European Commission

ISSN 2443-8014 (online)

Debt Sustainability Monitor

2017

INSTITUTIONAL PAPER 071 | JANUARY 2018

EUROPEAN ECONOMY

Economic and Financial Affairs

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https://ec.europa.eu/info/publications/economic-and-financial-affairs-publications_en.

Luxembourg: Publications Office of the European Union, 2018

PDF ISBN 978-92-79-77452-2 ISSN 2443-8014 doi:10.2765/01744 KC-BC-18-003-EN-N

European Commission
Directorate-General for Economic and Financial Affairs

Debt Sustainability Monitor

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Institutional Paper 071

ACKNOWLEDGEMENTS

This report was prepared in the Directorate-General for Economic and Financial Affairs under the direction of Marco Buti (Director-General) and Servaas Deroose (Deputy Director-General), and the supervision of Lucio Pench (Director for Fiscal Policy) and Giuseppe Carone (Head of Unit).

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Section 4.2.2 and Annex 8 further benefited from comments by Filip Keereman, Alessandro Malchiodi and Ivo Jarofke (DG FISMA). Chapter 4 benefited from comments by Kornelia Bezhanova and Laura Wahrig (EUROSTAT).

Statistical support was provided by Pedro Arevalo and Nicola Gagliardi. Secretarial support and layout was provided by Laura Crapanzano.

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Public debt-vulnerabilities remain despite a favourable macroeconomic outlook

Public debt has overall further reduced in the EU in 2017, supported by the continuing economic recovery, very favourable financial conditions and a broadly stable fiscal outlook (a structural primary balance stable compared to 2016, at 0.8% of GDP). However, in several countries, public debt levels have not decreased, or have done so at a slow pace, and remain close to their historical peaks. Close to 90% of GDP at the euro area aggregate level in 2017, public debt ratios linger around 100% of GDP in Belgium, Spain, France and Cyprus, and around 130% of GDP in Italy and Portugal. Several countries remain therefore exposed to unfavourable shocks.

Strengthening fiscal sustainability without hampering the recovery

Current better economic conditions should be used to re-build fiscal buffers in time to absorb new shocks when they come, not least a foreseeable rise in interest rates. At the same time, the economic outlook is still surrounded by uncertainties. Therefore, appropriate strategies need to be designed, aimed at strengthening fiscal sustainability, while not hampering the economic recovery. This requires in particular a differentiation of fiscal policy across Member States.

The DSM 2017 provides a timely update of fiscal sustainability challenges in the EU

This new edition of the Debt Sustainability Monitor (DSM), by providing an update of fiscal sustainability challenges in the EU, contributes to the monitoring and coordination of euro area Member States' fiscal policies and the aggregate fiscal stance for the euro area to ensure a growth-friendly and differentiated fiscal policy ([1]). With this aim, the analysis of fiscal sustainability challenges is increasingly used in the context of EU fiscal surveillance, including in setting the appropriate path for countries to reach their medium-term objectives. As an intermediate yearly update within the 3-year cycle of the Fiscal Sustainability Report (FSR), the DSM provides a snapshot of the situation, and is updated to take into account the latest available macroeconomic forecasts (based on the European Commission's Autumn 2017 forecast). The projections also rely on the Economic Policy Committee (EPC) agreed long-term convergence assumptions for the interest - growth rate differential, and the long-term budgetary projections of age-related costs from the joint European Commission - EPC 2015 Ageing Report ([2]).

A comprehensive horizontal framework for assessing fiscal sustainability is used

Fiscal sustainability challenges faced by Member States (including those stemming from population ageing) are evaluated according to the comprehensive horizontal fiscal sustainability assessment framework developed in the Fiscal Sustainability Report 2015 ([3]). This framework brings together in a synthetic way results on debt sustainability analysis (DSA) and fiscal sustainability indicators. The framework allows gaining a horizontally consistent overview of fiscal sustainability challenges across time horizons (short, medium and long-term) and across countries, based on a set of transparent criteria. This Debt Sustainability Monitor assesses fiscal sustainability challenges for all current EU countries that are not under macroeconomic adjustment programme ([4]).

([1]) European Commission (2017a).
([2]) Updated budgetary projections of age-related costs will be presented in the forthcoming European Commission - EPC Ageing Report 2018.
([3]) European Commission (2016a).
([4]) Greece is therefore excluded, being already monitored in the context of specific programme reviews.

Important fiscal sustainability challenges remain, despite more favourable overall prospects in the EU compared to a year ago

The EU and EA public debt ratios are set to gradually decline over the next decade, under the baseline no-fiscal policy change scenario ([5]), from a peak of 88% of GDP in 2014 (respectively 94% of GDP in the EA) to 73½% of GDP in 2028 (respectively 78% of GDP in the EA). These levels are significantly lower than the ones projected a year ago (see DSM 2016 ([6])), in line with a more favourable fiscal and economic outlook ([7]). Furthermore, when taking into account a large range of possible temporary shocks to macro-financial and fiscal variables (through stochastic projections), the EA public debt ratio is found to have a high probability to decline in the next 5 years (probability close to 95%).

Nonetheless, several elements point to persistent fiscal sustainability risks. First, despite the overall downward trend projected in the baseline no-fiscal policy change scenario, EU and EA overall debt ratios are projected to remain in 10 years' time above their pre-crisis levels, and well above the 60% of GDP Treaty reference threshold. Furthermore, as usual in debt projection exercises, fiscal assumptions critically drive the results: for instance, assuming government primary balances more in line with historical trends (based on last 15 years' averages) would bring a smaller reduction of public debt ratios (-5 pps. of GDP in the EU against -10 pps. of GDP in the baseline no-fiscal policy change scenario) ([8]). Finally, as highlighted in this report, EU and EA averages mask important cross-country differences, with less favourable prospects in a number of countries. For instance, in some highly indebted countries, public debt burdens are projected, at unchanged policies, to decline at a slower pace, or even increase by 2028.

These remaining important debt-vulnerabilities expose highly indebted Member States to unfavourable shocks, in particular to hikes in interest rates. For instance, an increase of market interest rates of 100 basis points, compared to the baseline scenario, would raise public debt ratios by around 8 pps. of GDP or more in high-debt countries. Stabilising public debt in a higher interest rate environment would thus require larger fiscal efforts (see Box 2.2 of the report). ([9])

In this context, the results of the DSM 2017 stress the importance of adhering to European fiscal rules, as a significantly larger decrease in public debt ratios would be achieved, getting closer to 60% of GDP at the EU and EA aggregate levels in 2028 ([10]) if all countries achieved and adhered to medium-term objectives set by the Stability and Growth Pact (SGP). The sustained fiscal consolidation implied in the SGP scenario can be deemed ambitious by EU historical standards. At the same time, lessons from past episodes of debt reduction in advanced economies highlight that primary balances even larger than the ones assumed in the

([5]) The no-fiscal policy change scenario relies on the assumption that the government primary balance (in structural terms and before ageing costs) remains constant at its last forecast value (2019) for the remainder of the 10-year projection horizon.
([6]) European Commission (2017b).
([7]) These more favourable trends are linked to lower starting debt levels (than forecasted a year ago), and a slightly higher structural primary balance forecasted in 2019 (whose level is important for our 10-year projections in line with the no-fiscal policy change assumption).
([8]) The description of this scenario, as well as all the scenarios performed in this report, is provided in Box 2.1.
([9]) At the same time, our baseline scenario assumes a return of interest rates to 'normal' values that can be deemed already high compared to current historically low levels.
([10]) See section 2.1.2 of the report for the results of the Stability and Growth Pact scenario.

SGP scenario were sustained (see Box 2.3 of the report).

Building on the results of the Debt Sustainability Analysis and on fiscal sustainability indicators, the report provides an assessment of fiscal sustainability risks across time horizons (see chapter 5 and Annex A6 for a detailed description of the classification criteria used).

No country is found to be at risk of fiscal stress in the short-term

As in the DSM 2016, no country appears to be at risk of fiscal stress in the short-term, based on the S0 indicator ([11]) (see Table 1 and Table 3). Risks of short-term fiscal stress are significantly lower compared with the situation in 2009. Short-term challenges are nevertheless identified in some countries, either on the fiscal side (in Spain, France, the United Kingdom, Hungary and Italy), or on the macro-financial side (in Cyprus). However, these vulnerabilities are not deemed acute enough to lead to overall risks of fiscal stress in the upcoming year ([12]).

Over the medium-term, high risks to fiscal sustainability are identified in ten countries, and medium risks for another five

The assessment of medium-term sustainability challenges relies on the joint use of the debt sustainability analysis (DSA, run over a 10-year horizon) and the S1 indicator ([13]), as in the DSM 2016. The joint use of the DSA and S1 allows capturing medium-term sustainability challenges in a comprehensive way, by considering fiscal risks related both to population ageing and to other risk factors affecting future debt developments.

Ten countries are deemed at high fiscal sustainability risk in the medium-term, as a result of inherited high post-crisis debt burdens, weak projected fiscal positions in some cases, and / or sensitivity to unfavourable shocks. This concerns Belgium, Spain, France, Croatia, Italy, Hungary, Portugal, Romania, Finland and the United-Kingdom. In half of these countries (Belgium, Spain, France, Italy and Portugal), both the DSA and the S1 indicator point to high risks. In the other half (Croatia, Hungary, Romania, Finland and the United-Kingdom), the high medium-term risk category is driven by the overall DSA assessment, while the S1 indicator signals medium risks. In these countries, the DSA result is driven by a debt ratio at the end of projections above the 60% of GDP Treaty reference value, under the baseline no-fiscal policy change scenario, accompanied by high risks highlighted by one or more of the alternative debt projection scenarios or sensitivity tests (see Table 2 and Table 3).

In five additional countries, namely Cyprus, Lithuania, Austria, Poland and Slovenia, medium-term fiscal sustainability risks are deemed medium. In Cyprus, Austria, Poland and Slovenia, both the DSA and the S1 indicator point to medium risks. In Lithuania, despite a contained level of public debt, under the baseline no-fiscal policy change scenario and alternative debt projection scenarios or sensitivity tests, the S1 indicator

([11]) The S0 indicator is a composite indicator aimed at evaluating the extent to which there may be a risk of fiscal distress in the short-term, stemming from the fiscal as well as the macro-financial and competitiveness sides of the economy. A set of 25 variables proven to perform well in the past in detecting fiscal distress situations is used to construct the indicator.

([12]) Box 3.1 of the report presents a complementary tool to the analysis of short-term risks, with results largely in line with the conclusions drawn from the S0 indicator.

([13]) The medium-term sustainability indicator S1 shows the additional adjustment required, in terms of improvement in the government structural primary balance over 5 years to reach a 60% public debt-to-GDP ratio by 2032, including financing for future additional expenditure arising from population ageing.

signals medium-risks in line with fast increasing ageing costs.

The remaining twelve countries are found to be at low risk in the medium-term. These countries are Bulgaria, Czech Republic, Denmark, Germany, Estonia, Ireland, Latvia, Luxembourg, Malta, the Netherlands, Slovakia and Sweden. In three cases however (Bulgaria, Ireland and Latvia), stochastic projections point to some vulnerabilities, in line with the important underlying volatility of these economies.

This DSM update results in a limited number of changes in the medium-term risk classification, compared with the 2016 edition, overall pointing to reduced risks. In four countries, the risk classification has improved towards safer levels: in Cyprus, Poland and Slovenia, from high to medium risk, and in Ireland from medium to low risk. In all these cases, the improvement in the initial budgetary position explains the change in the risk category (e.g. large improvement in the structural primary balance and debt ratio in Cyprus). In Romania on the other hand, the medium-term risk classification has worsened from medium to high risk, largely driven by the deterioration of the forecasted structural primary balance.

Over the long-term, medium or high risks to fiscal sustainability are found in thirteen countries

Long-term fiscal sustainability challenges are identified based on the S2 indicator, under the baseline no-fiscal policy change scenario, as traditionally done in previous issues of the FSR and the DSM 2016 ([14]).

In the long-term, only Slovenia appears to be at high fiscal sustainability risk, while another twelve countries are deemed to be at medium risk. In Slovenia, the high level of the S2 indicator is mainly driven by the projected cost of ageing, and in particular by pension expenditures. In the twelve countries found to be at medium risk, the projected increase of age-related expenditures contributes to the long-term fiscal gap with a varying intensity. In the majority of these countries (Luxembourg, Malta, Lithuania, the Netherlands, Austria, Belgium, Slovakia and the United Kingdom), projected age-related costs are the main (if not unique) driver of long-term fiscal sustainability challenges. In the others (Romania, Hungary, Poland and Finland), the unfavourable initial budgetary position largely contributes to the S2 indicator, mainly due to a structural primary deficit.

The remaining fourteen countries are classified at low fiscal sustainability risk in the long term (Czech Republic, Estonia, Germany, Spain, France, Latvia, Bulgaria, Portugal, Denmark, Italy, Sweden, Ireland, Croatia and Cyprus). However, in some countries (e.g. Czech Republic and Portugal), the low level of the S2 indicator is conditional on maintaining a high structural primary balance in the long-term, and can be deemed ambitious by historical EU standards (a low percentile rank associated to the required structural primary balance). Furthermore, as the adjustment implied by the S2 indicator might lead to debt stabilising at relatively high levels, this indicator has to be taken with caution for high-debt countries (e.g. Italy, Portugal, Spain and France).

([14]) The long-term sustainability indicator S2 shows the upfront adjustment to the current primary balance (in structural terms) required in order to stabilise the debt-to-GDP ratio over the infinite horizon, including financing for any additional expenditure arising from an ageing population.

Under more adverse fiscal assumptions, long-term fiscal challenges would become acute in most countries. For instance, under the AWG risk scenario (with more dynamic projected health-care costs due to the impact of non-demographic drivers), the majority of countries would be at either high (2 countries) or medium (22 countries) fiscal sustainability risk. If the initial structural primary balance reverted back to historical averages (often less favourable than forecast values), long-term fiscal gaps would also be higher in the majority of countries (17 countries), with unfavourable changes in risk classification in the Czech Republic, Ireland and Portugal (from low to medium). Box 2.4 of the report provides additional sensitivity tests, and explores ways to strengthen the interpretation of the S2 indicator.

Compared to the DSM 2016, the long-term risk classification has only changed in one country (Czech Republic). The improvement (from medium to low risk) in this country is explained by a more favourable initial budgetary position. The relative stability of the long-term risk classification is to be expected, given that the projected costs of ageing remain largely unchanged (based on the Ageing Report 2015).

Additional fiscal risks arising from non-performing loans on banks' balance sheets persist, even if some improvements are seen

Finally, to complement our sustainability analysis, the report explores (like in the DSM 2016) additional potential risks or mitigating factors linked to i) the structure of public debt, in terms of maturity, holders and currency, ii) government contingent liabilities primarily linked to the banking sector, and iii) government assets.

As far as governments' contingent liability risks from the banking sector are concerned, the main vulnerability stems from the share of non-performing loans (NPL), which still appears to be problematic in several EU countries (especially in Cyprus, Portugal, Italy, Slovenia and Ireland). Non-performing loans have nonetheless further reduced, or stabilised, across the board.

Under the assumption of a rigorous application of the regulatory framework and of a reduction of non-performing loans in the medium-term ([15]), the simulated impact of a systemic banking crisis on public finances would have a potential high impact only in a limited subset of countries and only in the short-term.

([15]) In the model used, the effect of non-performing loans (NPLs) is only considered in the current situation, while it is supposed to become negligible in the longer term.

Table 1: **Fiscal sustainability assessment by Member State (in bracket, classification in the DSM 2016, based on Commission Autumn 2016 forecasts, whenever the risk category has changed)**

	Overall SHORT-TERM risk category	Debt sustainability analysis - overall risk assessment	S1 indicator - overall risk assessment	Overall MEDIUM-TERM risk category	Overall LONG-TERM risk category
BE	LOW	HIGH	HIGH	HIGH	MEDIUM
BG	LOW	LOW	LOW	LOW	LOW
CZ	LOW	LOW	LOW	LOW	LOW (MEDIUM)
DK	LOW	LOW	LOW	LOW	LOW
DE	LOW	LOW	LOW	LOW	LOW
EE	LOW	LOW	LOW	LOW	LOW
IE	LOW	LOW (MEDIUM)	LOW (MEDIUM)	LOW (MEDIUM)	LOW
ES	LOW	HIGH	HIGH	HIGH	LOW
FR	LOW	HIGH	HIGH	HIGH	LOW
HR	LOW	HIGH	MEDIUM	HIGH	LOW
IT	LOW	HIGH	HIGH	HIGH	LOW
CY	LOW	MEDIUM (HIGH)	MEDIUM (HIGH)	MEDIUM (HIGH)	LOW
LV	LOW	LOW	LOW	LOW	LOW
LT	LOW	LOW	MEDIUM	MEDIUM	MEDIUM
LU	LOW	LOW	LOW	LOW	MEDIUM
HU	LOW	HIGH	MEDIUM	HIGH	MEDIUM
MT	LOW	LOW	LOW	LOW	MEDIUM
NL	LOW	LOW	LOW	LOW	MEDIUM
AT	LOW	MEDIUM	MEDIUM	MEDIUM	MEDIUM
PL	LOW	MEDIUM (HIGH)	MEDIUM	MEDIUM (HIGH)	MEDIUM
PT	LOW	HIGH	HIGH	HIGH	LOW
RO	LOW	HIGH (LOW)	MEDIUM	HIGH (MEDIUM)	MEDIUM
SI	LOW	MEDIUM (HIGH)	MEDIUM	MEDIUM (HIGH)	HIGH
SK	LOW	LOW	LOW	LOW	MEDIUM
FI	LOW	HIGH	MEDIUM (HIGH)	HIGH	MEDIUM
SE	LOW	LOW	LOW	LOW	LOW
UK	LOW	HIGH	MEDIUM (HIGH)	HIGH	MEDIUM

Source: Commission services

Table 2: **Final DSA risk classification: detail of the assessment**

HIGH RISK	MEDIUM RISK	LOW RISK
Baseline scenario at high risk BE, ES, FR, IT, PT	**Baseline scenario at medium risk** CY, AT, SI	**Baseline scenario at low risk (confirmed by other scenarios)** BG, CZ, DK, DE, EE, IE, LV, LT, LU, MT, NL, SK, SE
Baseline scenario at medium risk (At least one) other scenario* at high risk due to: Debt level at high risk: HR, UK Debt peak year at high risk: HU, RO, FI	**Baseline scenario at low risk (At least one) other scenario* at medium risk due to:** Debt level at medium risk: PL	

Source: Commission services

Table 3: **Summary heat map on fiscal sustainability challenges**

	BE	BG	CZ	DK	DE	EE	IE	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK
Heat map for short-term risks in EU countries																											
S0 overall index	0.35	0.25	0.19	0.30	0.08	0.20	0.28	0.37	0.24	0.20	0.36	0.44	0.24	0.21	0.12	0.39	0.05	0.20	0.07	0.25	0.36	0.20	0.13	0.30	0.10	0.12	0.42
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 EU countries																											
S1 indicator in EU countries																											
	BE	BG	CZ	DK	DE	EE	IE	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK
S1 indicator - Baseline scenario	3.4	-4.3	-3.1	-3.4	-1.7	-3.1	-1.4	3.2	4.9	1.2	6.7	0.0	-2.0	0.6	-3.8	1.1	-3.1	-1.9	0.4	0.6	5.0	2.1	1.3	-2.6	1.5	-3.9	2.1
S1 indicator - overall risk assessment	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	MEDIUM	HIGH	MEDIUM	LOW	MEDIUM	LOW	MEDIUM	LOW	LOW	MEDIUM	MEDIUM	HIGH	MEDIUM	MEDIUM	LOW	MEDIUM	LOW	MEDIUM
Sovereign-debt sustainability risks in EU countries																											
	BE	BG	CZ	DK	DE	EE	IE	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK
Baseline no-policy change scenario	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	MEDIUM	HIGH	MEDIUM	LOW	LOW	LOW	MEDIUM	LOW	LOW	MEDIUM	LOW	HIGH	MEDIUM	MEDIUM	LOW	MEDIUM	LOW	MEDIUM
Debt level (2028)	94.8	13.8	25.9	24.1	40.6	19.4	48.3	95.1	105.7	74.9	129.9	68.2	33.8	48.8	16.4	69.9	29.3	38.6	61.7	60.0	114.5	64.9	64.9	35.1	67.9	20.4	80.4
Debt peak year	2017	2017	2017	2017	2017	2028	2017	2017	2028	2017	2017	2017	2017	2028	2017	2017	2017	2017	2017	2028	2017	2028	2017	2017	2028	2017	2017
Average Structural Primary Balance (2019-2028) Percentile rank	48%	43%	40%	53%	25%	75%	25%	68%	74%	48%	35%	25%	70%	56%	46%	71%	25%	45%	42%	71%	29%	88%	49%	45%	65%	39%	40%
Historical SPB scenario	MEDIUM	LOW	LOW	LOW	LOW	LOW	MEDIUM	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	LOW	LOW	MEDIUM	LOW	LOW	MEDIUM	MEDIUM	HIGH	LOW	MEDIUM	LOW	LOW	LOW	HIGH
Debt level (2028)	89.1	14.8	42.1	11.3	44.7	13.2	72.3	94.7	107.7	90.1	125.1	78.6	36.4	57.3	8.1	67.3	41.6	38.3	62.5	65.2	130.8	58.3	72.9	52.5	50.5	13.7	102.5
Debt peak year	2017	2017	2028	2017	2017	2028	2028	2017	2028	2028	2017	2017	2017	2028	2017	2017	2017	2017	2017	2028	2028	2028	2017	2028	2017	2017	2028
Average Structural Primary Balance (2019-2028) Percentile rank	37%	44%	66%	31%	28%	69%	62%	68%	75%	69%	28%	37%	72%	68%	32%	68%	41%	45%	44%	75%	55%	83%	64%	71%	36%	29%	74%
Negative shock (-0.5p.p.) on nominal GDP growth	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	MEDIUM	HIGH	MEDIUM	LOW	LOW	LOW	HIGH	LOW	LOW	MEDIUM	MEDIUM	HIGH	MEDIUM	MEDIUM	LOW	HIGH	LOW	MEDIUM
Debt level (2028)	100.2	14.9	27.5	25.8	43.4	20.0	51.2	100.5	111.1	79.4	137.6	72.8	35.5	51.0	17.3	73.8	31.3	41.1	65.3	62.9	121.5	67.4	68.5	37.2	71.3	21.9	84.9
Debt peak year	2017	2017	2017	2017	2017	2028	2017	2028	2028	2017	2028	2017	2017	2028	2017	2028	2017	2017	2017	2028	2017	2028	2017	2017	2028	2017	2017
Positive shock (+1p.p.) to the market interest rates on new debt	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	LOW	LOW	HIGH	LOW	LOW	MEDIUM	MEDIUM	HIGH	MEDIUM	MEDIUM	LOW	HIGH	LOW	MEDIUM
Debt level (2028)	100.6	14.4	28.0	25.7	43.7	20.3	50.5	101.4	111.4	80.5	138.9	70.4	35.6	51.8	17.0	74.6	31.1	41.2	65.0	63.5	121.9	68.3	69.0	36.6	71.9	22.2	84.8
Debt peak year	2017	2017	2017	2017	2017	2028	2017	2028	2028	2028	2028	2017	2017	2028	2017	2028	2017	2017	2017	2028	2017	2028	2017	2017	2028	2017	2017
Negative shock on the PB over the two forecast years	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	LOW	LOW	MEDIUM	LOW	LOW	MEDIUM	MEDIUM	HIGH	HIGH	MEDIUM	LOW	MEDIUM	LOW	MEDIUM
Debt level (2028)	98.1	14.6	29.3	26.4	41.0	21.3	54.3	95.8	109.3	82.0	132.9	72.3	33.9	49.8	17.9	72.5	31.3	41.7	62.8	62.4	117.1	70.2	67.8	39.5	69.9	21.1	83.7
Debt peak year	2017	2017	2017	2017	2017	2028	2017	2017	2028	2028	2028	2017	2017	2028	2017	2017	2017	2017	2017	2028	2017	2028	2017	2017	2028	2017	2017
Stochastic projections	MEDIUM	MEDIUM	LOW	LOW	LOW	LOW	MEDIUM	HIGH	HIGH	MEDIUM	HIGH	MEDIUM	MEDIUM	MEDIUM	LOW	MEDIUM	LOW	LOW	LOW	LOW	HIGH	MEDIUM	LOW	LOW	LOW	LOW	LOW
Probability of debt in 2022 greater than in 2017 (%)	26%	28%	29%	15%	1%	100%	23.3%	33%	62%	37%	33%	14%	36%	44%	38%	40%	7%	3%	16%	50%	30%	76%	20%	25%	57%	3%	28%
Difference between the 10th and 90th percentile in 2022 (p.p. of GDP)	29.9	33.9	22.2	15.9	15.8	4.0	32.1	18.2	13.5	43.3	25.4	44.1	37.5	33.7	21.7	40.1	21.3	17.2	28.1	21.5	38.8	36.8	27.1	29.3	19.2	11.6	19.7
Debt sustainability analysis - overall risk assessment	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	LOW	LOW	HIGH	LOW	LOW	MEDIUM	MEDIUM	HIGH	HIGH	MEDIUM	LOW	HIGH	LOW	HIGH
Overall MEDIUM-TERM risk category	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	MEDIUM	LOW	HIGH	LOW	LOW	MEDIUM	MEDIUM	HIGH	HIGH	MEDIUM	LOW	HIGH	LOW	HIGH
Heat map for long-term risks in EU countries																											
	BE	BG	CZ	DK	DE	EE	IE	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK
S2 indicator - Baseline scenario	2.7	1.0	1.7	0.9	1.2	1.6	-0.5	1.2	1.1	-1.5	0.6	-1.8	1.1	3.1	4.4	3.4	3.2	3.0	2.7	3.1	1.0	5.1	6.1	2.4	2.8	0.5	2.1
Overall LONG-TERM risk category	MEDIUM	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	LOW	MEDIUM	HIGH	MEDIUM	MEDIUM	LOW	MEDIUM

(1) In this table, only the relevant information used for the risk classification is included. The report contains more detailed information. All thresholds used are presented in Annex A6.

Source: Commission services

1. INTRODUCTION OF PUBLIC FINANCES

Public debt vulnerabilities remain high despite a favourable macroeconomic outlook. Public debt ([16]) has overall further reduced in the EU in 2017, supported by the continuing economic recovery, very favourable financial conditions and a broadly stable fiscal outlook (a structural primary balance stable compared to 2016, at 0.8% of GDP). However, public debt levels have decreased at a slow pace and remain close to their historical peaks in several countries. Close to 90% of GDP at the euro area aggregate level in 2017, public debt ratios linger around 100% of GDP in Belgium, Spain, France and Cyprus, and around 130% of GDP in Italy and Portugal. Several Member States remain therefore exposed to potential unfavourable shocks.

Current better economic conditions should be used to re-build fiscal buffers in time to absorb new shocks when they come, not least a foreseeable rise in interest rates. At the same time, the economic outlook it still surrounded by uncertainties. Therefore, strengthening fiscal sustainability appears essential, while not hampering the economic recovery. This requires in particular a differentiation of fiscal policy across Member States ([17]).

Against this background, this new issue of the Debt Sustainability Monitor (DSM) aims at providing a timely update of fiscal sustainability challenges faced by Member States. As an intermediate yearly update within the 3-year cycle of the Fiscal Sustainability Report (FSR) ([18]), the DSM provides a snapshot of the situation, updating results to the latest available macroeconomic forecasts (based on European Commission's Autumn 2017 forecast). The projections also rely on the Economic Policy Committee (EPC) agreed long-term convergence assumptions for the interest - growth rate differential, and the long-term budgetary projections of age-related costs from the joint European Commission - EPC 2015 Ageing Report. It is the second edition of this report (following the DSM 2016 published in January 2017).

A multi-dimensional approach is used to assess and differentiate fiscal sustainability risks in the short-, medium- and long-term. As in the FSR and the DSM 2016, the fiscal sustainability assessment contained in this report is based on a separate assessment of challenges over the short-, medium- and long-term. The short-term dimension is 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. Fiscal sustainability challenges over the medium-term are captured through the joint use of the debt sustainability analysis (DSA) and the medium-term fiscal sustainability indicator S1 ([19]). The joint use of these two tools allows for an identification of medium-term challenges deriving from population ageing (mostly through the S1 indicator that is particularly suited to this purpose), while ensuring due consideration to medium-term public debt dynamics (for which the DSA is the reference toolkit). Challenges over the long-term are identified through the long-term fiscal sustainability indicator S2 ([20]).

The fiscal sustainability risk assessment provided in this report relies on a wealth of tools and scenarios. Fiscal sustainability challenges are illustrated for the three time dimensions in a summary heat map, allowing for a quick visualisation of the underlying factors of risk. For the DSA, a wealth of scenarios is performed to complement the traditional baseline no-fiscal policy change scenario, including for instance the assumption of reversal to historical average for different macro-fiscal variables, or more stringent financial conditions. Additionally, other projections assume a path in line with the respect of EDP recommendations and the convergence to medium-term budgetary objectives under the preventive arm of the Pact, or a path in line with Member States' Stability and Convergence Programmes (see Chapter 2 for more details). Sensitivity tests are also performed for the

([16]) In the report, public debt refers to the general government consolidated gross debt unless otherwise specified.
([17]) See European Commission (2017a).
([18]) European Commission (2016a).
([19]) The S1 indicator shows the additional fiscal adjustment effort required (in terms of improvement in the government structural primary balance) over five post-forecast years to reach the 60% of GDP debt ratio target in 2032.
([20]) The S2 indicator shows the upfront fiscal adjustment (to the government structural primary balance) required to stabilise the debt ratio over the infinite horizon.

fiscal sustainability indicators. For example, the AWG risk scenario assumes less favourable developments of future healthcare costs for the S1 and S2 indicators (see Chapter 3). These additional scenarios are meant to allow qualifying the fiscal sustainability assessment in the context of the qualitative interpretation of the results ([21]).

Results are provided for all current Member States that are not under a macroeconomic adjustment programme (i.e. for all current EU countries but Greece). Results by country are reported in the statistical annex to the report.

The remainder of the report is organised as follows. Quantitative results on debt sustainability analysis and fiscal sustainability indicators are provided in Chapters 2 and 3 respectively. Chapter 4 focusses on additional factors that should be considered in the assessment of fiscal sustainability challenges (the structure of public debt financing; risks related to governments' contingent liabilities; the value of government financial assets). Chapter 5 concludes with the overall assessment.

([21]) Like in any projection exercise (especially as the projection horizon grows), the projections in this report are based on a set of assumptions, which are subject to uncertainties (discussed in the European Commission (2016a)). Recognising these uncertainties, the framework includes a wealth of alternative scenarios and sensitivity tests (including stochastic projections). These uncertainties can be higher in specific cases: for instance, in small open economies where GDP volatility is generally high. Uncertainties are also likely to remain high in the case of the UK, as negotiations on the future relationship between the UK and the EU continue (see European Commission (2017c)).

2. QUANTITATIVE RESULTS ON DEBT SUSTAINABILITY ANALYSIS

In this chapter, results from deterministic and stochastic debt projections are presented (sections 2.1 to 2.3). Gross financing needs projections are also included (section 2.4). Some specific issues are explored, related to the sensitivity of public debt dynamics to a rise in interest rates (Box 2.2) and past debt reduction episodes (Box 2.3).

2.1. DETERMINISTIC DEBT PROJECTION RESULTS

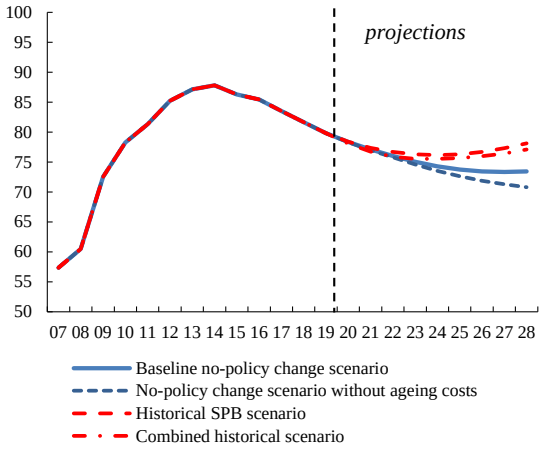
Deterministic public debt projections presented in this report are run under a series of alternative scenarios and sensitivity tests. These scenarios include the baseline and historical scenarios (see section 2.1.1) and the Stability and Growth Pact scenario (see section 2.1.2), which are compared to the DSM 2016 (see section 2.1.3). Stability and Convergence Program and Draft Budgetary Plan scenarios are also presented (see section 2.1.4). Deterministic debt projections, based on fiscal reaction functions, are then derived (see section 2.1.5). Moreover, sensitivity tests around the baseline scenario are carried out (see section 2.2) ([22]).

2.1.1. Baseline and historical scenarios

EU and EA aggregated results

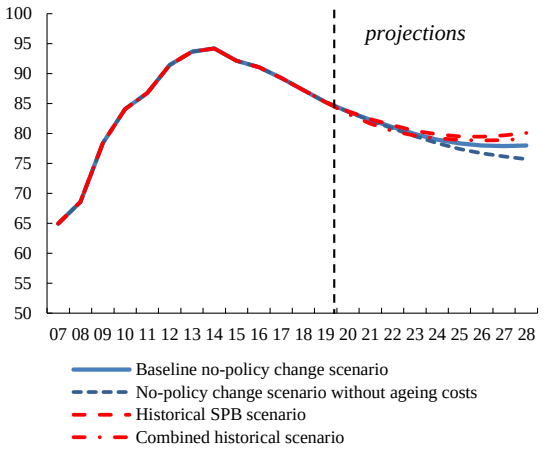
Under the baseline no-fiscal policy change scenario, the debt ratio for the EU would gradually decline in the next decade. On the basis of budgetary positions from the European Commission's Autumn 2017 forecast, and under the assumption of unchanged fiscal policy beyond the forecast horizon, the EU-28 debt ratio would gradually decline from a peak of 88% of GDP in 2014 to around 73½% of GDP in 2028 (see Graph 2.1) ([23]). For the EA, the same projection scenario shows a slightly sharper decline from 94% of GDP in 2014 to 78% of GDP in 2028 (see Graph 2.2). Despite this overall downward trend, the debt ratio would remain in 10 years' time well above its pre-crisis level (57½% and 65% of GDP in 2007 respectively in the EU-28 and the EA), and above the 60% of GDP Treaty reference threshold.

Graph 2.1: **Gross public debt projections (% of GDP), European Union 28: baseline no-fiscal policy change and historical scenarios**



Source: Commission services

Graph 2.2: **Gross public debt projections (% of GDP), Euro area: baseline no-fiscal policy change and historical scenarios**



Source: Commission services

The decline is the aggregate debt ratio is driven by a sustained primary surplus over the projection horizon, coupled with favourable snow-ball effects ([24]). The primary balance would

([22]) The definition of these different scenarios is described in Box 2.1.

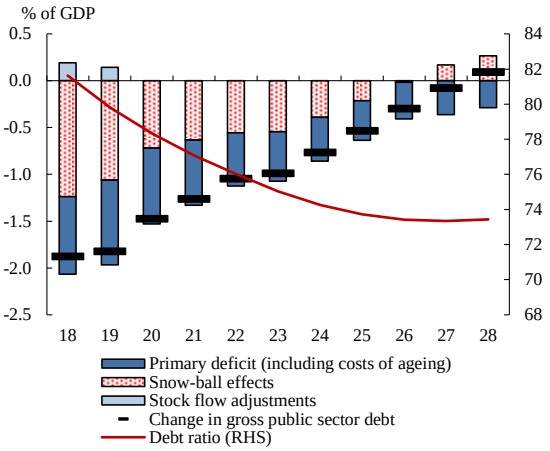
([23]) The no-fiscal policy change scenario relies on the assumption that the government primary balance (in structural terms and before ageing costs) remains constant at its last forecast value (2019) for the remainder of the 10-year projection horizon.

([24]) Snow-ball effects refer to the net impact of the counter-acting effects of interest rates, inflation and real GDP growth (as well as exchange rates in some countries) on the evolution of the debt ratio (see Annex A4 for more details).

be an important driver of the projected debt reduction (under the assumption of a structural primary balance *before costs of ageing* held constant at 0.6% and 0.7% of GDP respectively in the EU-28 and the EA over the projection period). Favourable snow-ball effects would also contribute to the decrease of the debt ratio, given the projected slow increase of interest rates from their current historically low levels (see Tables 2.2 – 2.1 and Graphs 2.3 – 2.4). Towards the end of the projection horizon, debt ratios would stabilise in line with progressively rising interest rates ([25]) and implicit liabilities related to population ageing (the growing impact of ageing costs can also be seen in Graphs 2.1 – 2.2 when comparing the no-fiscal policy change scenario with and without ageing costs).

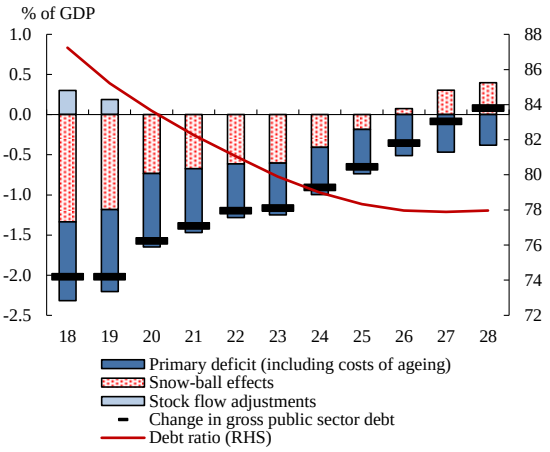
Assuming fiscal and economic conditions reverting to historical trends would bring a smaller reduction of public debt ratios (see Graphs 2.1 – 2.2)**.** For instance, if the structural primary balance (before ageing costs) reverted to its historical average beyond the forecast horizon (an average structural primary balance of 0.0% and 0.4% of GDP respectively for the EU-28 and the EA) ([26]), the projected decrease of the debt ratio would come to a halt before the end of the projection period. In this context, the EU-28 public debt ratio would decrease by around 5 pps. of GDP over the period 2017 – 2028, compared to a reduction of around 10 pps. of GDP in the baseline scenario. If real interest rates and real GDP growth were in addition reverting to their historical averages, the EU-28 debt ratio would decrease by around 6 pps. of GDP. By the end of the projection horizon, the EU-28 debt ratio would stand at some 4 – 5 pps. of GDP higher than in the baseline scenario. Gaps between baseline and historical scenarios are found to be lower at the EA aggregate level (around 1 – 2 pps. of GDP) notably given that baseline fiscal assumptions are closer to historical averages (see Table 2.4).

Graph 2.3: **Decomposition of the variation of the gross public debt ratio (% of GDP), European Union 28 - Baseline no-fiscal policy change scenario**



(1) Reading note: In 2018, a forecasted primary surplus of 0.8% of GDP contributes to reduce the public debt ratio.
Source: Commission services

Graph 2.4: **Decomposition of the variation of the gross public debt ratio (% of GDP), Euro area - Baseline no-fiscal policy change scenario**



(1) Reading note: In 2018, a forecasted primary surplus of 1.0% of GDP contributes to reduce the public debt ratio.
Source: Commission services

([25]) In particular, market long-term interest rates are assumed to converge to 3% in real terms in all countries by the end of the projection horizon (see Annex A4 for more explanations).
([26]) Averages over the period 2003-17.

Table 2.1: **Gross public debt projections (% of GDP) and underlying macro-fiscal assumptions, European Union 28 - Baseline no-fiscal policy change**

	2017	2018	2019	2020	2021	2022	2025	2028
Gross debt ratio	**83.5**	**81.6**	**79.8**	**78.3**	**77.1**	**76.0**	**73.7**	**73.4**
of which *Oustanding (non maturing) debt*	*65.1*	*64.7*	*63.4*	*62.2*	*61.1*	*60.1*	*57.7*	*56.8*
Rolled-over short-term debt	*9.0*	*8.7*	*8.4*	*8.2*	*8.0*	*7.8*	*7.4*	*7.4*
Rolled-over long-term debt	*7.9*	*6.7*	*6.6*	*6.6*	*6.6*	*6.6*	*6.6*	*6.7*
New short-term debt	*0.2*	*0.2*	*0.1*	*0.1*	*0.2*	*0.2*	*0.2*	*0.3*
New long-term debt	*1.4*	*1.4*	*1.2*	*1.2*	*1.3*	*1.4*	*1.7*	*2.2*
Changes in the debt ratio (-1+2+3)	**-1.9**	**-1.9**	**-1.8**	**-1.5**	**-1.3**	**-1.0**	**-0.5**	**0.1**
of which (1) Overall primary balance (1.1+1.2+1.3)	**0.8**	**0.8**	**0.9**	**0.8**	**0.7**	**0.6**	**0.4**	**0.3**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***0.8***	***0.6***	***0.6***	***0.6***	***0.6***	***0.6***	***0.4***	***0.3***
(1.1.1) Structural primary balance (before CoA)	*0.8*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*
(1.1.2) Cost of ageing (incl. revenues pensions tax)				*0.0*	*0.0*	*0.1*	*0.3*	*0.5*
(1.1.3) Property incomes				*0.0*	*0.0*	*0.1*	*0.1*	*0.2*
(1.2) Cyclical component	***-0.1***	***0.2***	***0.3***	***0.2***	***0.1***	***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***
(2) Snowball effect (interest rate/growth differential) (2.1+2.2+2.3)	**-1.1**	**-1.2**	**-1.1**	**-0.7**	**-0.6**	**-0.6**	**-0.2**	**0.3**
(2.1) Interest expenditure	*2.0*	*1.8*	*1.8*	*1.8*	*1.8*	*1.8*	*2.2*	*2.6*
(2.2) Growth effect (real)	*-1.9*	*-1.7*	*-1.5*	*-1.1*	*-1.0*	*-0.9*	*-0.9*	*-0.9*
(2.3) Inflation effect	*-1.2*	*-1.4*	*-1.3*	*-1.4*	*-1.4*	*-1.5*	*-1.4*	*-1.4*
(3) Stock flow adjustments	***0.0***	***0.2***	***0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
PM : Structural balance	***-1.2***	***-1.3***	***-1.2***	***-1.2***	***-1.3***	***-1.4***	***-1.8***	***-2.5***
Key macroeconomic assumptions								
Actual GDP growth (real)	2.3	2.1	1.9	1.4	1.3	1.2	1.3	1.3
Potential GDP growth (real)	1.6	1.6	1.7	1.6	1.5	1.4	1.3	1.3
Inflation (GDP deflator)	1.4	1.7	1.7	1.8	1.9	2.0	2.0	2.0
Implicit interest rate (nominal)	2.4	2.3	2.3	2.3	2.3	2.5	3.0	3.7

(1) Given that the drivers of the EU28 change in the public debt ratio are calculated as GDP-weighted averages of country-specific debt projections, small differences may appear between the total change in the public debt ratio and the sum of its drivers.
Source: Commission services

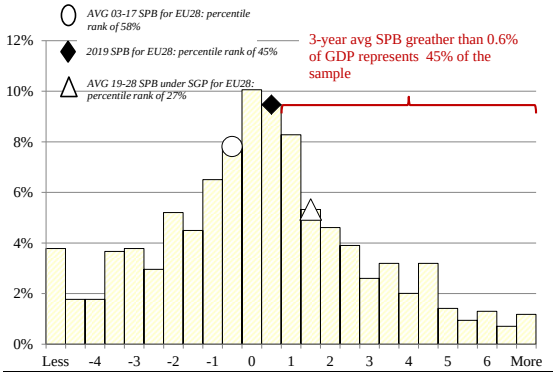
Table 2.2: **Gross public debt projections (% of GDP) and underlying macro-fiscal assumptions, Euro area - Baseline no-fiscal policy change**

	2017	2018	2019	2020	2021	2022	2025	2028
Gross debt ratio	**89.3**	**87.2**	**85.2**	**83.6**	**82.3**	**81.1**	**78.3**	**78.0**
of which *Oustanding (non maturing) debt*	*69.5*	*69.6*	*68.2*	*66.9*	*65.6*	*64.4*	*61.4*	*60.3*
Rolled-over short-term debt	*8.9*	*8.7*	*8.4*	*8.2*	*8.0*	*7.8*	*7.5*	*7.4*
Rolled-over long-term debt	*9.2*	*7.4*	*7.3*	*7.3*	*7.4*	*7.4*	*7.6*	*7.8*
New short-term debt	*0.2*	*0.2*	*0.1*	*0.1*	*0.2*	*0.2*	*0.2*	*0.3*
New long-term debt	*1.4*	*1.4*	*1.2*	*1.1*	*1.2*	*1.4*	*1.6*	*2.2*
Changes in the debt ratio (-1+2+3)	**-1.8**	**-2.0**	**-2.0**	**-1.6**	**-1.4**	**-1.2**	**-0.7**	**0.1**
of which (1) Overall primary balance (1.1+1.2+1.3)	**0.9**	**1.0**	**1.0**	**0.9**	**0.8**	**0.7**	**0.6**	**0.4**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***1.0***	***0.8***	***0.7***	***0.7***	***0.7***	***0.7***	***0.6***	***0.4***
(1.1.1) Structural primary balance (before CoA)	*1.0*	*0.8*	*0.7*	*0.7*	*0.7*	*0.7*	*0.7*	*0.7*
(1.1.2) Cost of ageing (incl. revenues pensions tax)				*0.0*	*0.1*	*0.1*	*0.3*	*0.5*
(1.1.3) Property incomes				*0.0*	*0.0*	*0.1*	*0.1*	*0.2*
(1.2) Cyclical component	***-0.2***	***0.2***	***0.4***	***0.2***	***0.1***	***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***
(2) Snowball effect (interest rate/growth differential) (2.1+2.2+2.3)	**-1.0**	**-1.3**	**-1.2**	**-0.7**	**-0.7**	**-0.6**	**-0.2**	**0.4**
(2.1) Interest expenditure	*1.9*	*1.8*	*1.7*	*1.7*	*1.8*	*1.8*	*2.2*	*2.7*
(2.2) Growth effect (real)	*-2.0*	*-1.8*	*-1.6*	*-1.0*	*-0.9*	*-0.8*	*-0.8*	*-0.8*
(2.3) Inflation effect	*-1.0*	*-1.3*	*-1.3*	*-1.4*	*-1.5*	*-1.6*	*-1.5*	*-1.5*
(3) Stock flow adjustments	***0.2***	***0.3***	***0.2***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
PM : Structural balance	***-1.0***	***-1.1***	***-1.1***	***-1.1***	***-1.2***	***-1.3***	***-1.7***	***-2.4***
Key macroeconomic assumptions								
Actual GDP growth (real)	2.2	2.1	1.9	1.3	1.1	1.1	1.1	1.1
Potential GDP growth (real)	1.4	1.5	1.5	1.5	1.3	1.3	1.1	1.1
Inflation (GDP deflator)	1.1	1.6	1.6	1.7	1.9	2.0	2.0	2.0
Implicit interest rate (nominal)	2.2	2.1	2.1	2.1	2.2	2.3	2.9	3.6

(1) Given that the drivers of the EA change in the public debt ratio are calculated as GDP-weighted averages of country-specific debt projections, small differences may appear between the total change in the public debt ratio and the sum of its drivers.
Source: Commission services

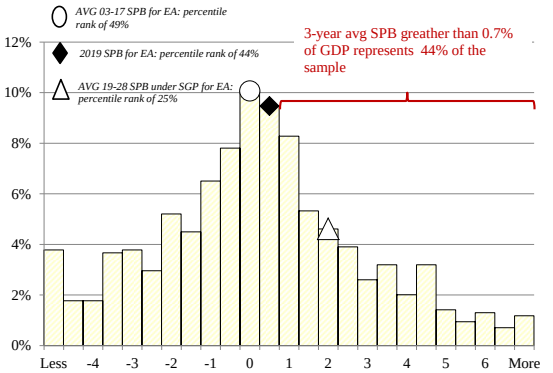
The fiscal stance assumed in the baseline scenario can be considered plausible, lying in the middle of EU primary balances' distribution. At both the EU-28 and the EA aggregate levels, the structural primary balance forecasted for 2019, on which the baseline scenario is grounded, appears plausible based on the European historical track-record (see Graphs 2.5 – 2.6).

Graph 2.5: **EU 28 structural primary balance level (SPB) and percentile rank in different scenarios against the distribution of EU countries' SPBs over 1980 – 2017**



(1) The distribution (yellow bars) is calculated over a dataset of all EU countries covering the period 1980 - 2017.
Vertical axis: % sample; horizontal axis: SPB values in % GDP.
Source: Commission services

Graph 2.6: **EA structural primary balance level (SPB) and percentile rank in different scenarios against the distribution of EU countries' SPBs over 1980 – 2017**



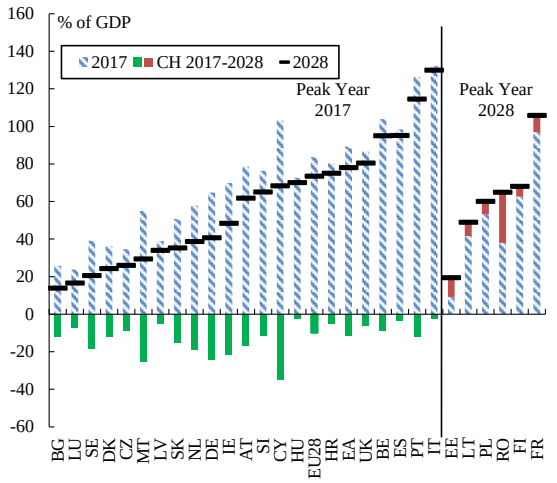
(1) The distribution (yellow bars) is calculated over a dataset of all EU countries covering the period 1980 - 2017.
Vertical axis: % sample; horizontal axis: SPB values in % GDP.
Source: Commission services

For example, the 0.6% of GDP structural primary balance assumed in the EU-28 is associated to a percentile rank of 45%. In other words, looking at all EU countries' structural primary balances over the period 1980 – 2017, it is found that in 45% of cases, the structural primary balance was at or above 0.6% of GDP.

Cross-country main results ([27])

According to the baseline no-fiscal policy change scenario, a decline in public debt ratios is projected in most EU Member States. Debt ratios are expected to decrease in 21 countries with particularly large reductions foreseen in CY, MT, DE, IE, NL and SE (by at least 19 pps. of GDP between 2017 and 2028). In these 6 countries, the substantial projected decrease of public debt ratios is largely explained by high forecasted primary surpluses in 2019 (at 2% of GDP in CY, MT, DE and IE) and / or favourable snow-ball effects. On the other hand, public debt ratios would increase in RO, EE, FR, LT, PL and FI (see Graph 2.7).

Graph 2.7: **Gross public debt projections (% of GDP) under the baseline no-fiscal policy change scenario, by country**



Source: Commission services

However, in some highly indebted countries, public debt burdens are projected to little decline, or to even increase. In Italy and Spain, the debt ratio would remain almost unchanged compared to 2017, while in France public debt would increase in the coming decade. Therefore, in these three countries, debt would remain (well) above 90% of GDP in 2028. In Belgium and Portugal, two other highly indebted Member States, the decline in debt burdens would be more

([27]) Detailed results by country are provided in the statistical country fiches of the Annex A10.

Table 2.3: **Gross public debt projections (% of GDP) - Baseline no-fiscal policy change and historical scenarios, by country**

	Debt in 2019	(A) Debt in 2028 - Baseline no-policy change scenario	(B) Debt in 2028 - Historical last 15 years average (03-17) on				(B - A)			
			SPB	IIR	Potential GDP growth	Combined	SPB	IIR	Potential GDP growth	Combined
BE	101.2	94.8	89.1	95.8	93.2	88.4	-5.8	1.0	-1.6	-6.4
BG	22.8	13.8	14.8	13.5	11.7	12.4	1.0	-0.3	-2.1	-1.4
CZ	32.5	25.9	42.1	26.1	23.6	39.5	16.2	0.2	-2.3	13.6
DK	34.6	24.1	11.3	24.8	24.9	12.4	-12.8	0.7	0.8	-11.7
DE	57.9	40.6	44.7	41.0	39.6	44.1	4.1	0.4	-1.0	3.5
EE	9.1	19.4	13.2	17.4	18.4	11.1	-6.2	-1.9	-1.0	-8.2
IE	67.2	48.3	72.3	49.5	41.8	65.9	24.0	1.2	-6.5	17.6
EL	:	:	:	:	:	:	:	:	:	:
ES	95.5	95.1	94.7	95.9	88.8	89.1	-0.4	0.8	-6.3	-6.0
FR	96.9	105.7	107.7	106.1	103.8	106.1	2.0	0.3	-1.9	0.4
HR	74.5	74.9	90.1	74.9	70.5	85.5	15.2	0.0	-4.5	10.5
IT	130.0	129.9	125.1	132.0	131.2	128.5	-4.8	2.2	1.3	-1.4
CY	93.9	68.2	78.6	67.8	65.1	75.3	10.4	-0.4	-3.1	7.1
LV	35.7	33.8	36.4	32.4	34.3	35.2	2.5	-1.4	0.5	1.4
LT	38.9	48.8	57.3	48.4	41.8	49.3	8.5	-0.4	-7.0	0.5
LU	22.9	16.4	8.1	16.1	16.2	7.9	-8.3	-0.3	-0.2	-8.5
HU	69.4	69.9	67.3	70.6	70.6	68.5	-2.7	0.6	0.6	-1.5
MT	48.8	29.3	41.6	29.7	28.6	41.4	12.3	0.4	-0.7	12.1
NL	51.5	38.6	38.3	38.9	37.2	37.2	-0.3	0.3	-1.4	-1.4
AT	73.4	61.7	62.5	62.1	62.7	63.8	0.8	0.4	1.0	2.1
PL	53.0	60.0	65.2	60.4	54.9	60.3	5.2	0.4	-5.1	0.4
PT	121.1	114.5	130.8	114.4	115.8	132.1	16.3	-0.1	1.3	17.6
RO	40.5	64.9	58.3	57.5	62.4	49.5	-6.6	-7.4	-2.5	-15.3
SI	72.0	64.9	72.9	66.9	64.8	75.1	8.0	1.9	-0.1	10.1
SK	47.2	35.1	52.5	35.5	32.2	49.7	17.4	0.4	-3.0	14.6
FI	61.6	67.9	50.5	67.4	66.1	48.4	-17.4	-0.5	-1.9	-19.5
SE	34.4	20.4	13.7	19.9	19.7	12.8	-6.7	-0.5	-0.7	-7.6
UK	84.2	80.4	102.5	80.7	79.9	102.4	22.1	0.4	-0.5	22.1
EU-28	**79.8**	**73.4**	**78.1**	**73.8**	**72.0**	**77.1**	**4.7**	**0.4**	**-1.4**	**3.6**
EA	**85.2**	**78.0**	**80.1**	**78.6**	**76.5**	**79.1**	**2.1**	**0.6**	**-1.5**	**1.2**

(1) The combined historical scenario assumes that the SPB, interest rate and GDP growth rate are reverting to their historical averages (calculated over the period 2003-17).
(2) Percentile ranks are calculated on the distribution of 3-year average SPB level over all EU countries and the period 1980 – 2017.
Source: Commission services

pronounced (by -9 and -12 pps. of GDP respectively), yet public debt ratios would remain above 90% of GDP. Weak fiscal positions (a structural primary deficit) in France and Spain contribute to these unfavourable trends. A positive interest - growth rate differential (unfavourable snow-ball effects) would be an important driver in other countries, given initial debt burdens (e.g. in Italy and Portugal). These countries would thus remain vulnerable to unfavourable shocks (see section 2.2).

The outlook would be overall less favourable if fiscal policy was more in line with historical performance. If the structural primary balance (before ageing costs) was reverting back to its historical average after 2019, public debt ratios would be higher in 2028 than in the baseline scenario in a majority of countries (16). The largest gaps would be recorded in IE, UK, SK, PT, CZ and HR (more than 15 pps. of GDP; see Table 2.3) given the important differences between recent and historical primary balances (see Table 2.4). In the combined historical scenario, a higher debt ratio, compared to the baseline, is projected in 15 countries, with the highest differences in UK, PT, IE, SK, CZ and MT. In a few cases, assuming that interest and growth rates were to evolve in line with historical averages would lead to higher debt ratios than the historical SPB scenario, given weaker historical growth performance (e.g. Portugal, Slovenia and Italy).

In some cases, fiscal assumptions, under the baseline scenario, seem ambitious. In several countries, the forecasted structural primary balance in 2019 can appear high by historical EU standards: this is the case in DE, IE, CY and MT

Table 2.4: **Summary of underlying macro-fiscal assumptions used in the baseline and historical scenarios, by country**

	Baseline no-policy change scenario						Historical last 15 years average (03-17)			Percentile rank of 2019 SPB	Percentile rank of AVG 03-17 SPB
	2019			Average 2019-28							
	SPB	Real IIR	Real GDP growth	SPB	Real IIR	Real GDP growth	SPB	Real IIR	Potential GDP growth		
BE	0.5	0.5	1.7	0.5	0.7	1.4	1.3	2.2	1.5	*48%*	*33%*
BG	0.7	1.4	3.6	0.7	1.6	2.3	0.6	1.1	3.4	*43%*	*45%*
CZ	0.9	0.5	2.9	0.9	0.9	2.0	-1.3	2.1	2.8	*40%*	*74%*
DK	0.2	0.6	1.9	0.2	0.9	1.7	2.0	2.8	1.2	*53%*	*25%*
DE	2.0	0.2	2.0	2.0	0.6	1.3	1.5	2.1	1.3	*25%*	*30%*
EE	-1.4	-2.3	2.8	-1.4	0.1	2.2	-0.6	-1.4	3.0	*75%*	*66%*
IE	2.0	1.4	3.1	2.0	1.0	2.9	-1.4	3.2	4.5	*25%*	*75%*
EL	:	:	:	:	:	:	:	:	:	*:*	*:*
ES	-0.7	1.0	2.1	-0.7	1.1	1.2	-0.7	2.3	1.6	*68%*	*67%*
FR	-1.3	0.3	1.6	-1.3	0.5	1.2	-1.6	2.0	1.3	*74%*	*76%*
HR	0.5	1.1	2.7	0.5	1.8	1.2	-1.6	2.5	1.2	*48%*	*77%*
IT	1.1	1.4	1.0	1.1	1.3	0.5	1.8	2.5	0.2	*35%*	*29%*
CY	2.0	0.6	2.7	2.0	0.8	1.6	0.5	2.4	1.5	*25%*	*47%*
LV	-0.9	-1.0	3.2	-0.9	0.4	3.3	-1.2	0.2	3.1	*70%*	*74%*
LT	0.0	-0.6	2.6	0.0	0.8	1.4	-1.1	1.8	3.3	*56%*	*72%*
LU	0.6	-0.7	3.3	0.6	-0.4	3.0	1.8	0.3	3.0	*46%*	*27%*
HU	-1.0	0.6	3.1	-1.0	1.8	2.3	-0.6	2.6	1.8	*71%*	*66%*
MT	2.0	1.1	4.1	2.0	1.3	3.6	0.2	2.5	3.5	*25%*	*53%*
NL	0.6	-0.7	2.5	0.6	0.2	1.4	0.6	2.0	1.3	*45%*	*44%*
AT	0.8	0.5	2.3	0.8	0.7	1.9	0.6	2.1	1.5	*42%*	*44%*
PL	-1.0	0.4	3.4	-1.0	1.4	2.6	-1.7	2.8	3.5	*71%*	*79%*
PT	1.6	1.5	1.8	1.6	1.6	0.9	-0.8	2.3	0.3	*29%*	*68%*
RO	-2.9	1.1	4.1	-2.9	2.1	3.3	-2.0	-1.3	3.6	*88%*	*81%*
SI	0.4	0.9	3.3	0.4	1.1	2.4	-0.8	3.0	1.9	*49%*	*68%*
SK	0.6	0.7	4.0	0.6	0.8	3.1	-1.8	2.6	3.8	*45%*	*80%*
FI	-0.5	-0.2	2.4	-0.5	0.4	1.3	1.9	1.6	1.2	*65%*	*26%*
SE	0.9	-1.4	2.2	0.9	-0.2	2.0	1.9	1.1	2.2	*39%*	*26%*
UK	0.9	1.2	1.1	0.9	1.3	1.4	-2.3	2.2	1.6	*40%*	*83%*
EU-28	**0.6**	**0.5**	**1.9**	**0.6**	**0.9**	**1.4**	**0.0**	**2.1**	**1.5**	***45%***	***58%***
EA	**0.7**	**0.5**	**1.9**	**0.7**	**0.7**	**1.3**	**0.4**	**2.2**	**1.3**	***44%***	***49%***

Source: Commission services

(2% of GDP) and to a lower extent Portugal (1.6% of GDP). In these cases, only 25% (29% in the case of Portugal) of the distribution displays a structural primary balance greater than the level assumed in the baseline scenario. In Germany however, the baseline level of SPB is not far from its historical average (1.5% of GDP), pointing that this country may be able to sustain a stronger fiscal effort over a longer period of time than other EU countries. In other cases, risks of 'fiscal fatigue' cannot be excluded over our 10-year projection horizon ([28]).

In highly indebted countries, fiscal positions appear on the other hand relatively weak compared to historical experience. Within the group of vulnerable countries identified (IT, PT, FR, ES and BE), fiscal positions appear relatively weak in some cases (e.g. France, Spain and Belgium) based on EU historical experience (and / or national past trends for Belgium). For example, in the case of France, 74% of the distribution is above the -1.3% of GDP structural primary deficit assumed in the baseline scenario ([29]). This value is however close to its historical average (-1.6% of GDP).

2.1.2. The Stability and Growth Pact (SGP) scenario

Under the Stability and Growth Pact scenario, countries are assumed to comply with the main provisions of European fiscal rules. In this scenario, fiscal policy is projected, during and beyond the forecast horizon. Strict compliance with respectively i) EDP (Excessive Deficit Procedure) recommendations (for countries under the corrective arm of the SGP) and ii) preventive arm provisions are assumed. Regarding the latter, the structural balance is supposed to converge to its Medium Term Objective (MTO), following the adjustment path required by the 'matrix of requirements of the preventive arm' as defined in

([28]) A caveat to keep in mind when considering the percentile rank measures used in this chapter is that while here each country's fiscal balance is analysed against the overall distribution of fiscal balances across all EU countries, history may prove that a certain country is more / less able to sustain stronger fiscal positions.

([29]) The more the percentile rank of the last forecast SPB of a given country is located towards any of the tails of the distribution, the more relevant the results of the SPB historical scenario become.

Table 2.5: **Gross public debt projections and underlying structural fiscal efforts (% of GDP) under baseline no-fiscal policy change and SGP scenarios, by country**

	End forecast			Baseline scenario - Debt			SGP scenario					
	Structural balance	Structural primary balance	Debt	2020	2022	2028	Debt 2028	AVG 19-28 SPB	AVG 19-28 SPB percentile rank	Structural balance 2017	MTO	MTO reached in
BE	-1.7	0.5	101.2	99.6	97.0	94.8	76.1	2.2	23%	-2.1	0.0	2021
BG	-0.1	0.7	22.8	21.6	19.4	13.8	17.0	0.6	47%	0.1	-1.0	2018
CZ	0.1	0.9	32.5	30.9	28.8	25.9	19.7	1.1	36%	0.7	-1.0	2018
DK	-0.7	0.2	34.6	33.9	31.7	24.1	29.0	0.4	49%	0.2	-0.5	2019
DE	1.0	2.0	57.9	55.0	49.7	40.6	36.3	2.1	24%	0.9	-0.5	2018
EE	-1.5	-1.4	9.1	9.5	11.5	19.4	8.9	-0.4	64%	-0.4	-0.5	2020
IE	0.3	2.0	67.2	63.6	57.2	48.3	48.8	1.1	36%	-1.8	-0.5	2018
EL	:	:	:	:	:	:	:	:	:	:	:	:
ES	-3.0	-0.7	95.5	95.6	96.4	95.1	74.3	2.2	22%	-3.3	0.0	2022
FR	-3.0	-1.3	96.9	97.2	98.2	105.7	79.4	1.3	33%	-2.6	-0.4	2022
HR	-2.0	0.5	74.5	73.4	73.7	74.9	71.0	1.0	39%	-1.0	-1.75	2019
IT	-2.4	1.1	130.0	129.6	128.8	129.9	107.8	3.5	14%	-1.7	0.0	2022
CY	-0.1	2.0	93.9	90.5	85.5	68.2	68.8	2.2	22%	1.1	0.0	2018
LV	-1.6	-0.9	35.7	34.7	34.0	33.8	29.0	-0.2	61%	-0.6	-1.0	2020
LT	-0.8	0.0	38.9	37.7	37.8	48.8	35.6	0.2	54%	-0.2	-1.0	2018
LU	0.3	0.6	22.9	21.5	19.2	16.4	12.6	0.5	47%	2.0	-0.5	2018
HU	-3.5	-1.0	69.4	68.8	69.7	69.9	58.6	0.8	41%	-1.8	-1.5	2021
MT	0.4	2.0	48.8	45.5	40.3	29.3	29.1	1.4	31%	0.8	0.0	2018
NL	-0.1	0.6	51.5	49.1	45.7	38.6	39.9	0.8	42%	0.9	-0.5	2018
AT	-0.9	0.8	73.4	71.5	67.9	61.7	56.2	1.2	35%	-1.0	-0.5	2019
PL	-2.5	-1.0	53.0	52.6	53.5	60.0	43.2	0.5	47%	-1.5	-1.0	2021
PT	-1.9	1.6	121.1	120.0	118.0	114.5	95.2	3.8	12%	-2.0	0.25	2022
RO	-4.6	-2.9	40.5	42.4	47.3	64.9	36.8	-0.2	60%	-2.0	-1.0	2025
SI	-1.4	0.4	72.0	69.8	67.1	64.9	46.9	1.9	26%	-1.5	0.25	2021
SK	-0.6	0.6	47.2	45.3	42.3	35.1	34.2	0.6	46%	-2.0	-0.5	2020
FI	-1.4	-0.5	61.6	61.0	61.4	67.9	50.7	0.7	44%	-0.3	-0.5	2020
SE	0.7	0.9	34.4	32.4	28.7	20.4	19.4	1.1	36%	1.3	-1.0	2018
UK	-1.6	0.9	84.2	83.1	81.4	80.4	68.4	1.6	29%	-3.3	-0.75	2021
EU-28	**-1.2**	**0.6**	**79.8**	**78.3**	**76.0**	**73.4**	**60.6**	**1.8**	**27%**	**-1.2**	**:**	**:**
EA	**-1.1**	**0.7**	**85.2**	**83.6**	**81.1**	**78.0**	**64.2**	**2.0**	**25%**	**-0.9**	**:**	**:**

(1) For SI, the MTO value of 0.25 is used in this scenario, corresponding to the minimum MTO established by the Commission to respect the requirement of the Stability and Growth Pact.
Source: Commission services

the European Commission 2015 Communication ([30]) and in the 'Commonly agreed position on Flexibility' endorsed by the ECOFIN ([31]), ([32]). Moreover, as done in the DSM 2016, this scenario is run by taking into account a feedback effect of fiscal consolidation on GDP growth (a 1 pp. of GDP consolidation effort impacting negatively on baseline GDP growth by 0.75 pps. in the same year ([33]).

Adhering to European fiscal rules would allow a significantly larger decrease in gross public debt ratios than under a no-fiscal policy change assumption. The debt ratio would reach around 61% of GDP in the EU-28 in 2028 (around 64% of GDP in the EA), a level about -13 pps. of GDP lower than in the baseline scenario (see Graphs 2.8 - 2.9). This substantial reduction compared to current levels would be achieved through a large and sustained fiscal consolidation, with an average structural primary balance of 1.8% of GDP in the EU-28 (2% of GDP in the EA) during the period 2019-28. This level can be deemed relatively ambitious by EU historical standards (with only one quarter of SPBs lying above this value, see Table 2.5).

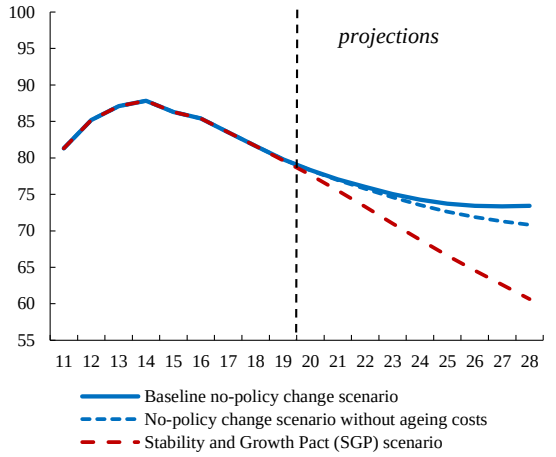
([30]) See at the following link: http://ec.europa.eu/economy_finance/economic_governance/sgp/pdf/2015-01-13_communication_sgp_flexibility_guidelines_en.pdf.

([31]) The "Commonly agreed position on Flexibility" was endorsed by the ECOFIN Council of 12 February 2016 (Council document number 14345/15, available at http://data.consilium.europa.eu/doc/document/ST-14345-2015-INIT/en/pdf).

([32]) The SGP scenario does not take into account the possible further granting of flexibility (on top of the one granted in the context of the European Semester) to temporarily deviate from the MTO or adjustment path towards it, under the structural reform and / or investment clause. Furthermore, the scenario only mirrors compliance with the adjustment path towards the MTO and does not explicitly incorporate the debt criterion. Nevertheless, one should keep in mind that in general, though not always, under normal economic circumstances, the convergence to the MTO under the preventive arm tends to imply the respect of the debt criterion.

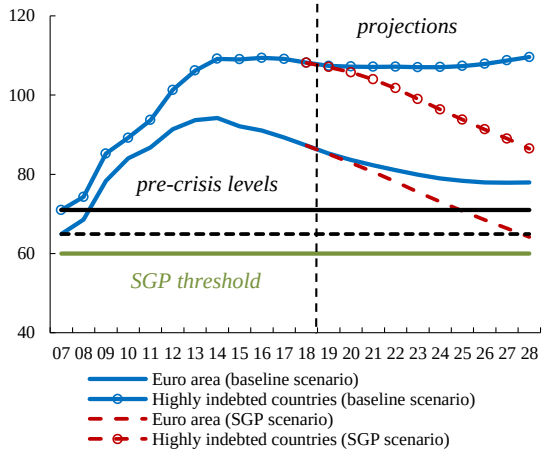
([33]) See Annex A3 for more details on this scenario.

Graph 2.8: **Gross public debt projections (% of GDP), baseline no-fiscal policy change and SGP scenarios, European Union 28**



Source: Commission services

Graph 2.9: **Gross public debt projections (% of GDP), baseline no-fiscal policy change and SGP scenarios, Euro area and highly indebted countries**

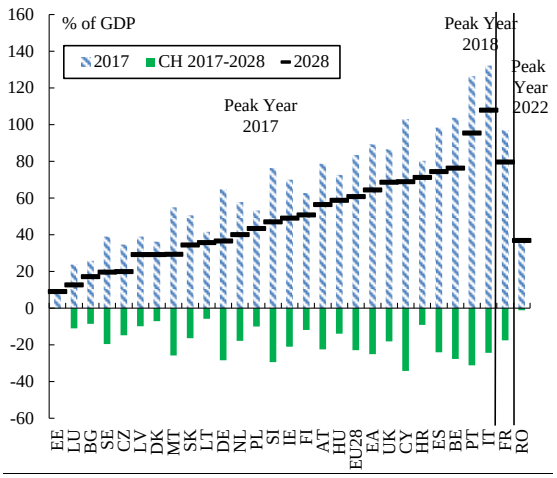


(1) Highly indebted countries include Belgium, Spain, France, Italy, Cyprus and Portugal (all having a debt to GDP ratio greater than 90% of GDP in 2017).
Source: Commission services

Public debt ratios would decrease in all Member States under the SGP scenario, with a strong decline in certain cases. Particularly large reductions are projected in CY, PT, SI, BE, MT, IT and ES (by around – 25 pps. of GDP or more by 2028). Smaller decreases are foreseen in Estonia, Romania and Lithuania, in line with low to moderate levels of public debt in 2017 (see Graph 2.10). More generally, a strong (negative), correlation between the initial level of debt and the required fiscal consolidation under the SGP scenario is observed, as can be expected. ([34])

At the same time, even in this case of strict compliance with SGP rules, public debt reduction would take time in some countries, with debt burdens remaining high by 2028. Despite the assumed fiscal consolidation and decreasing debt ratios, public debt burdens would still linger at above 90% of GDP on average in 2028 in some highly indebted Member States (Italy and Portugal) and above 70% of GDP in others (e.g. France, Belgium and Spain; see Graph 2.9). These still high levels reflect crisis legacies, the assumed 'normalisation' of interest rates and some negative feedback effects on growth in this scenario ([35]).

Graph 2.10: **Gross public debt projections (% of GDP) under the SGP scenario, by country**



Source: Commission services

The sustained fiscal consolidation implied in this scenario would represent a notable change compared to historical patterns in a number of countries. This is particularly the case of PT, UK, FR, ES, SI and IT, where the required fiscal position would be both substantially higher than country-specific historical averages and most

([34]) This correlation is not perfect however, as other factors are taken into account when defining the required fiscal adjustment (such as cyclical conditions in the definition of the MTO path or future ageing costs in the calculation of the MTO level).

([35]) In a limited number of countries, projected debt ratios under the SGP scenario are slightly higher than under the baseline scenario in line with decreasing costs of ageing over the projection horizon (e.g. BG, DK and NL). More explanations can be found in the Annex A3.

Table 2.6: **Comparison with the Debt Sustainability Monitor 2016 (based on Autumn 2016 forecasts), baseline and SGP scenarios (all variables in differences between DSM 2017 - DSM 2016)**

	End forecast (t+2)			Baseline no-policy change Debt			SGP scenario					
	Structural balance	Structural primary balance	Debt	t+3	t+5	End projection	Debt end projection	AVG SPB	AVG SPB percentile rank	Structural balance last outturn year	MTO	MTO reached in
BE	0.5	0.5	-5.2	-5.6	-5.7	-7.5	-4.1	0.0	0%	0.6	0.0	-1
BG	0.6	0.6	-3.1	-3.7	-4.6	-7.3	-7.2	0.5	-8%	0.9	0.0	0
CZ	1.2	1.0	-5.9	-7.1	-9.3	-16.0	-13.7	0.9	-16%	0.9	0.0	0
DK	0.0	-0.2	-3.6	-4.0	-4.2	-4.7	-4.7	-0.2	5%	-0.4	0.0	0
DE	0.5	0.5	-5.2	-5.9	-7.1	-12.0	-8.7	0.3	-4%	0.3	0.0	0
EE	-1.4	-1.4	-0.3	0.4	2.8	10.6	2.2	-0.5	10%	-1.1	-0.5	1
IE	0.9	0.6	-4.7	-5.5	-7.8	-14.9	-4.9	-0.3	5%	-0.2	0.0	-1
EL	:	:	:	:	:	:	:	:	:	:	:	:
ES	0.8	0.6	-4.5	-5.8	-8.0	-14.5	-9.1	0.1	-2%	0.5	0.0	-2
FR	-0.4	-0.5	-0.2	-0.1	1.0	3.2	2.8	-0.4	5%	-0.1	0.0	2
HR	0.5	-0.3	-8.3	-9.7	-10.9	-12.9	-8.9	-0.6	10%	0.8	0.0	0
IT	0.0	-0.1	-3.1	-3.2	-2.1	1.0	0.3	-0.1	2%	-0.1	0.0	0
CY	1.7	1.2	-6.7	-9.6	-14.4	-24.8	-8.8	-0.6	4%	0.9	0.0	-5
LV	0.0	-0.2	-0.3	-0.5	-0.1	0.3	-1.1	-0.2	4%	0.9	0.0	0
LT	0.7	0.1	-1.3	-2.0	-2.9	-5.3	-3.6	-0.2	5%	0.7	0.0	-1
LU	-0.1	-0.2	-0.6	-0.6	-0.5	-0.7	0.8	-0.2	5%	0.1	0.0	0
HU	-0.4	-0.6	-2.5	-2.7	-2.4	-0.3	-3.4	-0.4	7%	0.7	0.0	1
MT	0.9	0.5	-8.4	-9.5	-11.4	-16.5	-8.4	-0.2	3%	1.9	0.0	-2
NL	-0.1	-0.3	-7.8	-8.8	-8.8	-8.6	-8.2	-0.2	5%	1.4	0.0	0
AT	0.1	-0.4	-5.8	-6.2	-6.1	-5.5	-5.1	-0.4	6%	0.0	0.0	0
PL	0.8	0.7	-2.5	-3.7	-5.1	-9.3	-3.8	0.1	-1%	1.4	0.0	-2
PT	0.8	0.1	-6.6	-7.6	-8.9	-9.5	-5.6	-0.3	2%	0.4	0.0	-1
RO	-1.2	-1.3	-1.0	-0.2	2.1	9.2	0.5	-0.4	7%	0.6	0.0	2
SI	0.9	0.2	-4.6	-6.5	-8.4	-11.6	-6.6	-0.4	3%	0.7	0.0	-1
SK	0.1	0.0	-4.2	-4.4	-4.2	-5.2	-4.0	-0.2	5%	0.0	0.0	0
FI	0.0	-0.1	-6.5	-7.6	-8.2	-11.9	-7.3	-0.2	4%	1.0	0.0	0
SE	0.6	0.3	-3.7	-4.2	-5.1	-8.4	-10.4	0.6	-10%	1.5	0.0	0
UK	0.7	0.8	-3.3	-3.6	-4.5	-9.6	-3.1	0.2	-2%	0.6	0.0	-1
EU-28	**0.3**	**0.2**	**-4.1**	**-4.7**	**-5.2**	**-7.8**	**-5.1**	**0.0**	**0%**	**0.4**	**:**	**:**
EA	**0.2**	**0.1**	**-4.2**	**-4.8**	**-5.2**	**-7.4**	**-5.0**	**-0.1**	**1%**	**0.3**	**:**	**:**

Source: Commission services

recent levels (last forecast value). For instance, in Portugal and Italy, the required SPBs of 3.8% and 3.5% of GDP respectively are associated to percentile ranks of 12% and 14% (see Table 2.5). In France and the United Kingdom, the lower required values of 1.3% and 1.6% of GDP respectively, more plausible by EU standards, appear ambitious compared with these countries' track-records.

Backward-looking approaches, based on past debt reduction episodes, bring additional insights on credible successful strategies to reduce public debt (see Box 2.3). On the one hand, large sustained primary surpluses appear a key ingredient of past debt reduction episodes – for example, among a set of 27 'recent' cases in advanced and / or European economies, the average primary balance reached around 3% of GDP (above the one assumed in the SGP scenario). On the other hand, these successful fiscal consolidation spells more often took place in a context of an improving (external) growth environment. Beyond fiscal policy, different policy levers were mobilised to reduce debt (e.g. accommodative monetary policy and structural reforms).

2.1.3. Comparing the baseline and the SGP scenarios' results with the DSM 2016

A more favourable fiscal outlook is forecasted in the short-term compared to the Debt Sustainability Monitor 2016. The structural primary balance at the end of the forecast horizon appears overall slightly higher with this Autumn 2017 forecast compared to the previous round of forecasts (difference of +0.2 / 0.1 pp. of GDP at the EU-28 / EA level; see Table 2.6). This slightly more positive fiscal position (that would be observed in 14 countries) would be particularly important in CY, CZ, UK and PL (+0.7 to + 1.2 pps. of GDP difference). On the other hand, EE, RO, HU, FR and AT are expected to have less favourable fiscal positions compared to Autumn 2016 forecast (-1.4 to -0.4 pps. of GDP). End-

forecast public debt ratios are expected to be lower in all EU-28 countries compared to the DSM 2016 (by around -4 pps. of GDP at the EU-28 / EA level). This more favourable initial fiscal outlook is in line with the strengthening of the economic recovery observed over the past year.

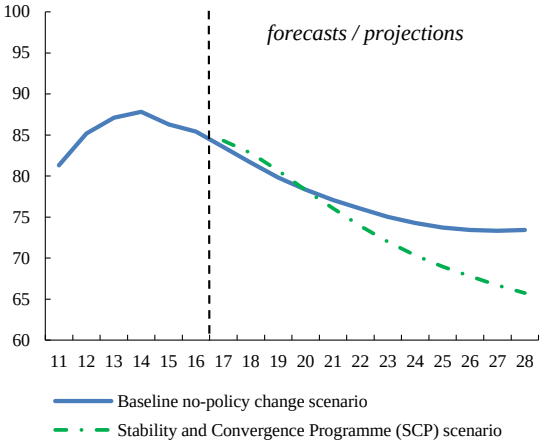
Lower debt ratios are projected both in the baseline and the SGP scenarios compared to a year ago. In the baseline scenario, public debt ratios are expected to reach significantly lower levels by the end of the projection period compared to foreseen trends in the DSM 2016 (a difference of around -7 ½ pps. of GDP at the EU-28 / EA level). A few notable exceptions exist, namely EE, RO, FR, IT and LV. Under the SGP scenario, public debt ratios are also expected to reach in most countries lower values compared to the DSM 2016 (-5 pps. of GDP on average). In this case, this revision mainly reflects lower initial debt values, as the overall projected fiscal balance is similar to last year (measured in terms of structural primary balance). Only Estonia revised its MTO (from 0 to -0.5% of GDP), entailing a higher debt ratio by the end of the projection horizon compared to the DSM 2016 (albeit remaining very low by European standards).

2.1.4. The Stability and Convergence Programme (SCP) and Draft Budgetary Plan (DBP) scenarios

Debt projection results based on Member States' April 2017 round of Stability and Convergence Programmes and on their October 2017 Draft Budgetary Plans are presented. As part of economic governance rules in the Stability and Growth Pact, Member States are required to lay out their fiscal plans for the next *three years* in the SCPs. These programmes are updated once a year and submitted to the Commission and the Council (ECOFIN) in Spring. Moreover, Member States sharing the euro as their currency are additionally required by European economic governance rules to submit their DBPs for the *following year* to the Commission by October 15 ([36]). In the SCP and the DBP scenarios, the baseline no-fiscal policy change assumptions prevail beyond the programme and plan horizon.

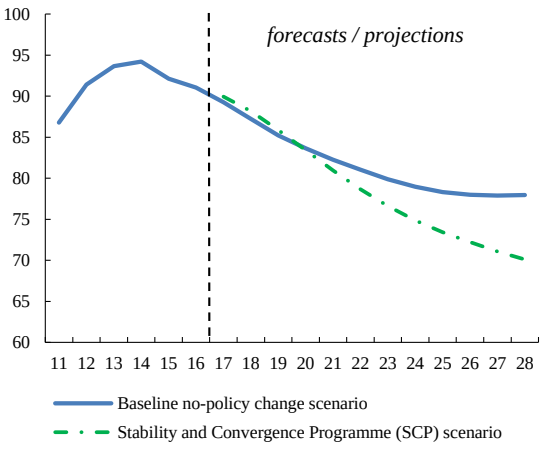
([36]) An exception is EL, being under an economic adjustment programme.

Graph 2.11: **Gross public debt ratio (% of GDP), European Union 28 - baseline no-fiscal policy change and SCP scenarios**



(1) The SCP scenario is based, beyond the programme horizon, on Commission Spring 2017 assumptions.
Source: Commission services

Graph 2.12: **Gross public debt ratio (% of GDP), Euro area - baseline no-fiscal policy change and SCP scenarios**



(1) The SCP scenario is based, beyond the programme horizon, on Commission Spring 2017 assumptions.
Source: Commission services

Stability and Convergence Programmes expect a substantial decline of debt ratios, yet remaining less pronounced than projected trends under the SGP scenario. According to the SCPs submitted in April 2017 by Member States, and applying after the programme horizon the no-fiscal policy change assumption, the public debt ratio would substantially decline by 2028 in the EU-28 and the EA (by around 19-20 pps. of GDP, see Graphs 2.11 - 2.12). In 2028, the debt ratio would reach around 66% of GDP in the EU-28

Table 2.7: **Gross public debt projections (% of GDP), baseline no-fiscal policy change and Draft Budgetary Plans scenarios, by country**

	Baeline scenario - Structural primary balance		DBP scenario - Structural primary balance		Baseline scenario - Debt		DBP scenario - Debt	
	2018	2019	2018	2019	2018	2028	2018	2028
BE	0.8	0.5	1.1	1.1	102.5	94.8	102.7	87.4
DE	2.1	2.0	1.6	1.6	61.2	40.6	63.3	47.2
EE	-1.4	-1.4	-0.9	-0.9	9.1	19.4	8.6	14.4
IE	1.3	2.0	1.3	1.3	69.1	48.3	69.0	57.6
EL	:	:	:	:	:	:	:	:
ES	-0.8	-0.7	0.1	0.1	96.9	95.1	96.8	87.7
FR	-1.0	-1.3	-0.7	-0.7	96.9	105.7	96.8	99.7
IT	1.6	1.1	1.7	1.7	130.8	129.9	130.0	122.6
CY	2.2	2.0	2.3	2.3	98.3	68.2	92.4	58.0
LV	-1.0	-0.9	-1.1	-1.1	35.5	33.8	37.3	34.3
LT	0.0	0.0	0.4	0.4	37.9	48.8	37.6	42.8
LU	0.6	0.6	0.8	0.8	23.0	16.4	22.7	14.1
MT	1.9	2.0	1.9	1.9	51.6	29.3	50.8	31.1
NL	0.6	0.6	0.9	0.9	54.9	38.6	54.4	34.3
AT	0.8	0.8	0.4	0.4	76.2	61.7	75.2	63.4
PT	1.8	1.6	2.1	2.1	124.1	114.5	123.5	109.5
SI	0.4	0.4	0.9	0.9	74.1	64.9	71.7	57.5
SK	0.0	0.6	0.3	0.3	49.9	35.1	49.9	37.5
FI	-0.4	-0.5	-0.3	-0.3	62.1	67.9	61.9	67.3
EA-18	**0.7**	**0.6**	**0.8**	**0.8**	**85.8**	**77.3**	**86.1**	**75.8**

(1) In the DBP scenario, the no-fiscal policy change assumption is applied as from 2018, while it is applied as from 2019 in the baseline scenario.
Source: Commission services

(respectively 70% of GDP in the EA), a level significantly lower than under the baseline scenario (by around 8 pps. of GDP). On the other hand, the projected public debt ratio appears higher than the one projected in the SGP scenario (see section 2.1.2). Thus, overall, the consolidation plans embedded in the SCPs appear more ambitious than current policies, yet still leading to a higher aggregate debt ratio than when assuming full compliance with SGP rules.

Under the DBP scenario, a slightly more pronounced decrease of debt ratios is anticipated by 2028 than under the Commission baseline scenario. A slightly higher assumed structural primary balance in 2019 (0.8% of GDP at the EA-18 level; see Table 2.7) than the one assumed in the Commission baseline scenario (0.6% of GDP) mainly drives this slightly more favourable result (a debt ratio falling below 76% of GDP based on Member States DBPs against more than 77% in the Commission baseline scenario).

Projected debt ratios would be particularly lower, under the DBP scenario, than according to the Commission baseline scenario by 2028 in CY, SI, BE, ES and IT (difference of at least 7 pps. of GDP), in line with the higher forecasted structural primary balance in these countries. In the case of Cyprus, the large difference (around 10 pps. of GDP) is also explained by the much lower level of debt forecasted in 2018 in the DBP ([37]). In Ireland and Germany, on the other hand, projected debt ratios would reach much higher values under the DBP scenario, largely driven by less optimistic budgetary assumptions.

2.1.5. Debt projections based on estimated fiscal reaction functions

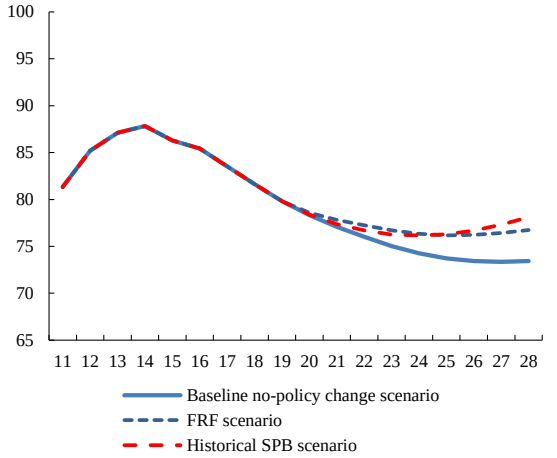
Simulations based on behavioural fiscal reaction functions, are reported in this section.

([37]) This difference is mainly due to the difference in expected stock-flow adjustments. The Commission forecast does not take into account the early repayments of debt under a no-policy change assumption.

Given unprecedented high levels of public debt both at EU and OECD levels since WWII, a growing literature has emerged about governments' responsiveness to raising public debt. For instance, Bohn's (1998) seminal paper, revisited more recently by Gosh *et al* (2011), proposed to estimate fiscal reaction functions (henceforth FRFs) as a prerequisite for assessing fiscal sustainability. In this section, a fiscal reaction function scenario is presented, as an alternative scenario to the standard baseline no-fiscal policy change scenario. Under this FRF scenario, fiscal policy is supposed to react, over the projection period, to the debt ratio in the previous period and to macroeconomic conditions (i.e. output gap, real interest rate, inflation). The behavioural equations used in this scenario and additional information can be found in the FSR 2015 and in Berti *et al* (2016).

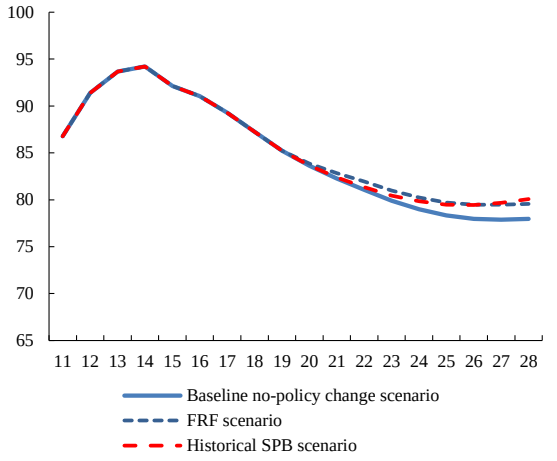
Debt projections, based on behavioural fiscal reaction functions, are to some extent in line with the 'mechanical' SPB historical scenario, yet suggesting an increased fiscal responsiveness since the last crisis. Taking into account government primary balance reaction to changes in public debt (and macroeconomic conditions) would lead to a higher level of public debt ratio at the EU-28 and EA level in 2028, compared to the baseline no-fiscal policy change scenario (by respectively more than 3 pps. of GDP and more than 1½ pps. of GDP; see Graphs 2.13 - 2.14). Indeed, projected primary balances under this scenario would be lower than under the baseline scenario (by around -0.4 / -0.2 pp. of GDP on average over the period 2020-2028). On the other hand, public debt ratios would be lower than under the 'mechanical' historical (15-year average) SPB scenario (by -1½ pps. of GDP / -0.5 pps. of GDP in the EU-28 / EA), suggesting an overall increased fiscal responsiveness over the last few years.

Graph 2.13: **Gross public debt ratio (% of GDP), fiscal reaction function scenario compared to the baseline and historical SPB scenarios, European Union 28**



Source: Commission services

Graph 2.14: **Gross public debt ratio (% of GDP), fiscal reaction function scenario compared to the baseline and historical SPB scenarios, Euro area**



Source: Commission services

Country-specific results are presented in the country fiches of this report (see Annex A10).

Table 2.8: **Sensitivity tests on interest rates (+1 / -1 pp. on short- and long-term interest rates on newly issues and rolled-over debt) around the baseline no-fiscal policy change scenario, by country**

	End forecast (2019)			2028							
				Baseline no-policy change scenario		Standardized (permanent) positive shock (+1p.p.) to market interest rates			Standardized (permanent) negative shock (-1p.p.) to market interest rates		
	SPB	Implicit interest rate	Debt	Implicit interest rate	Debt	Implicit interest rate	Debt	*Debt (diff. with Baseline scenario)*	Implicit interest rate	Debt	*Debt (diff. with Baseline scenario)*
BE	0.5	2.2	101.2	3.6	94.8	4.4	100.6	5.8	2.8	89.5	-5.4
BG	0.7	3.5	22.8	4.0	13.8	4.5	14.4	0.6	3.4	13.3	-0.5
CZ	0.9	2.3	32.5	3.8	25.9	4.7	28.0	2.1	2.9	24.0	-1.9
DK	0.2	2.7	34.6	3.6	24.1	4.4	25.7	1.6	2.9	22.7	-1.5
DE	2.0	1.8	57.9	3.6	40.6	4.5	43.7	3.2	2.7	37.6	-2.9
EE	-1.4	0.6	9.1	3.9	19.4	4.9	20.3	0.9	3.0	18.5	-0.9
IE	2.0	2.6	67.2	3.4	48.3	4.1	50.5	2.3	2.9	46.2	-2.1
EL	:	:	:	:	:	:	:	:	:	:	:
ES	-0.7	2.4	95.5	3.9	95.1	4.8	101.4	6.3	3.1	89.3	-5.8
FR	-1.3	1.8	96.9	3.4	105.7	4.2	111.4	5.6	2.7	100.5	-5.2
HR	0.5	3.3	74.5	4.4	74.9	5.3	80.5	5.6	3.5	69.8	-5.2
IT	1.1	2.8	130.0	4.0	129.9	4.9	138.9	9.0	3.2	121.6	-8.3
CY	2.0	2.2	93.9	3.5	68.2	4.1	70.4	2.2	3.0	66.1	-2.1
LV	-0.9	2.2	35.7	3.5	33.8	4.4	35.6	1.8	2.7	32.2	-1.7
LT	0.0	2.4	38.9	4.0	48.8	5.0	51.8	3.0	3.1	46.0	-2.8
LU	0.6	1.2	22.9	2.3	16.4	2.9	17.0	0.6	1.8	15.9	-0.5
HU	-1.0	3.8	69.4	4.4	69.9	5.3	74.6	4.6	3.6	65.7	-4.3
MT	2.0	3.4	48.8	3.8	29.3	4.5	31.1	1.8	3.1	27.6	-1.7
NL	0.6	1.4	51.5	3.2	38.6	4.1	41.2	2.6	2.4	36.2	-2.4
AT	0.8	2.2	73.4	3.4	61.7	4.2	65.0	3.3	2.7	58.7	-3.0
PL	-1.0	2.9	53.0	4.3	60.0	5.2	63.5	3.5	3.4	56.7	-3.2
PT	1.6	2.9	121.1	4.2	114.5	5.0	121.9	7.4	3.4	107.7	-6.8
RO	-2.9	4.4	40.5	4.7	64.9	5.6	68.3	3.5	3.8	61.6	-3.3
SI	0.4	2.5	72.0	3.8	64.9	4.7	69.0	4.1	3.0	61.2	-3.8
SK	0.6	2.6	47.2	3.4	35.1	4.1	36.6	1.5	2.8	33.8	-1.4
FI	-0.5	1.5	61.6	3.5	67.9	4.3	71.9	4.0	2.6	64.3	-3.7
SE	0.9	0.7	34.4	3.2	20.4	4.0	22.2	1.8	2.3	18.7	-1.7
UK	0.9	3.0	84.2	3.8	80.4	4.6	84.8	4.4	3.1	76.3	-4.1
EU-28	**0.6**	**2.3**	**79.8**	**3.7**	**73.4**	**4.5**	**78.0**	**4.6**	**2.9**	**69.2**	**-4.2**
EA	**0.7**	**2.1**	**85.2**	**3.6**	**78.0**	**4.5**	**82.9**	**5.0**	**2.8**	**73.4**	**-4.6**

Source: Commission services

2.2. SENSITIVITY ANALYSIS ON DETERMINISTIC DEBT PROJECTIONS

In addition to the alternative scenarios considered so far, a set of sensitivity tests around the baseline scenario is considered. These sensitivity tests introduce a change or a shock to key underlying assumptions of the baseline scenario i.e. on market interest rates, economic growth, the primary balance and exchange rates (see Graph 2.15). In this report, a more thorough analysis of the impact of an increase of interest rates than the standard analysis is presented in Box 2.2.

A standard permanent shock on interest rates on newly and rolled-over debt (-1 / +1 pp.) would have an overall sizeable impact on public debt dynamics, with some countries' differences. Such a shock would lead to a difference between the most favourable and the least favourable scenarios of around 9 – 10 pps. of GDP in 2028 at the aggregate EU-28 / EA level (see Table 2.8). The impact would be particularly large in highly indebted countries such as IT, PT, ES, BE, FR and HR. For instance, 1 pp. permanently higher market interest rates would lead to a much higher debt ratio in Italy by 2028 (around +9 pps. of GDP compared to the baseline scenario) and in Portugal (around +7 pps. of GDP).

Countries' vulnerabilities to interest rate shocks differ, depending on the maturity of public debt and projected financing needs. In some countries, the effect of market interest rate shocks on public debt is amplified by the relatively low maturity of public debt (e.g. Lithuania, Croatia),

Table 2.9: **Sensitivity tests on the nominal GDP growth rate (+0.5 / -0.5 pp.) around the baseline no-fiscal policy change scenario, by country**

	End forecast (2019)			Baseline no-policy change scenario		Standardized (permanent) positive shock (+0.5p.p.) on GDP growth			Standardized (permanent) negative shock (-0.5p.p.) on GDP growth		
	SPB	Actual GDP growth	Debt	Actual GDP growth (average 2018-28)	Debt 2028	Actual GDP growth (average 2018-28)	Debt 2028	*Debt (diff. with Baseline scenario)*	Actual GDP growth (average 2018-28)	Debt 2028	*Debt (diff. with Baseline scenario)*
BE	0.5	1.7	101.2	1.4	94.8	1.9	89.8	-5.0	0.9	100.2	5.3
BG	0.7	3.6	22.8	2.3	13.8	2.8	12.8	-1.0	1.8	14.9	1.1
CZ	0.9	2.9	32.5	2.0	25.9	2.5	24.5	-1.5	1.5	27.5	1.6
DK	0.2	1.9	34.6	1.7	24.1	2.2	22.5	-1.6	1.2	25.8	1.7
DE	2.0	2.0	57.9	1.3	40.6	1.8	37.9	-2.6	0.8	43.4	2.8
EE	-1.4	2.8	9.1	2.2	19.4	2.7	18.8	-0.6	1.7	20.0	0.6
IE	2.0	3.1	67.2	2.9	48.3	3.4	45.5	-2.8	2.4	51.2	3.0
EL	:	:	:	:	:	:	:	:	:	:	:
ES	-0.7	2.1	95.5	1.2	95.1	1.7	90.0	-5.1	0.7	100.5	5.4
FR	-1.3	1.6	96.9	1.2	105.7	1.7	100.7	-5.1	0.7	111.1	5.4
HR	0.5	2.7	74.5	1.2	74.9	1.7	70.7	-4.2	0.7	79.4	4.5
IT	1.1	1.0	130.0	0.5	129.9	1.0	122.6	-7.3	0.0	137.6	7.7
CY	2.0	2.7	93.9	1.6	68.2	2.1	63.9	-4.3	1.1	72.8	4.6
LV	-0.9	3.2	35.7	3.3	33.8	3.8	32.3	-1.5	2.8	35.5	1.6
LT	0.0	2.6	38.9	1.4	48.8	1.9	46.7	-2.1	0.9	51.0	2.2
LU	0.6	3.3	22.9	3.0	16.4	3.5	15.6	-0.8	2.5	17.3	0.9
HU	-1.0	3.1	69.4	2.3	69.9	2.8	66.4	-3.6	1.8	73.8	3.8
MT	2.0	4.1	48.8	3.6	29.3	4.1	27.4	-1.9	3.1	31.3	2.0
NL	0.6	2.5	51.5	1.4	38.6	1.9	36.3	-2.3	0.9	41.1	2.5
AT	0.8	2.3	73.4	1.9	61.7	2.4	58.3	-3.4	1.4	65.3	3.6
PL	-1.0	3.4	53.0	2.6	60.0	3.1	57.2	-2.7	2.1	62.9	2.9
PT	1.6	1.8	121.1	0.9	114.5	1.4	107.8	-6.6	0.4	121.5	7.1
RO	-2.9	4.1	40.5	3.3	64.9	3.8	62.5	-2.4	2.8	67.4	2.5
SI	0.4	3.3	72.0	2.4	64.9	2.9	61.6	-3.3	1.9	68.5	3.5
SK	0.6	4.0	47.2	3.1	35.1	3.6	33.2	-2.0	2.6	37.2	2.1
FI	-0.5	2.4	61.6	1.3	67.9	1.8	64.8	-3.2	0.8	71.3	3.4
SE	0.9	2.2	34.4	2.0	20.4	2.5	19.0	-1.4	1.5	21.9	1.5
UK	0.9	1.1	84.2	1.4	80.4	1.9	76.1	-4.3	0.9	84.9	4.6
EU-28	**0.6**	**1.9**	**79.8**	**1.4**	**73.4**	**1.9**	**69.4**	**-4.0**	**0.9**	**77.7**	**4.2**
EA	**0.7**	**1.9**	**85.2**	**1.3**	**78.0**	**1.8**	**73.7**	**-4.3**	**0.8**	**82.5**	**4.6**

Source: Commission services

implying rapid transmission on the implicit interest rate. Other countries, such as Ireland and the United Kingdom for example, where the average maturity of public debt is particularly high, seem less exposed to market interest rate shocks (despite medium to high public debt levels; see Box 2.2 for more details).

Similarly, a permanent shock on nominal GDP growth (whether related to real GDP growth or inflation) would have large effects on debt ratios. The gap between the two extreme standard scenarios (-0.5 / +0.5 pp.) would reach 8 – 9 pps. of GDP in the EU-28 / EA by 2028, with larger effects in highly indebted countries (e.g. IT, PT, ES, FR and BE; see Table 2.9).

A mild 'fiscal fatigue' scenario ([38]) would increase the debt ratio compared to the baseline scenario by around 2 - 2 ½ pps. of GDP in the EU-28 / EA by 2028 (see Table 2.10). In this case, the negative effect on public debt of a loosening of the fiscal position, compared to the baseline scenario, would be to some extent counter-acted by some positive feedback effects on growth. Larger gaps are found in Croatia, Romania and Ireland in line with the design of the scenario (the structural primary balance is reduced by 50% of the SPB forecasted cumulated change). Indeed, in these three countries, a high variation in the SPB is forecasted by the Commission over the period 2017-19 (fiscal *deconsolidation* by more than 1 pp.

([38]) In this scenario, a negative shock on the SPB equivalent to a SPB reduction by 50% of the forecasted SPB cumulated change is assumed.

Table 2.10: **Sensitivity test on the structural primary balance around the baseline no-fiscal policy change scenario (negative shock equivalent to a SPB reduction by 50% of the forecasted SPB cumulated change), by country**

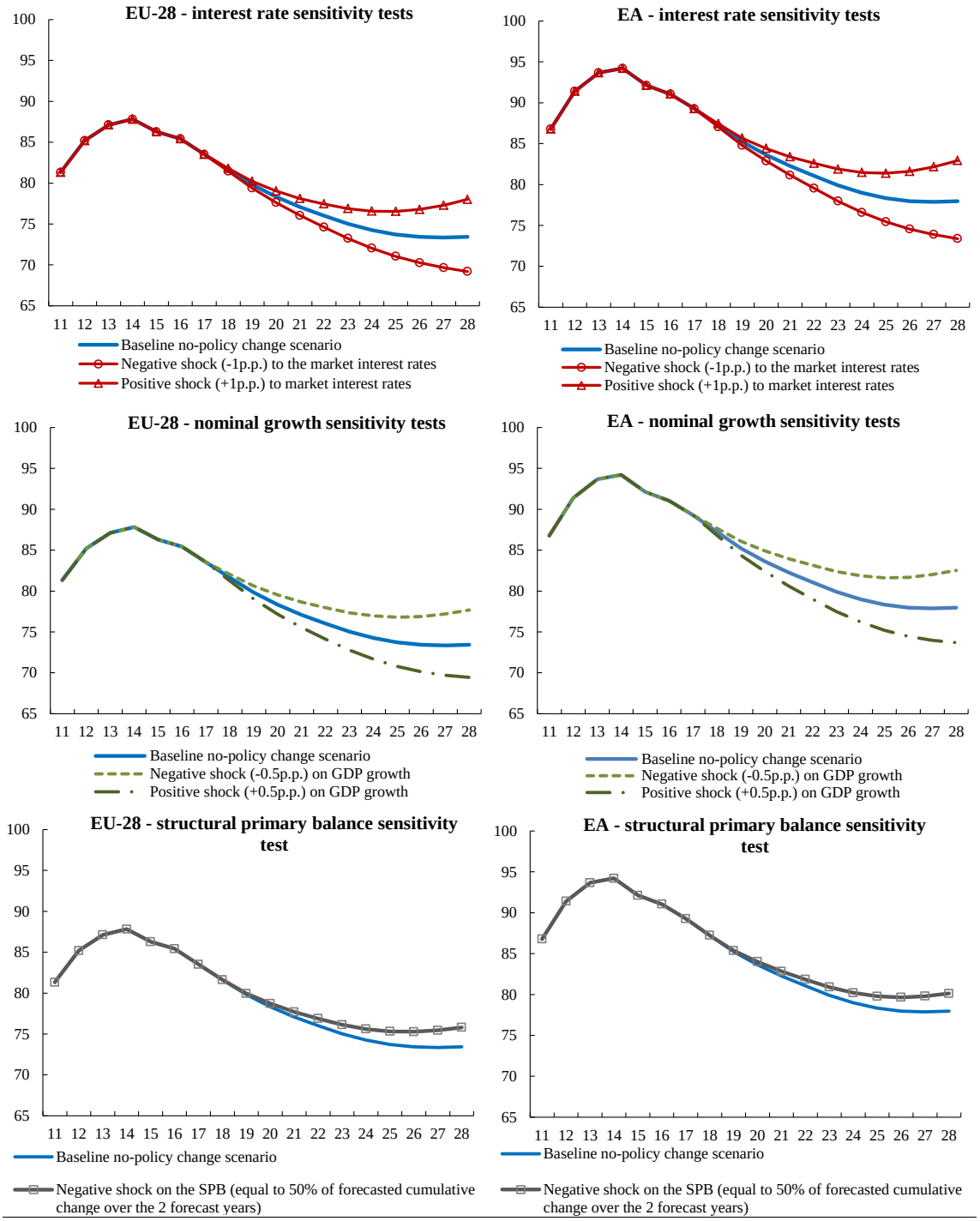
	End forecast (2019)		2028				
			Baseline no-policy change scenario		Standardized negative (permanent) shock on SPB (reduced by 50% of forecasted cumulated SPB change)		
	SPB	Debt	SPB	Debt	SPB	Debt	*Debt (diff. with Baseline scenario)*
BE	0.5	101.2	0.5	94.8	0.1	98.1	3.2
BG	0.7	22.8	0.7	13.8	0.6	14.6	0.8
CZ	0.9	32.5	0.9	25.9	0.5	29.3	3.4
DK	0.2	34.6	0.2	24.1	0.0	26.4	2.3
DE	2.0	57.9	2.0	40.6	2.0	41.0	0.4
EE	-1.4	9.1	-1.4	19.4	-1.6	21.3	1.9
IE	2.0	67.2	2.0	48.3	1.4	54.3	6.0
EL	:	:	:	:	:	:	:
ES	-0.7	95.5	-0.7	95.1	-0.8	95.8	0.7
FR	-1.3	96.9	-1.3	105.7	-1.7	109.3	3.6
HR	0.5	74.5	0.5	74.9	-0.2	82.0	7.1
IT	1.1	130.0	1.1	129.9	0.9	132.9	3.0
CY	2.0	93.9	2.0	68.2	1.6	72.3	4.1
LV	-0.9	35.7	-0.9	33.8	-0.9	33.9	0.0
LT	0.0	38.9	0.0	48.8	-0.1	49.8	1.0
LU	0.6	22.9	0.6	16.4	0.4	17.9	1.5
HU	-1.0	69.4	-1.0	69.9	-1.2	72.5	2.5
MT	2.0	48.8	2.0	29.3	1.8	31.3	2.0
NL	0.6	51.5	0.6	38.6	0.3	41.7	3.1
AT	0.8	73.4	0.8	61.7	0.6	62.8	1.1
PL	-1.0	53.0	-1.0	60.0	-1.3	62.4	2.5
PT	1.6	121.1	1.6	114.5	1.3	117.1	2.7
RO	-2.9	40.5	-2.9	64.9	-3.5	70.2	5.4
SI	0.4	72.0	0.4	64.9	0.1	67.8	2.8
SK	0.6	47.2	0.6	35.1	0.2	39.5	4.4
FI	-0.5	61.6	-0.5	67.9	-0.7	69.9	1.9
SE	0.9	34.4	0.9	20.4	0.9	21.1	0.7
UK	0.9	84.2	0.9	80.4	0.5	83.7	3.4
EU-28	**0.6**	**79.8**	**0.6**	**73.4**	**0.3**	**75.8**	**2.4**
EA	**0.7**	**85.2**	**0.7**	**78.0**	**0.5**	**80.1**	**2.2**

(1) In this sensitivity test, a feedback effect on growth is included.
Source: Commission services

of GDP in Croatia and Romania; fiscal *consolidation* by over 1 pp. of GDP in Ireland).

Several EU sovereigns are also exposed to foreign exchange risks. Finally, as several EU countries issue a non-negligible share of their public debt in a foreign currency (see chapter 4), some fiscal risks may appear due to exchange rate fluctuations (at least in countries with a floating exchange rate regime). Therefore, a sensitivity shock on the nominal exchange rate is also computed, with substantial effects in a number of countries (see country fiches in the Annex A10 and Box 2.2 of the Debt Sustainability Monitor 2016 for more details).

Graph 2.15: **Sensitivity tests around the baseline scenario on interest rates, nominal GDP growth and the structural primary balance, EU 28 and EA (% of GDP)**



Source: Commission services

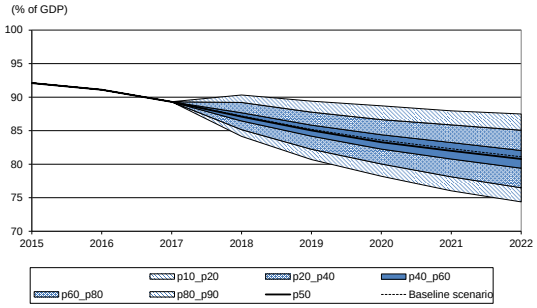
2.3. STOCHASTIC DEBT PROJECTION RESULTS

Stochastic projections complement the more traditional deterministic public debt projections by featuring the uncertainty of macroeconomic conditions in the analysis of debt dynamics in a comprehensive way. Stochastic projections produce a distribution of debt paths, corresponding to a wide set of possible underlying macroeconomic conditions, obtained by applying shocks to macroeconomic and fiscal variables (government primary balance, interest rates, economic growth and exchange rate) ([39]) to a central scenario (here the deterministic baseline no-fiscal policy change scenario). Hence, stochastic projections capture in a more comprehensive way than standard deterministic projection uncertainties in macroeconomic conditions. The advantages of this approach are three-fold: i) running a very large number of sensitivity tests; ii) calibrating the shocks so that they reflect past observed uncertainty (country-specific volatility); iii) capturing the correlation between the different variables (country-specific correlation) ([40]).

Results presented in the form of fan charts allow grasping the minimum and maximum levels of public debt ratios that would be reached under a large range of macroeconomic conditions. Stochastic projection results are generally presented in the form of fan charts, featuring the cone of the debt-to-GDP ratio distribution over the 5-year projection horizon. In the fan charts, the projected debt path under the central scenario (around which shocks apply) and the median of the debt ratio distribution are reported respectively (as a dashed and a solid black line at the centre of the cone). The cone covers 80% of all possible debt paths obtained by simulating 2000 shocks to primary balance, nominal growth, interest rates and exchange rate (the lower and upper lines delimiting the cone represent respectively the 10th and the 90th distribution percentiles), thus excluding from the shaded area simulated debt paths (20% of the whole) that result from more extreme shocks, or "tail events". The differently shaded areas within the cone represent different portions of the distribution of possible debt paths. The dark blue area (delimited by the 40th and the 60th percentiles) includes the 20% of all possible debt paths that are closer to the central scenario.

When taking into account a large range of temporary shocks to macro-financial and fiscal variables, the EA public debt ratio is found to have a high probability to decline in the next 5 years. The EA debt ratio is projected to lie between around 74½% and 87½% of GDP in 2022 with an 80% probability (compared to around 89% of GDP in 2017; see Graph 2.16). In terms of debt dynamics, the probability that the EA debt ratio would rise in 2018 is low (10%). It would decline afterwards with an 80% probability. Therefore, the probability that the EA public debt ratio would be higher in 2022 than its current level is very small (around 5%).

Graph 2.16: **Gross public debt (% of GDP) from stochastic projections (2017-22), Euro area**



Source: Commission services

Cross-country differences in terms of projections' distribution reflect underlying heterogeneity of Member States business cycles. In countries such as Sweden, France and Germany, the distance between the upper and the lower tails of the debt ratio distribution is relatively limited (a difference below 16 pps. of GDP). For instance, in Sweden, the debt ratio is projected to lie between 24% and 36% of GDP with an 80% probability. On the other hand, in countries such as CY, HR, HU and PT, a higher volatility of macro-financial and fiscal conditions lead to much wider debt distribution cones (of around 40 pps. of GDP). In Cyprus for example, the interval between the 10th and the 90th percentiles is at 63 - 107% of GDP. This clearly points to higher uncertainty

([39]) Shocks to the exchange rate are simulated only for non-EA countries, for which the share of public debt denominated in foreign currency can be significant.

([40]) See Berti (2013) and Annex A5 for more details on the methodology used.

Table 2.11: **Stochastic debt projection results, by country (% of GDP)**

Country	Debt ratio in 2017	Median debt ratio in 2022	10th percentile of debt ratio distribution in 2022	90th percentile of debt ratio distribution in 2022	Diff. btw. percentiles 90th and 10th of debt ratio distribution in 2022	Diff. btw. percentiles 60th and 40th of debt ratio distribution in 2022	Probability of debt ratio in 2022 greater than in 2017 (%)
BE	103.8	96.6	81.6	111.5	29.9	5.8	26.4
BG	25.7	17.7	0.9	34.8	33.9	7.0	27.9
CZ	34.6	29.8	18.6	40.8	22.2	4.4	29.4
DK	36.1	29.6	21.6	37.6	15.9	3.1	15.4
DE	64.8	50.7	42.9	58.6	15.8	3.2	1.1
EE	9.2	12.6	10.9	14.9	4.0	0.8	99.7
IE	69.9	60.0	45.8	77.9	32.1	6.6	23.3
EL	:	:	:	:	:	:	:
ES	98.4	95.1	86.5	104.6	18.2	3.7	32.7
FR	96.9	98.5	92.0	105.6	13.5	2.7	62.4
HR	80.3	74.3	56.8	100.1	43.3	8.8	36.9
IT	132.1	127.7	115.4	140.7	25.4	5.3	33.2
CY	103.0	84.7	62.6	106.8	44.1	10.0	14.4
LV	39.0	33.9	18.5	56.0	37.5	7.2	36.5
LT	41.5	39.6	25.5	59.2	33.7	6.4	43.9
LU	23.7	20.9	10.2	31.9	21.7	4.5	38.0
HU	72.6	68.3	48.9	89.0	40.1	8.0	40.3
MT	54.9	40.9	30.9	52.2	21.3	4.1	6.8
NL	57.7	45.8	37.2	54.4	17.2	3.4	3.4
AT	78.6	67.7	53.7	81.8	28.1	5.7	16.1
PL	53.2	53.1	42.4	63.9	21.5	4.6	49.6
PT	126.4	118.7	100.1	138.9	38.8	8.1	30.4
RO	37.9	48.2	30.6	67.4	36.8	7.6	76.4
SI	76.4	67.3	53.9	81.0	27.1	5.0	19.8
SK	50.6	42.5	28.3	57.7	29.3	5.9	24.6
FI	62.7	64.0	54.6	73.8	19.2	3.8	57.0
SE	39.0	29.9	24.1	35.7	11.6	2.3	2.5
UK	86.6	82.0	72.3	92.0	19.7	3.7	27.8
EA	**89.3**	**80.8**	**74.4**	**87.5**	**13.1**	**2.6**	**5.1**

Source: Commission services

surrounding baseline projections for this latter group of countries (see Table 2.11).

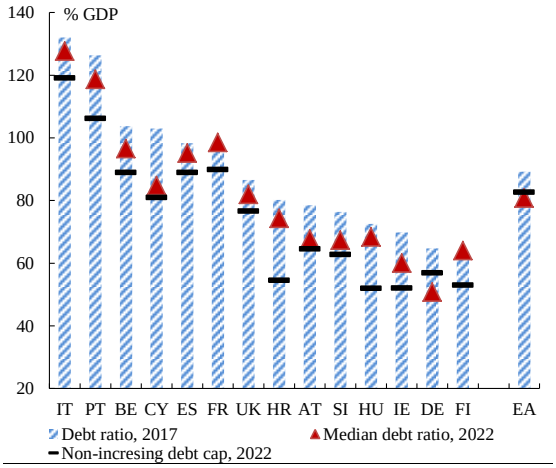
If the probability of a continuing rise of EA public debt is limited, some countries are nevertheless more likely to experience upward trends in the next 5 years. Relatively high probabilities of increasing debt are in particular estimated in some medium- to high-debt countries such as France (probability above 60%), Finland (57%), Hungary (40%), Croatia (37%), Spain (33%), Italy (33%) and Portugal (30%).

Stochastic debt projections can also be used to derive 'non-increasing debt caps'. Non-increasing debt caps are defined as the median level of public debt to target in 2022 to ensure that, even in the case of adverse shocks, public debt ratios will not increase relative to their current values with a 90% probability (see FSR 2015 and DSM 2016 for more details). These values may provide useful insights compared to conventional uniform targets used in fiscal rules, by taking into account country-specific economic features. In other words, countries, characterised by large uncertainties, such as the Baltics or Ireland, may need to target lower debt levels, than more stable economies.

Non-increasing debt caps largely differ between Member States depending on current debt levels, and country-specific economic volatility.

The EA non-increasing debt cap is estimated at around 83% of GDP, with values ranging from 52% of GDP in Ireland to 119% of GDP in Italy (see Graph 2.17). An illustration of the impact of uncertainties on non-increasing debt caps can be given by Austria and Croatia: despite similar debt levels in 2017 (around 80% of GDP), Austria could target a higher median debt value in 2022 (around 64% of GDP) than Croatia (that would need to target a value of 54% of GDP), given the larger economic volatility in the latter.

Graph 2.17: **Non-increasing debt caps and median debt ratio in 2022, by selected country**



(1) Results are presented for countries with a debt ratio greater than 60% of GDP in 2017.
Source: Commission services

For the vast majority of countries under examination, the debt ratio that is projected to be reached in 2022 under a no-fiscal policy change assumption would not be sufficient to contain debt trajectories in case of unfavourable shocks. Indeed, with the notable exception of Germany, the median debt ratio projected in 2022 is above non-increasing debt caps. Therefore, pursuing current policies would not ensure that countries would be immune to continuing debt increases (with a 90% probability) in case of negative shocks.

2.4. GROSS FINANCING NEEDS PROJECTION RESULTS

The projected dynamics of gross financing needs (GFN), by capturing the maturity of public debt, provides a key complementary indicator of debt-related vulnerabilities. If the debt to GDP ratio remains a crucial metric to assess fiscal sustainability, the current environment of very low interest rates and the extension of debt maturity call for giving due account to gross financing needs ([41]). Gross financing needs, calculated as the sum of the budgetary deficit and debt amortisations, provide a measure of the ease with which a country can face upcoming financial obligations. Hence, the projected dynamics of gross financing needs is particularly important for measuring the extent to which governments might need to tap financial markets over the current and the coming years, thus enabling an assessment of rollover risks ([42]).

Public gross financing needs are overall contained in the EU compared with the onset of the crisis. Public gross financing needs are estimated at around 15% of GDP in 2017 at the EU-28 aggregate level (around 17% of GDP for the EA), down from around 22% of GDP in 2012 (respectively 25% of GDP) ([43]). Important cross-country differences appear in line with the heterogeneity in terms of public debt stock, maturity structure, financing conditions and government primary balance. For instance, in 15 countries, GFN are below 10% of GDP in 2017 (sometimes well below this value, e.g. in BG, LU, IE, CZ and LV). On the other hand, 6 countries exhibit GFN greater than 17% of GDP (IT, ES, FR, HR, HU and BE) ([44]). In most countries (22), government borrowing requirements have decreased compared to the level reached in 2012 (which was around 22% of GDP at the EU-28 level and 25% at the EA level). Particularly important decreases have been observed in CY, PT, ES, IE and DE in line with the (very) sharp fall of the public debt ratio (IE and DE) and / or the substantial reduction of the budgetary deficit.

([41]) The indicator is widely used by other institutions such as the IMF, the ECB and the ESM.
([42]) These projections have been introduced with the DSM 2016. This variable (outturn values) has been used in the S0 indicator since 2012 (see chapter 3). More details on the calculations can be found in the DSM 2016.
([43]) By comparison, EA public gross financing needs are estimated at around 14% of GDP by the ECB (2017a). Differences in the scope considered (loans included or not), sources and underlying variables' estimations (e.g. for budgetary deficit) can explain discrepancies.
([44]) This level corresponds to the critical threshold based on the S0 methodology (close to the IMF threshold at 15% of GDP).

Table 2.12: **Public gross financing needs (% of GDP) in the baseline no-fiscal policy change scenario, by country**

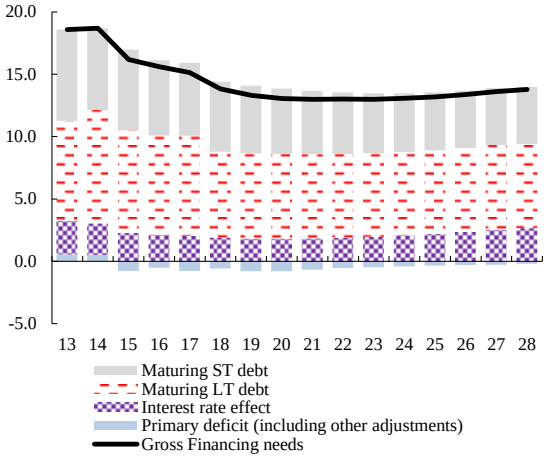
	2012	2017	2018	2019	2028	Average 2017-28
BE	25.5	18.5	19.6	19.3	18.4	18.3
BG	3.2	1.5	1.4	1.3	1.3	1.3
CZ	12.7	5.8	8.0	7.5	4.4	5.5
DK	8.9	6.0	5.3	5.3	3.7	4.6
DE	26.4	12.8	12.4	11.4	8.2	9.7
EE	:	:	:	:	:	:
IE	18.7	5.0	6.4	4.9	3.7	4.1
EL	:	:	:	:	:	:
ES	34.9	21.1	19.4	18.9	22.4	20.8
FR	22.9	21.0	15.7	15.9	22.2	18.8
HR	17.6	20.4	16.8	15.9	15.4	16.2
IT	31.4	24.4	20.9	21.3	24.4	22.6
CY	29.3	7.4	2.9	4.0	9.4	6.6
LV	4.4	5.8	2.5	5.1	4.3	4.2
LT	10.5	7.5	6.1	8.9	9.7	7.6
LU	4.7	4.4	1.2	1.7	2.1	1.5
HU	14.9	18.6	19.8	18.0	19.1	18.8
MT	10.4	7.5	7.8	7.2	3.4	5.2
NL	20.9	9.9	10.3	9.0	6.5	7.8
AT	11.5	8.4	10.0	9.1	8.9	8.9
PL	10.4	7.4	8.7	8.8	10.0	8.8
PT	32.8	15.3	20.3	18.8	20.0	19.2
RO	16.7	6.7	7.6	8.2	16.3	11.2
SI	10.2	13.7	14.0	13.3	12.6	12.3
SK	15.4	8.0	2.7	1.5	4.3	3.6
FI	16.2	15.5	12.5	12.2	15.7	13.5
SE	13.0	12.3	11.0	10.1	4.8	7.8
UK	12.7	10.5	11.8	11.2	11.1	11.0
EU-28	**21.9**	**15.1**	**13.8**	**13.3**	**13.8**	**13.4**
EA	**25.4**	**17.1**	**15.0**	**14.5**	**15.3**	**14.8**

(1) Estimations are not shown for EE due to data limitations. Public gross financing needs are calculated as the sum of the government budgetary deficit (+) / surplus (-) and debt amortisations. Debt amortisations cover both debt securities and loans, at the exception of 'currency and deposits'. The data sources used are Eurostat for the share of short-term and long-term public debt and the ECB (Centralised Securities Database) for the share of outstanding debt securities maturing within the year. Estimations need to be taken with some caution for post-programme surveillance countries (given the large share of official loans). Discrepancies may appear with other institutions' estimations (e.g. ECB, IMF) due to differences in the scope and sources used. Forecasts and projections are based on the assumptions of the baseline no-fiscal policy change scenario. More information on these calculations can be found in the DSM 2016.
Source: Eurostat, ECB, Commission services

A mild reduction is expected over the next 10 years in the EU, with some Member States nevertheless projected to see their gross financing needs rising. Over the next 10 years, public gross financing needs are projected to slightly decrease (by around 1 – 2 pps. of GDP compared to 2017 at the EU-28 and EA aggregate levels). GFN reductions are expected in half of the Member States, with the largest decreases projected in SE, HR, DE, MT and SK (by at least -3½ pps. of GDP). Other Member States should experience an increase in their borrowing requirements by 2028 (e.g. RO, PT, PL and LT).

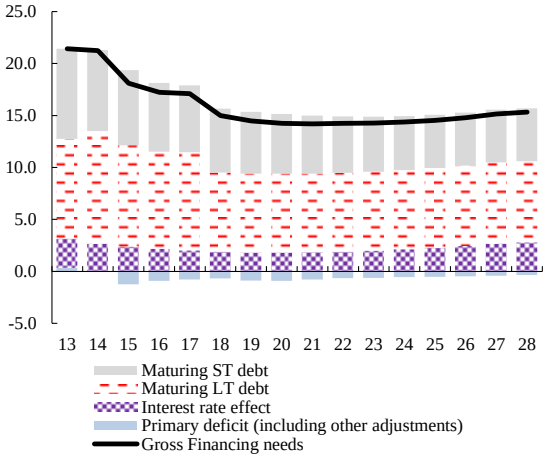
These trends are largely driven by the projected dynamics of the primary balance (in line with often increasing ageing costs) and the increase of the interest bill, given the assumed 'normalisation' of financial conditions (see Graph 2.18 and 2.19). They would remain below their 2012 peak in most countries.

Graph 2.18: **Public gross financing needs' projections decomposition, baseline no-fiscal policy change scenario, European Union 28 (% of GDP)**



Source: Commission services

Graph 2.19: **Public gross financing needs' projections decomposition, baseline no-fiscal policy change scenario, Euro area (% of GDP)**



Source: Commission services

Box 2.1: Debt projections scenarios: main assumptions

The **debt projection scenarios** included in the Commission DSA are the following:

1. ***Baseline no-fiscal policy change scenario*** (European Commission forecasts for the 2 forecast years; assumption of unchanged fiscal policy after forecasts; EPC-agreed long-run convergence assumptions of underlying macroeconomic variables – long-term interest rate converging to 3% in real terms; inflation rate converging to 2%; OGWG- agreed GDP growth path).

2. **No-fiscal policy change scenario without age-related costs** (same as scenario (1) without ageing costs).

3. **Historical scenarios** (European Commission forecasts for the 2 forecast years; assumption of gradual 4-year convergence of SPB, implicit interest rate, real GDP growth – one at a time and then all together – to historical average(s) after forecasts).

4. **Fiscal reaction function (FRF) scenario** (European Commission forecasts for the 2 forecast years; primary balance determined from estimated FRF after forecasts).

5. **Stability and Growth Pact (SGP) scenario** (assumption of full compliance with EDP recommendations and convergence to the MTO according to the matrix of required fiscal adjustment ([1]) – see Annex A3 for a more thorough description of the scenario).

6. Stability and Convergence Programme (SCP) scenario (SCP assumptions for main macro-fiscal variables; assumption of unchanged fiscal policy after programme horizon).

7. **Draft Budgetary Plan (DBP) scenario** (DBP assumptions for main macro-fiscal variables; assumption of unchanged fiscal policy after plan horizon).

Sensitivity test scenarios run around the baseline no-fiscal policy change scenario are the following:

1. ***"Standard" sensitivity tests on short- and long-term interest rates*** (-1p.p./+1p.p. on short- and long-term interest rates on new and rolled over debt over whole projection period, 2018-28).

2. ***"Enhanced" sensitivity tests on short- and long-term interest rates*** (-1p.p./+2p.p. on short- and long-term interest rates on new and rolled over debt for first 3 projection years, followed by -1p.p./+1p.p. over remaining of projection period until 2028).

3. ***"Standard" sensitivity tests on nominal GDP growth*** (-0.5/+0.5 p.p. on nominal GDP growth over whole projection period, 2018-28).

4. ***"Enhanced" sensitivity tests on nominal GDP growth*** (-1 standard deviation/+1 standard deviation on nominal GDP growth for first 2 projection years, followed by -0.5/+0.5 p.p. over remaining of projection period until 2028).

5. ***Sensitivity test on structural primary balance*** (negative shock to structural primary balance equal to 50% of forecasted cumulative change over the 2 forecast year; structural primary balance kept constant at lower last forecast year level over remainder of projection period until 2028).

6. ***Sensitivity test on nominal exchange rate*** (shock equal to maximum annual change in the exchange rate, observed over the last 10 years, applied for first 2 projection years).

([1]) European Commission (2017d), COM(2015) 12 final, 13/01/2015, and ECOFIN commonly agreed position on flexibility, as confirmed by the ECOFIN Council of 12 February 2016. (Council document number 14345/15).

Box 2.2: The sensitivity of public debt to a rise in interest rates in EU countries

With inflation gradually returning to its target, the monetary policy stance should gradually become less supportive over our projection horizon. In a context where the economic recovery has gained momentum across EU Member States, recent inflation developments point to a gradual uptick. Monetary policy is therefore set to progressively normalise in the foreseeable future, although the persistence of important slack in the economy and of uncertainties implies that monetary policy should remain highly accommodative (see ECB, 2017b). Yet, interest rates are expected to increase over our 10-year projection horizon from their current very low levels.

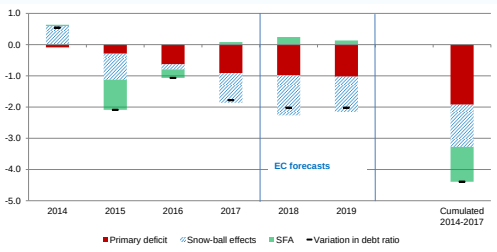
Over the last years, extremely accommodative monetary conditions have allowed reducing or at least containing public debt burdens in several EU countries (see negative snow-ball effects ([1]) in Table 1). At the euro area aggregate level, snow-ball effects have accounted for around one third of the decrease in the public debt ratio since 2014 (see Graph 1). Largest negative effects have been recorded in Ireland ([2]), Malta, Germany, Luxembourg and the Netherlands. On the other hand, snow-ball effects have remained positive over the same period in Italy, Cyprus, Portugal, Belgium and France. This is explained by significant interest rate premia (e.g. Cyprus, Portugal and Italy) and / or relatively weak economic growth performance (e.g. Italy, France and Belgium). In fact, in these five highly indebted countries, public debt ratios have not or little receded since 2013-14.

Table 1: **Snow-ball effects in the euro area, by country (% of GDP)**

	Avg 2010-2013	Avg 2014-2017	2014	2015	2016	2017
BE	0.6	0.1	1.2	0.4	**-0.3**	**-1.1**
DE	**-0.3**	**-1.1**	**-1.1**	**-1.2**	**-0.9**	**-1.2**
EE	**-0.4**	**-0.4**	**-0.3**	**-0.2**	**-0.3**	**-0.7**
IE	2.0	**-8.1**	**-4.8**	**-24.3**	**-1.5**	**-1.6**
ES	3.6	**-0.1**	2.4	**-0.8**	**-0.6**	**-1.3**
FR	0.7	0.1	0.8	0.0	0.4	**-0.6**
IT	4.2	2.0	3.2	1.7	1.7	1.2
CY	3.6	1.4	5.9	2.0	0.3	**-2.5**
LV	**-0.4**	**-0.3**	0.1	0.2	0.1	**-1.6**
LT	**-0.4**	**-0.3**	**-0.1**	0.6	**0.0**	**-1.6**
LU	**-0.6**	**-0.7**	**-1.2**	**-0.6**	**-0.1**	**-0.8**
MT	**-0.6**	**-2.8**	**-3.8**	**-3.2**	**-1.9**	**-2.2**
NL	0.8	**-0.7**	0.4	**-0.8**	**-0.7**	**-1.6**
AT	0.4	**-0.5**	0.2	**-0.4**	0.0	**-1.7**
PT	5.2	0.5	2.8	**-0.3**	0.5	**-1.1**
SI	2.0	**-0.3**	0.7	0.7	**-0.2**	**-2.2**
SK	0.1	**-0.2**	0.5	**-0.2**	0.2	**-1.3**
FI	0.0	**-0.4**	0.6	**0.0**	**-0.7**	**-1.3**
EA	1.5	**-0.3**	0.6	**-0.8**	**-0.2**	**-1.0**

Source: AMECO, Commission services

Graph 1: **Change in the debt ratio in the euro area, by main component (pps. of GDP)**



(1) The relatively high negative value of SFA in 2015 (-1% of GDP) mainly corresponds to sales of financial assets.

Source: AMECO, Commission services

The rise of market interest rates is assumed to be gradual and to translate only slowly to interest payments by governments. Under the baseline scenario, market interest rates are assumed to gradually converge back to 'normal' values over the next decade ([3]). In these circumstances**,** the interest–growth rate differential would gradually increase from close to -2 pps. in 2017 at the euro area aggregate level to close to +2 pps. in 2028 (when measured based on the market long-term interest rate). This rise in market interest rates would feed more slowly into implicit interest rates,

([1]) Snow-ball effects refer to the net impact of the counter-acting effects of interest rate, inflation and GDP real growth on the evolution of the debt ratio.

([2]) Due to strong GDP revisions.

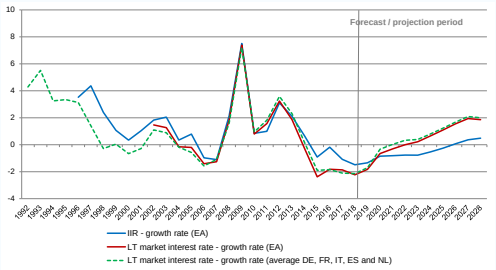
([3]) In particular, the market long-term interest rate is projected to converge to 3% in real terms within a 10-year horizon in all Member States. The market short-term interest rate is projected to converge to 2.5%, based on the historical (pre-crisis) euro area yield curve coefficient (0.83). These projections are based on commonly agreed EPC - AWG / Commission assumptions.

(Continued on the next page)

Box (continued)

given the maturity structure of public debt. Indeed, many countries have used the low interest rates environment to lengthen the maturity structure of their public debt. For instance, the average residual maturity was above 7 years in 2017 in the euro area against 6.4 years in 2014. In some countries, the rise has been even more substantial (e.g. Belgium from 7.6 to 9.3 years and Spain from 5.8 to 7 years) ([4]) Hence, the implicit interest rate –growth rate differential would only turn positive at the end of the projection horizon (see Graph 2), remaining low by historical standards.

Graph 2: **Differential between the interest rate and the GDP growth rate, euro area (%)**



(1) The convergence of the implicit interest rate (IIR) towards 'steady-state' values is logically slower than the one of the market long-term interest rate (on newly issued debt) given the debt maturity structure of public debt (large share of outstanding debt).
Source: Commission services

The impact of higher market interest rates on public debt is estimated using standard and enhanced sensitivity tests ([5]). An increase of market interest rates affects Member States' public finances by raising the implicit interest rate (and by extension annual interest payments) on the debt stock *ceteris paribus*. The size of the impact and its timing depends on the average maturity of the outstanding debt stock as this determines the pace at which maturing debt is rolled over at higher interest rates. It also depends on future new financing needs (e.g. linked to future budgetary primary deficits) ([6]).

An increase of market interest rates of 100 bp. for all EU countries would take about one to two decades to feed fully into debt servicing costs, depending on the country-specific maturity structure of debt. In some countries, the transmission to the implicit interest rate would be quicker (e.g. Lithuania, Croatia) due to the relatively low maturity of public debt. In others, such as Ireland or the UK, the impact would take longer to materialize in line with the high maturity of debt (see Table 2).

Table 2: **Impact of an increase of market interest rates (+1 pp.) on the implicit interest rate vis-à-vis baseline scenario, and key statistics on debt structure, by selected country**

	Impact on IIR after…				Share of short-term public debt (% debt)	Share of long-term public debt maturing every year (% LT debt)	Avg residual debt securities maturity (years)
	t+1	t+5	t+10	t+20			
BE	0.3	0.6	0.8	1.0	8.1	9.5	8.8
DE	0.3	0.6	0.9	1.0	9.0	15.7	5.8
IE	0.2	0.4	0.6	0.9	12.1	5.2	11.1
ES	0.3	0.6	0.9	1.0	8.9	13.7	6.6
FR	0.3	0.5	0.8	1.0	11.1	8.8	7.1
IT	0.4	0.6	0.9	1.0	14.0	12.2	6.8
CY	0.1	0.2	0.6	0.9	4.4	12.6	4.8
LV	0.2	0.6	0.8	1.0	4.2	7.8	5.7
LT	0.4	0.7	0.9	1.0	5.1	12.8	5.5
LU	0.2	0.3	0.6	0.9	6.6	6.8	6.7
MT	0.2	0.5	0.7	0.9	5.3	8.0	9.4
NL	0.3	0.6	0.8	1.0	10.5	10.9	7.0
AT	0.2	0.5	0.7	1.0	6.1	8.5	8.6
PT	0.3	0.6	0.8	1.0	14.7	10.5	6.4
SI	0.3	0.6	0.9	1.0	4.8	10.8	7.6
SK	0.2	0.3	0.6	0.9	1.3	9.7	6.7
FI	0.3	0.6	0.8	1.0	9.6	9.6	5.9
EA	**0.3**	**0.6**	**0.8**	**1.0**	**10.2**	**12.0**	**6.8**
HR	0.4	0.7	0.9	1.0	7.4	12.0	4.1
HU	0.4	0.7	0.9	1.0	15.9	10.4	3.9
UK	0.3	0.5	0.7	0.9	14.6	5.8	14.6
EU-28	**0.3**	**0.6**	**0.8**	**1.0**	**10.9**	**11.0**	**7.7**

(1) The share of short-term public debt corresponds to the average over the period 2014-16 (Eurostat). The share of long-term debt securities maturing every year corresponds to the average over the period 2012-17 (ECB, CDSB). The average residual maturity of debt securities corresponds to the one in December 2016 (ECB, CDSB).
Source: Commission services, Eurostat, ECB (CDSB)

Despite the slow increase in implicit interest rates, the cumulative impact on Member States' public debt ratios through 2028 would be substantial. It would range from + 0.6 pp. of GDP in Luxembourg to 9 pps. of GDP in Italy, with the impact for the EU as a whole at 4½ pps. of GDP (see Graph 3). Furthermore, in a more adverse scenario, where highly indebted countries would

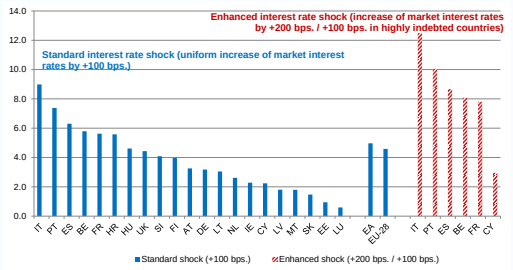
([4]) Based on ECB (2017c).
([5]) In the stylised scenarios carried in this Box, only interest rates are stress-tested. However, higher growth could also be assumed (to the extent that higher interest rates reflect more favourable growth prospects).
([6]) For instance, in extreme cases of countries projected to generate large budgetary surpluses in the future, no 'new' debt needs to be issued, and maturing debt can be repaid. Therefore, the implicit interest rate will only reflect past values of market interest rates.

(Continued on the next page)

Box (continued)

experience more dramatic increases of their interest rates (due to a widening of risk premia – with an increase of +200 bps. during the first three years of projections) ([7]), the effect on public debt ratios could be even more sizeable (as much as +12½ pps. of GDP by 2028 in Italy).

Graph 3: **Impact of a shock on market interest rates on public debt ratios in 2028, by selected country (pps. of GDP)**



(1) These sensitivity tests are described in more details in Box 2.1.
Source: Commission services

Stabilizing public debt in a high interest rate environment would require larger fiscal efforts. The higher interest rates (in the standard shock case) would increase primary surpluses required to stabilise public debt levels by 0.4 pp. of GDP in the EU and up to 0.7-0.8 pp. of GDP in the most vulnerable Member States. Considering more adverse shocks in highly indebted countries (in the form of higher risk premia), the additional fiscal consolidation needed to stabilize debt ratios would range between 0.5 pp. of GDP (Cyprus) to 1.2 pps. of GDP (Italy).

([7]) This conventional assumption is based on the traditional enhanced sensitivity test of the DSM (see also results in country fiches in Annex A10).

Table 3: **Change in the required fiscal adjustment to stabilize the debt to GDP ratio vis-à-vis baseline scenario, by selected country (pps. of GDP)**

	Standard shock (+100 bps.)	Enhanced shock (+200 / +100 bps.) in highly indebted countries
BE	0.5	1.2
DE	0.4	
EE	0.1	
IE	0.3	
ES	0.6	0.8
FR	0.4	0.8
IT	0.8	1.0
CY	0.3	0.6
LV	0.2	
LT	0.3	
LU	0.1	
MT	0.3	
NL	0.3	
AT	0.4	
PT	0.7	1.4
SI	0.4	
SK	0.2	
FI	0.3	
EA	**0.5**	
HR	0.5	
HU	0.4	
UK	0.4	
EU-28	**0.4**	

(1) The required fiscal adjustment to stabilize the debt to GDP ratio measures the gap between the initial primary balance and the primary balance that would stabilize debt in the medium-term (2032) at its initial level. It corresponds to the 'Initial Budgetary Position' component of the S1 indicator.
Source: Commission services

Box 2.3: Past episodes of public debt reductions: stylised facts

Public debt burdens remain high, even though overall declining trends are observed since 2014. Despite notable fiscal consolidation since 2009, public debt levels remain historically high in the EU. Indicatively, while the primary balances of the EU and euro area improved by around 4½ pps. of GDP between 2009 and 2017, public debt rose by close to 11 pps. of GDP over that period. Recent trends are more favourable, with public debt levels having started to fall since 2014. This has been in large part driven by the exceptional monetary policy stimulus undertaken by the ECB starting in early 2015 that has reduced the interest burden and supported growth in the euro area. During the same period, the aggregate fiscal stance in the euro area has eased, with the structural primary balance falling from 1.6% of potential GDP in 2014 to 1.0% in 2017, while it has stayed constant at the EU level.

Forward-looking approaches, based on standard debt projection scenarios, indicate that debt ratios should remain high over the next decade in several countries. As seen in section 2.1.2 of this report, even assuming strict compliance with SGP rules, the reduction of public debt ratios is expected to take time in several countries, notably reflecting the legacy of the crisis. With debt ratios remaining at high levels, there are still concerns about fiscal sustainability especially given the prospect of future rises in interest rates.

Backward-looking approaches, based on the analysis of past episodes of debt reduction, can bring useful insights on current debates regarding the design of credible successful public debt reduction strategies. Even if some authors have called for 'living with the debt' (Ostry et al., 2015), there is clear recognition that current better economic conditions should be used to re-build fiscal buffers in time to absorb new shocks when they come, not least a possible rise in interest rates. This is particularly the case of countries that have to date not substantially reduced their debt ratios and where important contingent liabilities persist. Thus, the analysis of successful past debt reduction episodes could be useful to inform policy-makers on the best available options 'at-hand'.

Debt reduction episodes are often associated with fiscal consolidation – as testified by a large body of literature looking at both emerging and advanced economies - but not only. The recent post-crisis experience in the EU and other advanced economies of fiscal consolidation not resulting in debt ratio reduction in the short-term led to two new research directions: first, on the specific links between fiscal policy and debt ratios, with intense debates regarding the size and the persistence of fiscal multipliers ([1]). The second main strand of research goes beyond fiscal policy and seeks to identify the broader macroeconomic dynamics underlying past debt reduction episodes. The findings of three recent quantitative studies analysing debt reduction episodes since 1980 and one descriptive assessment of debt reductions in advanced economies with debt above 100% of GDP since 1875 have been examined in more details in this Box (see Table 1), with other references added when relevant ([2]).

Table 1: **Recent selected studies of debt reduction episodes**

Study	Geographical scope	Time span	Definition of an episode	Analysis	Episodes
Abbas et al. (2013)	Advanced economies as defined in IMF World Economic Outlook	1980-2010	At least 5 ppts reduction over 3 consecutive years with one year of slippage	Quantitative	26
Baldazzi et al. (2013)	107 advanced and emerging economies	1980-2012	Reduction of debt/GDP ratio for at least 2 consecutive years with increases in CAPB of at least 0.5% of GDP per year sustained for at least 2 years	Quantitative	79
IMF (2012)	26 advanced economies with debt above 100% of GDP	1875-2010	A reduction in debt/GDP ratio over the 15 years after debt reached 100%	Qualitative	15
Nickel et al. (2010)	EU-15 economies	1985-2009	Debt ratio declines by more than 10 ppts in 5 consecutive years	Quantitative	14

Source: Commission services

The first main takeaway of this selected literature is that debt reduction episodes are relatively rare 'events' in advanced economies. At the most 26 episodes are identified in Abbas et al. (2013) since 1980. Baldazzi et al. (2013) find a

([1]) Gros (2011), European Commission (2012), Eyraud and Weber (2013)

([2]) Reinhart et al. (2015) classify debt reduction strategies into two broad categories: 'orthodox' strategies that focus on fiscal consolidation, growth-supportive structural reforms, accommodative monetary policy and sales of public assets, and 'heterodox' ones that include restructuring debt, generating unexpected inflation, taxing wealth, and repressing private finance. While advanced countries have employed heterodox options, in particular financial repression and unexpected inflation, as recently as in the 1980's (Reinhart and Sbrancia, 2015), this Box focuses on orthodox strategies that have been more common after the 1980's and in line with the broader policy trends towards independent central banks and free capital flows.

(Continued on the next page)

Box (continued)

larger set (79) when broadening the sample to emerging economies. Other studies (IMF, 2012; Nickel et al., 2010) considering a narrower sample of advanced economies (either with very high debt levels and / or EU countries only) establish an even more limited number of cases (14-15). As can be seen from Table 1, the results are sensitive to the geographical scope, the time span chosen and the definition of a debt reduction episode.

Some common lessons can be learnt from the existing literature. All studies conclude that large primary surpluses and economic growth – supported by a favourable external environment, real exchange rate depreciation and growth-enhancing structural reforms - are common ingredients to debt reduction episodes.

- *On fiscal consolidation*: Abbas et al. (2013) conclude that high structural primary balances (3.1% on average) were one of the main drivers of the 26 episodes of debt reduction identified. In particular, the structural primary balance strengthened by around 3-4 pps. of GDP from close to balance to up to 4% of GDP after four years. The IMF (2012) shows that if high primary surpluses are necessary for debt reduction, permanent, structural fiscal reforms are more effective over the long-term than one-off or temporary measures (also see Cottarelli and Jaramillo, 2012). This can be illustrated by the more successful cases of Belgium and Canada relative to Italy. Moreover, both Belgium and Canada put in place fiscal frameworks in the 1990's that preserved the fiscal improvement and mitigated consolidation fatigue.

- *On economic growth*: Abbas et al. (2013) also stress the importance of real growth (3.5% on average over the episodes identified) to drive down public debt ratios. Real growth picked up during debt reduction episodes driven by private consumption and strong export growth ahead of and during fiscal consolidation supported by real exchange rate depreciation (exceeding 10% in 16 out of 26 episodes). The main conclusion is that an improving growth environment - in spite of fiscal consolidation - was an important feature of successful debt reduction episodes with a healthy external environment combined with real exchange rate depreciation reducing the fiscal multiplier. The IMF (2012) equally highlights the crucial role of the external environment to support growth. Canada's successful episode in the mid-1990's was aided by the boom in the US economy, contrary to the unsuccessful fiscal consolidation in 1985 that was undermined by a global slowdown. Thus, the IMF (2013) recommends that if the external environment is not supportive, then the pace of fiscal consolidation and debt reduction should be slower with realistic targets but embedded in a medium-term fiscal consolidation framework. Nickel et al. (2010) point, on the basis of 14 episodes among EU-15 countries between 1985 and 2009, that robust real GDP growth raises the likelihood of a major debt reduction although short-term fluctuations in the business cycle do not seem to have an impact.

Interestingly, Abbas et al. (2013) argue that high debt and low initial growth do not preclude large debt reductions if there is sufficient country commitment, noting seven advanced economies between 1989 and 2007, including four EU countries (Austria, Belgium, Denmark and the Netherlands) having reduced debt by 40 pps. of GDP on average in spite of initially high debt levels (90% on average) and modest initial growth (0.3% on average) ([3]).

However, some open questions (and differences from past research) remain. These issues concern in particular the composition and pace of fiscal consolidation, the importance of credit conditions (for the government's interest burden) and by implication, monetary policy.

- *On the composition of fiscal consolidation:* contrasting with earlier findings, Baldazzi et al. (2013) establish that the optimal composition and pace of fiscal consolidation depends crucially on financial conditions. In particular, while under normal circumstances spending cuts may be more effective as suggested in the expansionary austerity literature ([4]), when credit supply to the private sector is constrained due to financial sector weakness, a *slower*

([3]) By initial, Abbas et al. (2013) refer to the year before the start of the debt reduction episode. Real GDP growth is found to have picked-up from its initial low level during the episodes considered, reaching 3.5% on average (and no less than 1% over the sample of cases put into evidence).

([4]) See Alesina and Ardagna (1998, 2009) and Alesina (2010).

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Box (continued)

consolidation path with *both revenue and expenditure measures* will have a more favourable impact on medium-term growth and debt-to-GDP reduction. This is consistent with other research by the same authors that found that revenue measures can be effective if the fiscal consolidation needs of the country are very large, as the multiplier of certain spending cuts – notably to public investment - can be very high ([5]).

- *On monetary and financial conditions:* Abbas et al. (2013) found that accommodative monetary policy, supporting the decline in real interest rates and the acceleration of growth, was an important feature of debt reduction episodes. The IMF (2012) provides a more nuanced conclusion: on one hand, in Belgium and Canada in the 1980's and Italy through the mid-1990's, debt didn't fall despite fiscal adjustment due to the tight monetary environment. It is almost exclusively after monetary conditions were supportive by bringing down real interest rates that these countries reduced their debt ratios. On the other hand, in Japan, accommodative monetary policy in the late 1990's was ineffective because banking system weaknesses blocked its transmission channels. In Nickel et al. (2010), ex-ante high interest burdens are found to be significantly associated with debt reduction as they discipline governments into undertaking credible debt reduction policies (urgency of debt reduction including for liquidity reasons).

Thus, overall these studies highlight that successful episodes of debt reductions used different policy levers, and that failure to set a consistent overall strategy can result in self-defeating policies. The case of the UK between 1918-28 offers a telling story in that large primary surpluses (exceeding 5% of GDP on average) were not enough to reduce debt given limited growth (real output in 1928 was below that in 1918) due to tight monetary policy needed to sustain an overvalued exchange rate.

([5]) See Baldacci et al. (2010). The explanation provided is that the crowding-in effect of public spending cuts on private consumption and investment via lower interest rates found in the expansionary austerity literature is thwarted when the financial sector is deleveraging. As a result, private demand is not able to offset the reduction in public demand hence strong fiscal adjustments have a negative impact on medium-term growth.

To review the findings of this literature based on the most recent data through 2016, a dataset of EU and other advanced economies that have seen large public debt reductions since 1980 is compiled. Following the IMF (2013), the dataset includes cases only since 1980 in countries with initial level of debt above 50% of GDP and defines large debt reduction episodes as at least 5 pps. of GDP cumulative reduction over four consecutive years with no more than one year of slippage. Similar to the IMF dataset, our dataset excludes Singapore and Norway due their high net asset positions and Israel in the 1980's due to hyper-inflation. However, our dataset differs from the IMF's in that it includes EU countries that aren't classified by the IMF as advanced and those that meet the debt episode criteria when extending the time horizon to 2016, while it excludes cases where inflation was above double digits or where revised data suggest the criteria were not met. Table 2 summarize these episodes.

The following results are obtained: ([6])

- **In line with previous literature, past debt reduction episodes have a low frequency** (27 cases, including 19 in EU countries). This occurrence is even lower when concentrating on very large debt reduction spells (11 cases including 6 in EU countries), similar to the one that would be needed in the EU to return back to pre-crisis debt levels (65% of GDP in the euro area and 71% of GDP in highly indebted countries) or the SGP threshold (representing a reduction of around 25 pps. of GDP in the euro area and of around 40-50 pps. of GDP in highly indebted countries depending on the targeted level).

([6]) Vis-à-vis the IMF dataset, our dataset includes SK (2000-08), DE (2011-16), NL (2014-16), MT (2004-07) and (2011-16), IS (2011-16), HU (2011-16). Our dataset excludes EL (2000-03) and AT (2000-07) because the debt episode criteria aren't met based on the latest Eurostat data; NZ (1986-88) and IL (1989-2000) due to double digit inflation; and UK (1986-2001) and (1986-1991) because initial public debt (as measured by Eurostat) was below 50% of GDP.

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Table 2: **Major public debt reduction episodes since 1980**

	Year Start	Year End	Debt Start (% GDP)	Debt End (% GDP)	Total debt reduction (% GDP)	Episode Length (years)	Annual av. debt reduction (% GDP)	Nominal IIR (%)	GDP deflator (%)	Real IIR (%)	Real Growth (%)	r-g differential (%)	Annual av. PB (% GDP)	Annual av. snowball (% GDP) 1/	Annual av. identified debt flows	Average stock-flow residual 2/
							(0)	(1)	(2)	(3=1-2)	(4)	(3-4)	(5)	(6)	(7=6-5)	(8=0-7)
Post 1980, debt above 50%																
IE	1987	2006	105	24	-81	19	-4.3	5.7	3.4	2.3	6.3	-4.0	3.8	-2.4	-6.2	1.9
DK	1993	2007	81	27	-53	14	-3.8	6.4	2.0	4.4	2.5	1.9	4.4	1.0	-3.4	-0.4
BE	1993	2007	134	87	-47	14	-3.4	5.8	1.7	4.1	2.5	1.7	4.7	1.8	-3.0	-0.4
SE	1996	2008	70	37	-33	12	-2.7	5.0	1.6	3.4	3.1	0.3	3.7	0.5	-3.2	0.5
ES	1996	2007	66	36	-30	11	-2.7	5.3	3.5	1.8	3.9	-2.1	2.3	-1.0	-3.3	0.5
NL	1993	2002	74	49	-26	9	-2.9	6.5	2.5	4.0	3.1	0.9	2.3	0.5	-1.8	-1.1
FI	1994	2008	56	33	-24	14	-1.7	5.7	1.8	3.9	3.7	0.2	4.6	0.1	-4.5	2.8
SK	2000	2008	50	28	-21	8	-2.6	5.4	3.7	1.7	6.2	-4.5	-1.6	-1.4	0.2	-2.8
SE	1985	1991	58	38	-20	6	-3.3	13.3	7.0	6.3	1.8	4.5	5.4	2.0	-3.4	0.1
CY	2004	2008	64	45	-19	4	-4.9	4.8	3.8	0.9	4.2	-3.3	3.1	-1.7	-4.7	-0.1
IT	1994	2004	117	100	-17	10	-1.7	6.6	3.0	3.5	1.7	1.9	3.6	2.3	-1.3	-0.4
DE	2010	2016	81	68	-13	6	-2.1	2.5	1.7	0.8	1.7	-0.8	2.1	-0.4	-2.5	0.4
MT	2011	2016	70	58	-12	5	-2.4	4.2	2.0	2.1	5.6	-3.4	1.0	-2.1	-3.0	0.6
DK	1985	1989	69	57	-12	4	-3.0	12.1	4.0	8.1	1.4	6.7	7.1	4.0	-3.2	0.2
MT	2004	2007	72	62	-10	3	-3.2	5.6	2.6	3.0	3.2	-0.2	1.2	-0.1	-1.3	-1.9
PT	1996	2000	60	50	-9	4	-2.3	5.9	3.7	2.3	4.2	-2.0	-0.4	-0.8	-0.5	-1.8
NL	2004	2007	50	43	-7	3	-2.4	4.5	2.2	2.3	3.1	-0.8	2.1	-0.4	-2.5	0.1
HU	2011	2016	81	74	-7	10	-1.3	5.1	2.5	2.6	1.9	0.7	1.9	0.7	-1.2	-0.1
NL	2014	2016	68	62	-6	2	-2.8	1.8	0.4	1.4	2.1	-0.7	0.3	-0.5	-0.8	-2.0
IS	2011	2016	95	46	-49	5	-9.8	5.9	3.4	2.4	3.8	-1.4	6.7	-1.0	-7.7	-2.0
NZ	1992	2007	51	14	-37	15	-2.4	9.9	2.0	4.2	3.8	0.3	4.9	1.1	-3.7	1.3
CA	1996	2007	99	65	-35	11	-3.2	7.6	2.3	5.3	3.3	2.0	6.9	1.6	-5.3	2.2
IS	1995	2005	58	25	-33	12	-2.8	4.1	3.8	0.3	4.6	-4.3	1.5	-1.8	-3.3	0.5
IL	2003	2016	93	64	-29	12	-2.4	5.4	1.8	3.6	4.1	-0.5	0.6	-0.4	-1.0	-1.4
US	1993	2001	70	53	-17	8	-2.1	7.5	1.9	5.7	3.6	2.1	2.9	1.2	-1.6	-0.5
CH	2004	2011	59	46	-13	10	-1.3	1.2	0.7	0.5	2.3	-1.8	1.3	-0.9	-2.2	0.9
JP	1987	1991	72	66	-6	4	-1.5	5.6	1.5	4.2	5.4	-1.2	5.0	-1.1	-6.0	4.6
Mean 3/			75	50	-25	9	-2.9	5.8	2.6	3.2	3.3	-0.1	3.0	0.0	-3.0	0.1
Median			70	49	-20	9	-2.7	5.6	2.3	3.0	3.3	-0.5	2.9	-0.4	-3.0	0.3
EU countries																
Mean 3/			75	52	-23	8	-2.8	5.8	2.7	3.1	3.1	0.0	2.7	0.1	-2.6	-0.2
Median			70	49	-19	8	-2.7	5.6	2.5	2.6	3.1	-0.2	2.3	-0.1	-3.0	0.3

(1) Snowball effects taken from AMECO. Where not available estimated as ((i - p. (1 + g)) - g)) / (1 + g + p + g.p). Debt/GDP of the previous year.
(2) Stock-flow residual is equal to SFA as calculated by Eurostat or where unavailable, the residual from annual debt reduction and identified debt flows.
(3) For r - g differential, a weighted average mean is used based on the average level of debt during the episode.

Source: Eurostat, IMF WEO, Commission services

(Continued on the next page)

Box (continued)

Table 3: **Comparing standard DSM projections to past debt reduction episodes**

	Debt start (% GDP)	Debt end (% of GDP)	Total debt reduction (% of GDP)	Avg annual debt reduction (% of GDP)	annual average: IIR (nominal, %)	Inflation (%)	Real growth (%)	r-g (%)	Snow-ball effects (% of GDP)	PB (% of GDP)	SFA residual (% of GDP)
Past debt consolidation episodes (mean)											
All cases (27)	74.9	50.3	-24.6	-2.9	5.8	2.6	3.3	-0.1	0.0	3.0	0.1
EU countries (20)	75.0	51.5	-23.5	-2.9	5.8	2.7	3.1	0.0	0.1	2.7	-0.2
DSM scenarios (highly indebted countries)											
Baseline scenario	109.1	109.6	0.5	0.0	2.8	1.8	1.1	-0.1	0.0	-0.1	0.0
SGP scenario	109.1	86.5	-22.6	-2.1	2.7	1.8	0.9	0.0	0.1	2.0	0.0
Historical SPB scenario	109.1	109.1	0.0	0.0	2.8	1.8	1.1	-0.1	0.0	0.0	0.0
Fiscal Reaction Function scenario	109.1	106.6	-2.5	-0.2	2.8	1.8	1.1	-0.1	0.0	0.2	0.0

(1) Highly indebted countries include Belgium, Spain, France, Italy, Cyprus and Portugal (all having a debt to GDP ratio greater than 90% of GDP in 2017).
Source: Commission services

Sustaining primary surpluses is also found to be key, with the mean primary surplus in the sample of 3% of GDP and median of 2.9%. Among economies with 2% inflation or less, the average primary surplus is between 2.9-3.3% of GDP. A large primary surplus is often associated with a high burden of interest payments (adjusted for growth, or snowball effect), reflecting fiscal efforts implemented by governments to ensure that debt is not on an explosive path - the so-called fiscal reaction function.

- **Furthermore, there have been no cases of debt reduction where real GDP growth has been below 1.4% of GDP**. This could partly explain why fiscal consolidation in the EU between 2011 and 2014 did not result in debt reduction, with average real GDP growth of 0.8% during these years. By contrast, the years when there was debt reduction in the EU (2015—16), real GDP growth averaged 2.1%.

- **Another important feature is that debt reduction takes time**. Previous findings do not mean that countries that have consolidated between 2011 and 2014 should loosen fiscal policy as one of the key lessons from the literature and from the dataset is that debt reduction takes time (9 years on average and 12 years on average in very large debt reduction episodes). In almost all the largest debt reduction episodes (Belgium, Finland, Denmark), countries had primary surpluses before the debt reduction episode started, showing the importance of building fiscal credibility before risk premia and thus borrowing rates fall that enables debt reduction.

The fiscal position implied by a strict application of SGP rules appear on average less stringent compared to what has been observed during past episodes of debt reduction. Indeed, a strict compliance to SPG rules in highly indebted Member States would entail an average primary balance of around 2% of GDP compared to close to 3% of GDP during past episodes of debt reduction. However, in some countries (Italy and Portugal), the required primary surpluses would eventually reach higher levels, close to 4% of GDP, given particularly high debt burdens and unfavourable snowball effects ([7]). No-fiscal policy change or convergence back to past behaviours ('historical SPB' or 'fiscal reaction function' scenarios) would 'just' allow stabilising debt burdens at their current high levels (see Table 3). Despite a relatively weak economic growth performance (less than 1% under the SGP scenario) ([8]), snow-ball effects would have on average a relatively 'neutral' effect on the debt dynamic, given the projected slow increase of interest rates from their current low levels.

([7]) The average potential real GDP growth is estimated at 0.5% in Italy and at 0.9% in Portugal over the period 2019-28 (against 1.3% in the EA) and the average real implicit interest rate would stand at 1.3% in Italy and 1.6% in Portugal over the period 2019-28 (against 0.7% in the EA).
([8]) Assuming a value for fiscal multipliers of 0.75.

3. QUANTITATIVE RESULTS ON FISCAL SUSTAINABILITY INDICATORS

This chapter presents results for the short-, medium- and long-term sustainability indicators as set out in the multi-dimensional approach to fiscal sustainability of the Commission ([45]). Box 3.1 presents an additional indicator to complement the analysis of short-term fiscal risk. Box 3.2 offers a stylised illustration of ways to interpret the long-term sustainability indicator.

3.1. SHORT-TERM FISCAL SUSTAINABILITY CHALLENGES

3.1.1. The S0 indicator

The S0 indicator captures fiscal sustainability challenges in the short term. It is an 'early-detection' indicator of fiscal risks stemming from fiscal, macro-financial and competitiveness characteristics of the economy over a one year horizon. Unlike the traditional S1 and S2 indicators, S0 does not quantify the required fiscal adjustment to ensure sustainable public finances over a specific time horizon. It is instead a composite indicator based on a range of variables that have proven to perform well in detecting situations of fiscal stress in the past.

The measurement of S0 is based on a set of twenty-five fiscal and financial-competitiveness variables. Table 3.1 provides a list of the 12 fiscal and 13 financial-competitiveness variables that are used to construct the S0. Most of the financial-competitiveness variables are used as part of the scoreboard for the surveillance of macroeconomic imbalances in the context of the Macroeconomic Imbalances Procedure. This reflects the existing 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 potential fiscal risks.

The so-called 'signals approach' to the S0 allows for setting out endogenously the fiscal risk thresholds. These thresholds are estimated for the overall composite indicator, individually for each entry variable to the indicator, as well as for each of the two thematic sub-indices that reflect either the fiscal sector or the financial-competitiveness side of the economy. Given the risk thresholds, S0 is the weighted proportion of variables that have reached their optimal thresholds, with weights given by their 'signalling power', i.e. the ability to correctly predict past fiscal events. The higher the proportion of individual variables with values at or above their specific threshold, the higher the value of S0.

S0's indication of short-term fiscal risks is threefold. First, S0 is a measure of the overall risks to fiscal sustainability. Secondly, the fiscal and financial-competitiveness sub-indices help identify countries that face fiscal risks from one of the two thematic areas, though not necessarily at their 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 at country level.

The interpretation of risk assessment results based on the S0 analysis should be made with caution. Although the framework described above tends to be comprehensive, additional dimensions that are relevant for the analysis of short-term sustainability challenges 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. The broader background of a country-specific context could supplement the interpretation of S0 results.

([45]) See European Commission (2016, 2012a) and Berti et al. (2012) for further methodological details.

Table 3.1: **Thresholds and signalling power of S0 indicator, fiscal and financial-competitiveness sub-indices and individual variables used in the S0 indicator**

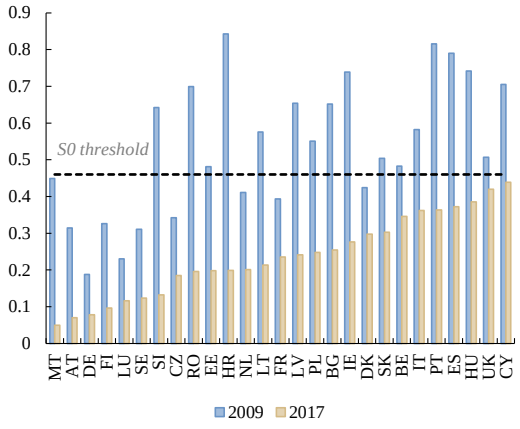
Variables	safety	threshold	signaling power	type I error	type II error	crisis number	no-crisis number
Balance, % GDP	>	-9.61	0.07	0.04	0.89	44	1080
Primary balance, % GDP	>	0.23	0.13	0.47	0.40	43	1058
Cyclically adjusted balance, % GDP	>	-2.50	0.23	0.52	0.25	40	981
Stabilizing primary balance, % GDP	<	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 debt gen. gov., % 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 need, % GDP	<	15.95	0.26	0.24	0.50	26	621
Interest rate-growth rate differential	<	4.80	0.08	0.11	0.82	38	977
Change in expenditure of gen. government, % GDP	<	1.90	0.11	0.13	0.76	41	1051
Change in final consumption expend. of gen. gov., % GDP	<	0.61	0.07	0.17	0.76	38	972
Fiscal index	<	0.36	0.28	0.30	0.42	45	1083
L1.net international investment position, % GDP	>	-19.80	0.29	0.47	0.24	25	500
L1.net savings of households, % GDP	>	2.61	0.33	0.42	0.25	28	699
L1.private sector debt, % GDP	<	164.70	0.18	0.22	0.60	20	418
L1.private sector credit flow, % GDP	<	11.70	0.37	0.28	0.35	20	409
L1.short-term debt, non-financial corporations, % GDP	<	15.40	0.20	0.54	0.26	19	403
L1.short-term debt, households, % GDP	<	2.90	0.21	0.52	0.26	19	403
L1.construction, % value added	<	7.46	0.22	0.27	0.51	43	1006
L1.current account, 3-year backward MA, % GDP	>	-2.50	0.34	0.35	0.31	42	983
L1.change (3 years) of real effective exchange rate	<	9.67	0.11	0.18	0.71	24	460
L1.change (3 years) in nominal unit labour costs	<	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 index	<	0.46	0.55	0.22	0.23	52	1158

(1) Variable names preceded by L1 are taken in lagged value.
(2) The signalling power is defined as [1- (type-I error + type-II error)].
(3) Calculation of gross financing needs for S0 is based on all debt securities issued by the general government as detailed by the ECB (see ECB, 2010).
(4) The real effective exchange rate is based on exports deflator for a reference group of 37 countries.
Source: Commission services

3.1.2. Results of the short-term sustainability indicator

Overall short-term risks of fiscal stress have declined for all the EU Member States between 2009 and 2017. In 2009, more than half of the Member States had values of S0 indicator above the threshold signalling a high risk of fiscal stress in the short term. In 2017, no Member State would be at risk of facing fiscal pressure up to one year ahead (Graph 3.1). The overall drop in the S0 between 2009 and 2017 reflects a more favourable economic and fiscal outlook in the short term.

Graph 3.1: **The S0 indicator for EU countries, 2009 and 2017**

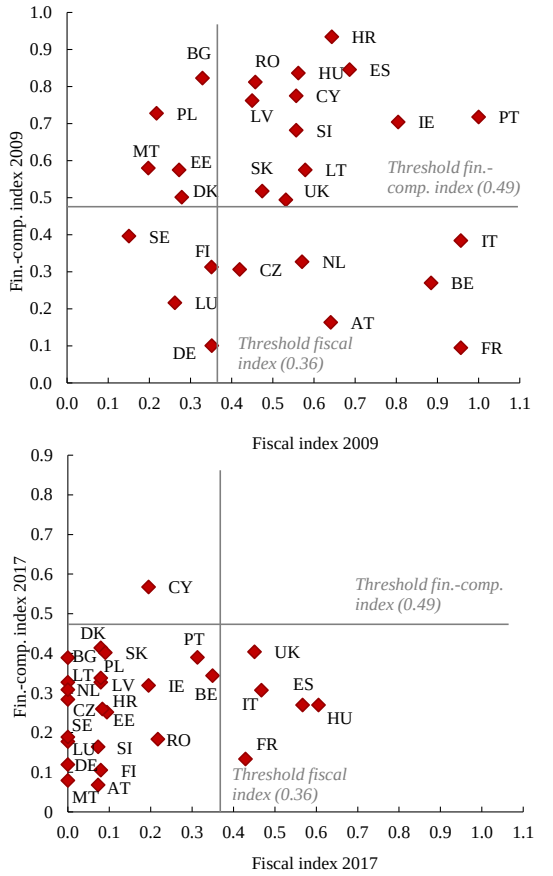


Source: Commission services

Thematic sub-indices are a useful tool for attributing movements in the overall risk to more specific areas. The fiscal and financial-competitiveness sides of the economy are key potential sources of fiscal pressures in the short term. Graph 3.2 shows the two thematic sub-indices for all the EU Member States in 2009 and

in 2017, as well as their corresponding thresholds. In 2017, short-term challenges from the fiscal side are identified for Hungary, Spain, Italy, the United Kingdom and France. Cyprus is the only country with short-term challenges stemming from the financial-competitiveness side. However, the overall S0 indicator does not signal a risk for any country, which implies that short-term challenges from either of these two sides of the economy are not sufficiently severe to generate risks of fiscal stress at the aggregate level.

Graph 3.2: **Fiscal and financial-competitiveness sub-indices, 2009 and 2017**



Source: Commission services

On the fiscal side, high levels of gross and net debt, as well as low or negative primary balances, create short-term challenges in some Member States. Table 3.2 shows the values taken by the specific variables incorporated in the composite indicator S0 for the fiscal subgroups. By highlighting values above the variable-specific thresholds, the tables allow tracking down the specific sources of fiscal risk for each Member State, thereby identifying areas calling for policy action. However, the relevance of the individual breaches should be evaluated taking into account the signalling power of each variable as identified in Table 3.1. Among the countries found to face some potential challenges on the fiscal side (Hungary, Spain, Italy, the United Kingdom and France), gross financing needs and / or debt levels appear to be the most important contributors.

Turning to macroeconomic and financial-competitiveness conditions, short-term risks in several Member States mainly reflect a negative net international investment position, relatively low household savings and high private sector indebtedness. This is the case in particular in Cyprus. The values taken by all the financial-competitiveness variables incorporated in the composite indicator S0 are reported in Table 3.3. Measures mitigating the sources of short-term risks would contribute to further reducing the possibility of fiscal stress in the short term.

Table 3.2: **Fiscal variables used in the S0 indicator, 2017**

	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 need (%GDP)	Interest growth rate diff.	Change expend. gen. govt (%GDP)	Change consumpt. gen. govt (%GDP)
BE	-1.5	1.1	-1.4	-1.1	103.8	-1.9	8.3	91.9	16.9	-1.0	-0.8	-0.2
BG	0.0	1.0	0.0	-0.3	25.7	-3.3	0.1	12.4	2.8	-1.2	1.2	0.2
CZ	1.2	2.0	0.8	-1.2	34.6	-2.2	0.4	23.2	3.7	-3.5	-0.2	-0.2
DK	-1.0	0.2	-0.5	-0.3	36.1	-1.6	4.2	17.7	6.1	-0.7	-0.6	-0.3
DE	0.9	2.1	0.9	-1.2	64.8	-3.3	6.2	45.8	8.6	-1.8	0.0	0.1
EE	-0.2	-0.2	-1.1	-0.7	9.2	-0.2	0.2	-0.8		-8.2	-0.3	-0.5
IE	-0.4	1.6	-1.3	-1.6	69.9	-2.9	8.8	60.9	3.3	-2.4	-0.7	-0.1
ES	-3.1	-0.6	-3.1	-1.3	98.4	-0.6	8.6	86.6	19.2	-1.4	-1.1	-0.3
FR	-2.9	-1.1	-2.4	-0.6	96.9	0.4	9.7	88.5	16.8	-0.6	-0.4	-0.1
HR	-0.9	2.0	-1.1	-0.7	81.1	-2.7	5.3		15.7	-0.8	-0.9	0.0
IT	-2.1	1.7	-1.8	1.2	132.1	0.1	17.4	121.2	21.3	0.9	-0.3	-0.2
CY	1.1	3.5	0.4	-2.5	103.0	-4.1	2.4	89.8	2.2	-2.4	0.1	-0.1
LV	-0.9	0.0	-1.8	-1.5	39.0	-1.5	1.7	27.6	4.9	-4.0	0.9	0.4
LT	0.1	1.3	-0.9	-1.6	41.5	1.4	1.4	30.6	2.9	-4.3	0.2	-0.3
LU	0.5	0.8	0.6	-0.8	23.7	2.9	1.4	-11.4	-0.5	-4.2	0.7	0.1
HU	-2.1	0.7	-2.8	-1.8	72.6	-1.3	13.6	69.3	19.3	-2.6	0.9	0.5
MT	0.9	2.8	0.4	-2.2	54.9	-2.7	3.5	42.1	5.4	-4.2	0.1	0.3
NL	0.7	1.7	0.6	-1.6	57.7	-4.1	6.4	46.9	7.4	-2.7	-0.3	-0.4
AT	-1.0	0.9	-0.9	-1.7	78.6	-4.9	5.3	55.3	9.0	-2.1	-0.9	-0.3
PL	-1.7	-0.2	-2.1	-1.7	53.2	-0.9	0.4	49.5	5.7	-3.3	0.1	-0.4
PT	-1.4	2.5	-1.7	-1.1	126.4	-3.7	21.8	111.2	14.3	-0.9	-0.2	-0.4
RO	-3.0	-1.6	-3.3	-1.2	37.9	0.3	2.5	31.2	6.7	-3.5	-0.2	0.4
SI	-0.8	1.8	-1.7	-2.2	76.4	-2.1	3.8	53.0	9.0	-3.0	-1.6	-0.4
SK	-1.6	-0.3	-1.6	-1.3	50.6	-1.2	1.0		7.7	-2.7	-0.9	0.3
FI	-1.4	-0.4	-1.0	-1.3	62.7	-0.4	5.4	23.1	9.6	-2.2	-1.8	-0.8
SE	0.9	1.2	0.8	-1.8	39.0	-3.2	9.7	6.9	5.8	-4.6	-0.7	-0.4
UK	-2.1	0.5	-2.5	-0.5	86.6	-1.7	14.1	80.5	10.9	-0.6	-0.5	-0.3

Source: Commission services

Table 3.3: **Financial-competitiveness variables used in the S0 indicator, 2017**

	Yield curve	Real GDP growth	GDP per capita in PPP (%US level)	L.Net intern. Invest. position (%GDP)	L.Net savings households (%GDP)	L.Private debt (%GDP)	L.Private credit flow (%GDP)	L.Short-term debt nonfin. corp. (%GDP)	L.Short-term debt households (%GDP)	L.Construction (%value added)	L.Current account (%GDP)	L.Change real eff. exchange rate	L.Change nom. unit labour costs
BE	0.7	1.7	81.3	51.2	2.0	190.1	13.3	40.2	1.5	5.3	-0.3	-5.3	-0.6
BG	2.1	3.9	34.9	-47.0	-5.2	104.9	4.0	15.7	2.1	3.9	1.8	-1.8	9.5
CZ	0.1	4.3	62.8	-24.6	3.0	68.7	4.4	8.4	1.6	5.5	0.5	-2.3	2.9
DK	0.4	2.3	86.8	54.8	2.2	210.7	-10.4	25.4	4.2	4.9	8.4	-0.5	3.4
DE	0.3	2.2	85.3	54.4	5.7	99.3	3.8	10.4	1.8	4.8	8.1	1.4	5.2
EE		4.4	53.0	-37.1	4.1	115.4	5.9	11.1	0.9	6.0	1.4	2.5	13.4
IE	1.0	4.8	129.7	-176.2	0.5	278.1	-19.0	27.0	1.3	2.8	5.5	5.2	-20.5
ES	1.6	3.1	64.5	-83.9	1.0	146.7	-1.0	8.6	2.4	5.6	1.4	-0.7	0.4
FR	0.7	1.6	72.0	-15.7	4.9	146.9	6.2	24.2	1.5	5.5	-0.7	-0.9	1.4
HR	2.7	3.2	42.3	-70.1		106.1	-0.1	9.9	3.5	5.2	2.9	0.7	-6.2
IT	1.8	1.5	66.8	-9.8	2.0	113.6	0.6	19.4	3.2	4.8	2.1	-0.7	1.9
CY	4.0	3.5	58.3	-127.8	-7.7	344.6	10.2	32.6	11.2	3.9	-3.6	-0.6	-6.2
LV	0.8	4.2	46.7	-58.9	-3.7	88.3	0.3	12.6	1.8	5.3	-0.3	-1.2	16.5
LT	1.1	3.8	54.2	-43.2	-2.7	56.2	4.3	4.7	0.8	6.5	-0.3	-5.8	14.7
LU	0.5	3.4	179.2	34.7	5.3	343.6	1.5	7.1	2.6	5.7	5.0	7.5	2.5
HU	2.2	3.7	48.3	-65.0	1.8	77.0	-3.6	9.6	2.5	3.7	3.6	-3.3	3.3
MT	1.1	5.6	68.1	47.6		128.4	11.1	12.1	2.8	4.0	6.7	4.9	-0.1
NL	0.5	3.2	90.5	69.1	3.0	221.5	1.5	32.0	3.1	4.7	8.8	-5.5	-1.1
AT	0.6	2.6	88.6	5.6	4.5	124.0	3.2	11.7	3.0	6.4	2.2	-0.3	5.8
PL	1.4	4.2	49.4	-60.7	0.7	81.6	4.7	8.3	3.0	7.2	-1.0	-0.7	2.1
PT	3.6	2.6	54.2	-104.7	-1.5	171.4	-2.2	21.3	2.8	3.9	0.3	-3.5	0.9
RO	2.6	5.7	43.2	-49.9		55.8	0.6	12.3	0.9	6.7	-1.3	1.7	6.0
SI	1.4	4.7	60.0	-36.9	2.8	80.5	-0.8	9.9	2.4	5.2	5.1	0.0	0.7
SK	0.8	3.3	54.4	-62.4	2.1	94.7	9.2	19.7	2.0	7.9	-0.7	-4.4	3.5
FI	0.6	3.3	76.7	-2.3	-0.9	149.3	2.2	5.5	2.8	6.8	-1.2	-0.8	2.1
SE	1.0	3.2	86.3	11.2	8.3	188.5	7.6	38.7	14.2	6.0	4.6	-1.8	2.0
UK	0.6	1.5	74.6	-1.1	1.4	168.1	8.2	26.5	10.2	6.2	-5.5	1.0	3.1

(1) Variable names preceded by L are taken in lagged values.
Source: Commission services

3.2. MEDIUM- AND LONG-TERM FISCAL SUSTAINABILITY CHALLENGES

3.2.1. The S1 and S2 indicators

Fiscal sustainability in the medium and long term typically refers to the achievement of the government's intertemporal budget constraint. This constraint, which is also known as the solvency condition, refers to the capacity of a country to meet its net debt obligations, over a finite and infinite horizon, with a stream of future primary surpluses. Other things equal, the greater 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 additional costs, in addition to the other non-interest expenditure and the cost of servicing the outstanding debt.

Sustainability gap indicators measure the budgetary adjustment that would ensure sustainable public finances. Using respectively the finite and the infinite version of the government budget constraint, two sustainability gap indicators are derived to capture challenges over the medium and the long-term respectively.

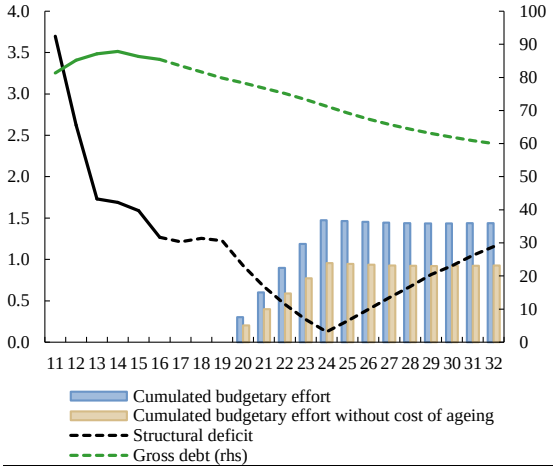
- **Medium-term sustainability is captured by the S1 indicator.** The latter measures the additional adjustment effort required, in terms of a cumulated gradual improvement in the structural primary balance over five years (starting from the year after the last forecast year, i.e. starting from 2020) ([46]), to reach a specific public debt-to-GDP ratio in fifteen years' time from now (currently 2032), including paying for any future additional expenditure (until the target date) arising from an ageing population. The debt target is set at 60% of GDP in the standard definition of the indicator or, alternatively, at the pre-crisis debt ratio or the end-of-forecast debt ratio. The timescale of the indicator has been chosen to be sufficiently long to allow the impact of ageing to be analysed in a meaningful way, while still remaining subject to influence from decisions by current taxpayers and policy makers;
- **Long-term sustainability is assessed using the S2 indicator.** This indicator shows the upfront 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, including paying for any additional expenditure arising from an ageing population. This indicator – a flow measure – can also be presented as a stock indicator, the so-called intertemporal net worth (INW). This alternative form of S2 is defined as the difference between the current net worth (i.e. assets minus liabilities) of the general government and the sum of discounted future primary balances required to achieve intertemporal fiscal sustainability.

3.2.2. Results of the medium-term sustainability indicator

The risk to medium-term sustainability reflects the initial structural primary balance, the starting debt ratio and the forecast increase in ageing costs. Under the baseline no-fiscal policy change scenario, Table 3.4 shows the updated results for S1 for the standard definition of the indicator of a target debt ratio of 60% of GDP (in 2032). The table also reports the decomposition of the S1 indicator into: i) the gap to the debt-stabilising primary balance, which shows the additional required adjustment in the primary balance to stabilise debt at its current level; ii) the cost of delay, which shows the additional required adjustment due to the gradual improvement in the primary balance compared to an immediate adjustment; iii) the debt requirement to reach the 60% target debt; and, iv) the required adjustment to cover the ageing costs until 2032.

([46]) After 2024, the structural primary balance remains constant at its 2024 value, which incorporates the additional consolidation efforts made up to that year. This means that no consolidation (or deconsolidation) is assumed to take place after 2024.

Graph 3.3: **Required fiscal adjustment (% of GDP) until t+5 in the EU to reach 60% public debt-to-GDP ratio by 2032**



Source: Commission services

An improvement in the EU structural primary balance is necessary to achieve a government debt ratio of 60% of GDP by 2032. As shown in Table 3.4, the required improvement for the EU and the EA to achieve the debt-to-GDP ratio target of 60% by 2032 amounts respectively to a cumulative effort of 1.5 and 1.9 pps. of GDP over the period 2020-2024, i.e. an average budgetary consolidation effort of around 0.3 and 0.4 percentage points per year respectively. In other words, the average structural primary balance for the EU would have to improve from a projected surplus of 0.6% of GDP in 2019 to 2.1% in 2024, while for the EA the structural primary balance would have to improve from a surplus of 0.7% of GDP in 2019 to 2.6% in 2024.

For the EU as a whole, an additional fiscal effort is required to offset the effect of the rising cost of ageing on medium-term sustainability. The consolidation to the structural primary balance implied by the S1 indicator in the EU is also shown in Graph 3.3, together with the resulting path of debt and the structural balance. When compared with the required consolidation without budgetary costs due to ageing populations, an additional fiscal effort of around ½ pps. of GDP is required in the medium-term to compensate for the negative impact on sustainability of higher government expenditure as a result of population ageing. This also underlines the scope for further structural reforms to contain ageing-related upward pressure on government spending in the medium term.

Table 3.4: **The medium-term sustainability indicator (S1) and its components, pps. of GDP**

	S1	Due to			
		Initial Budgetary position		Debt requirement	Ageing costs
		Gap to the debt-stabilizing primary balance	Cost of delaying adjustment		
BE	3.4	-0.9	0.5	3.2	0.6
BG	-4.3	-0.8	-0.7	-2.8	-0.1
CZ	-3.1	-1.1	-0.5	-2.1	0.6
DK	-3.4	-0.7	-0.5	-1.9	-0.2
DE	-1.7	-2.4	-0.3	-0.2	1.0
EE	-3.1	1.3	-0.4	-3.9	0.0
IE	-1.4	-2.7	-0.2	0.6	1.0
ES	3.2	1.0	0.5	2.7	-1.0
FR	4.9	1.0	0.7	2.9	0.3
HR	1.2	0.3	0.2	1.0	-0.3
IT	6.7	0.4	1.1	5.1	0.1
CY	0.0	-2.4	0.0	2.7	-0.2
LV	-2.0	0.3	-0.3	-1.9	-0.1
LT	0.6	0.1	0.1	-1.5	1.9
LU	-3.8	-1.3	-0.5	-3.1	1.1
HU	1.1	1.0	0.2	0.7	-0.7
MT	-3.1	-2.7	-0.4	-0.9	0.9
NL	-1.9	-0.9	-0.3	-0.6	-0.1
AT	0.4	-1.4	0.1	1.1	0.7
PL	0.6	0.8	0.1	-0.5	0.3
PT	5.0	-0.1	0.8	4.4	-0.1
RO	2.1	3.0	0.3	-1.5	0.3
SI	1.3	-0.8	0.2	0.9	1.0
SK	-2.6	-1.4	-0.4	-1.0	0.2
FI	1.5	-0.3	0.2	0.1	1.5
SE	-3.9	-1.6	-0.6	-2.0	0.3
UK	2.1	-1.0	0.3	1.9	0.9
EU-28	1.5	-0.6	0.2	1.4	0.4
EA	1.9	-0.7	0.3	1.8	0.4

Source: Commission services

Italy, Portugal, France, Belgium, and Spain are considered at high risk in the medium term based on the S1 indicator. In these five countries a significant fiscal adjustment is required to ensure medium-term sustainability by achieving the debt target of 60% of GDP in 2032. Another ten Member States would also have to make a consolidation effort, although not exceeding 0.5 pps. of GDP per year, to achieve the 60% of GDP debt target. These Member States, which are therefore considered at medium risk ([47]), are HR, CY, LT, HU, AT, PL, RO, SI, FI and the UK. Finally, twelve countries (BG, CZ, DK, DE, EE, IE, LV, LU, MT NL, SK and SE) have an S1 indicator with a negative value, thus indicating that already under current policies these countries are not expected to breach the 60% of GDP threshold by 2032. Except IE, these countries are expected to

([47]) The thresholds used to assess the scale of the sustainability challenge based on the S1 indicator are as follows: 1) if S1 is less than zero, the country is assigned low risk; 2) if S1 is between 0 and 2.5 (thus requiring an adjustment in the structural primary balance of up to 0.5 pps. of GDP per year until 2024), the country is assigned medium risk; 3) if S1 is greater than 2.5 (implying an adjustment in the structural primary balance of more than 0.5 pps. of GDP per year), the country is assigned high risk.

Table 3.5: **The required adjustment of primary balances until 2024 to reach a given target for the public debt-to-GDP ratio by 2032 (all data as % of GDP)**

	Baseline								+1p.p in the short-term/long-term interest rate on maturing and new debt from 2020		
			Required annual adjustment of structural primary balance between 2020 and 2024			Budgetary effort by 2024 (cumulated SPB)			Difference in budgetary effort by 2024 (cumulated SPB)		
			2032 Debt target								
	Structural primary balance 2017	Structural primary balance 2019	60 percent of GDP (S1)	Pre-crisis levels (2007)	End-forecast levels (2019)	60 percent of GDP (S1)	Pre-crisis levels (2007)	End-forecast levels (2019)	60 percent of GDP (S1)	Pre-crisis levels (2007)	End-forecast levels (2019)
BE	1.1	0.5	0.7	0.2	-0.1	3.4	0.8	-0.5	0.5	0.6	0.7
BG	0.9	0.7	-0.9	-0.1	-0.2	-4.3	-0.5	-1.0	0.3	0.1	0.1
CZ	1.6	0.9	-0.6	0.0	-0.1	-3.1	-0.2	-0.6	0.4	0.2	0.2
DK	0.7	0.2	-0.7	-0.1	-0.2	-3.4	-0.4	-1.1	0.3	0.2	0.2
DE	2.1	2.0	-0.3	-0.4	-0.3	-1.7	-2.1	-1.6	0.4	0.4	0.4
EE	-1.0	-1.4	-0.6	0.4	0.3	-3.1	1.9	1.4	0.3	0.0	0.1
IE	0.8	2.0	-0.3	0.4	-0.4	-1.4	2.0	-2.0	0.3	0.1	0.3
ES	-0.6	-0.7	0.6	1.1	0.0	3.2	5.4	-0.1	0.6	0.5	0.7
FR	-0.6	-1.3	1.0	0.9	0.3	4.9	4.5	1.5	0.4	0.5	0.6
HR	1.9	0.5	0.2	0.6	0.0	1.2	3.2	-0.1	0.5	0.4	0.6
IT	1.7	1.1	1.3	0.6	0.0	6.7	3.0	0.2	0.7	0.9	1.0
CY	2.8	2.0	0.0	0.1	-0.6	0.0	0.6	-3.2	0.3	0.3	0.5
LV	-0.8	-0.9	-0.4	0.5	0.0	-2.0	2.7	0.2	0.3	0.1	0.2
LT	0.2	0.0	0.1	0.9	0.5	0.6	4.3	2.4	0.4	0.2	0.3
LU	0.9	0.6	-0.8	0.2	-0.1	-3.8	1.1	-0.3	0.2	0.0	0.1
HU	-0.4	-1.0	0.2	0.1	0.0	1.1	0.6	0.2	0.5	0.5	0.5
MT	2.5	2.0	-0.6	-0.7	-0.4	-3.1	-3.3	-2.0	0.3	0.3	0.3
NL	1.3	0.6	-0.4	-0.1	-0.2	-1.9	-0.4	-1.1	0.4	0.3	0.3
AT	1.0	0.8	0.1	0.0	-0.2	0.4	-0.1	-0.9	0.4	0.4	0.4
PL	-0.5	-1.0	0.1	0.4	0.3	0.6	2.1	1.3	0.4	0.3	0.4
PT	2.1	1.6	1.0	0.8	-0.1	5.0	4.2	-0.6	0.6	0.7	0.9
RO	-1.8	-2.9	0.4	1.3	0.8	2.1	6.3	3.8	0.4	0.2	0.3
SI	1.0	0.4	0.3	0.9	0.0	1.3	4.7	0.2	0.4	0.3	0.5
SK	-0.3	0.6	-0.5	0.0	-0.3	-2.6	0.2	-1.4	0.3	0.1	0.2
FI	-0.1	-0.5	0.3	0.8	0.3	1.5	3.9	1.4	0.4	0.3	0.4
SE	1.1	0.9	-0.8	-0.4	-0.3	-3.9	-2.0	-1.6	0.4	0.3	0.2
UK	0.2	0.9	0.4	0.8	0.0	2.1	3.8	-0.1	0.4	0.3	0.5
EU-28	0.8	0.6	0.3	0.4	-0.1	1.5	1.8	-0.3	0.5	0.4	0.5
EA	1.0	0.7	0.4	0.3	-0.1	1.9	1.6	-0.4	0.5	0.5	0.6

Source: Commission services

have a debt level already below the 60% of GDP target in 2019.

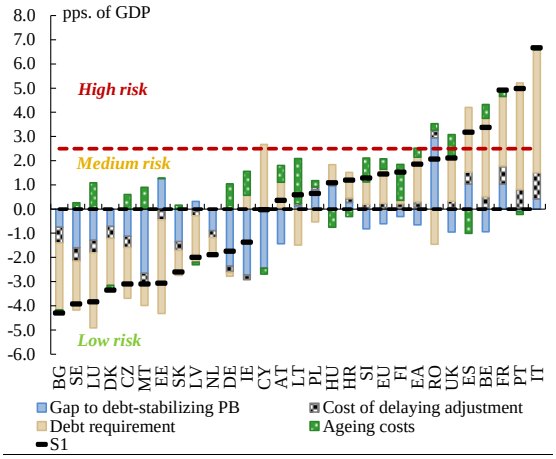
A higher adjustment of the structural primary balance would be required to achieve pre-crisis debt levels or to offset higher interest rates. For the EU as a whole, the required adjustment to reach pre-crisis (2007) levels in 2032 would be even higher than with the 60% of GDP debt target. This is due to the fact that several Member States had debt levels in 2007 that were well below 60% of GDP. If the reference target were set at the debt ratio in 2007, only BG, DK, DE, MT NL and SE among the current low-risk countries would still have a negative value of the S1 indicator, thereby retaining their low-risk category (see Table 3.5, which reports the yearly adjustment needs for different debt end-points). Moreover, the structural primary balance adjustment required to stabilise the debt-to-GDP ratio at pre-crisis levels would be particularly demanding (a cumulated budgetary consolidation effort of 4% of GDP or more) for ES, FR, LT, PT, RO and SI. Finally, Table 3.5 presents the simulation results for a one percentage point increase in the interest rate on new and rolled over debt. The increase in the required adjustment to achieve a debt ratio of 60% of GDP by 2032 is highest (at least 0.5% of GDP) for BE, ES, FR, HR, IT, CY, HU and PT, reflecting the current debt ratio and / or the medium-term financing needs.

For the EU-28 and the EA, the initial budgetary position contributes to reducing medium-term sustainability risk, whereas the debt requirement and ageing costs increase the S1 indicator. The additional adjustment due to the debt requirement of 60% of GDP accounts for the largest adjustment in both the EU and the EA, by respectively 1.4 and 1.8 pps. of GDP. Finally, the

cost of ageing component accounts for 0.4 pps. of GDP of the S1 sustainability gap for both the EU and the EA respectively.

The additional adjustment due to the debt requirement is particularly high for Italy, Portugal and Belgium (exceeding 3.0 pps. of GDP). This value is positive only for those countries with an initial level of debt above 60% of GDP. As can be seen in Graph 3.4, the additional fiscal consolidation if the gradual adjustment of the primary balance is delayed (the so-called "cost of delay" subcomponent), is highest for RO, HU, PL, EE, FR, ES and IT. An improvement in the structural primary balance is required to stabilise debt at its current levels by RO, EE, ES, FR, HU and PL. On the other hand, the required adjustment from the increase in the cost of ageing is highest in LT, LU, IE, DE and SI.

Graph 3.4: **The S1 sustainability indicator and its components**



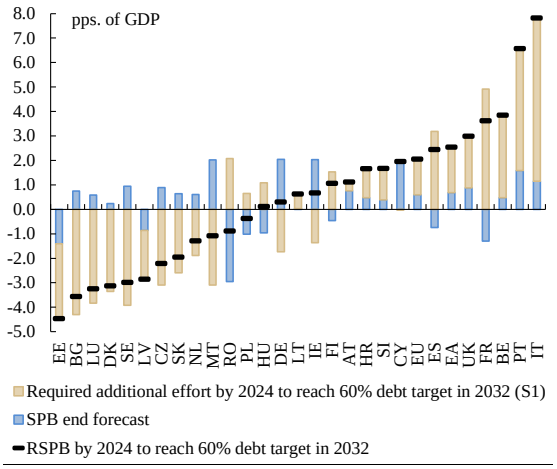
Source: Commission services

3.2.3. The required structural primary balance

The required structural primary balance (RSPB) is informative about the fiscal policy that needs to be sustained in order to achieve medium-term sustainability. The RSPB reflects the overall size of the structural primary balance required to close the medium-term sustainability gap, i.e. to reach a debt ratio of 60% of GDP by 2032. It is calculated as the total of the structural primary balance at the end of the forecast period and the required adjustment quantified by S1.

The overall required structural primary balance to ensure medium-term sustainability varies significantly across the EU Member States. Graph 3.5 shows the RSPB and its decomposition into the starting structural fiscal position at the end of the forecast period and the S1 sustainability gap for each EU country. For the EU and the EA, the RSPB reaches 2.7% and 3.3% of GDP respectively. At the individual country level, the size of the RSPB varies substantially from -4.5% of GDP for Estonia to more than 3% of GDP for the United Kingdom, France, Belgium and to 6.6% of GDP for Portugal and 7.8% for Italy.

Graph 3.5: **The required structural primary balance by 2024 to reach 60% debt target in 2032**



Source: Commission services

Required structural primary balances appear large in some countries, although past episodes of sustained large fiscal consolidations are not unprecedented. While for a few Member States, the RSPB appear large, and may be deemed politically and socially unsustainable, empirical evidence suggests that the required adjustments implied by the S1 results (as reported in Table 3.5 and Graph 3.5) would not be unprecedented. During the past three decades, there have been 14 episodes in advanced economies and 26 episodes in emerging economies when individual countries adjusted their structural primary balance by more than 7 pps. of GDP ([48]).

([48]) See IMF (2010). The list includes the following countries (end date of episodes in parentheses): BE (1998), CY (2007), DK (1986), FI (2000), GR (1995), IE (1989), IT (1993), PT (1985), SE (1987, 2000), UK (2000).

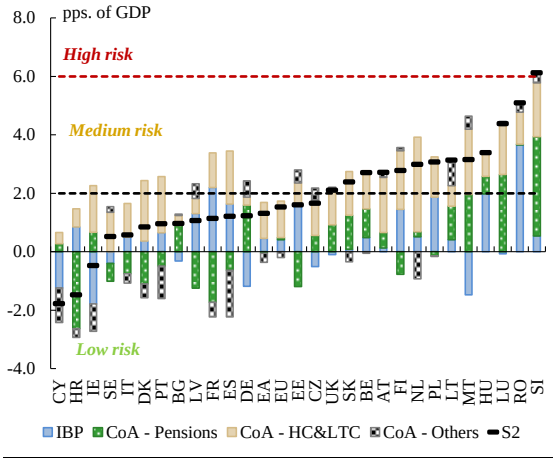
3.2.4. Results of the long-term sustainability indicator

The S2 indicator provides a measure of long-term fiscal sustainability. It is an inter-temporal fiscal gap that estimates the immediate and permanent adjustment to the current structural primary balance (subsequently kept constant at the adjusted value forever) required to stabilise the debt-to-GDP ratio over the infinite horizon, including paying for any additional expenditure arising from an ageing population. The S2 indicator does not put any restrictions on the level at which debt stabilises in the long run; rather, it is based on the condition that debt does not grow faster than output. However, in the short to medium term, the current high level of debt is a source of risk in times of changing economic and fiscal circumstances, and this aspect is duly reflected in the other fiscal sustainability indicators presented in this report (see also Box 3.2).

Thirteen Member States are considered at high / medium fiscal risk in the long term. Graph 3.6 shows that Slovenia is classified as high risk with substantial long-term sustainability challenges ([49]). Romania and Luxembourg have respectively the second and third highest long-term sustainability challenges in the EU, although still below the high risk threshold. The other countries at medium risk are HU, MT, LT, PL, NL, FI, AT, BE, SK and the UK.

Government spending on health and long-term care contributes to widening the sustainability gap in all the Member States. Graph 3.6 shows for each Member State a disaggregation of the S2 indicator in terms of the initial budgetary position (IBP) ([50]) and the three components of the long-term cost of ageing (CoA) ([51]), namely pensions, healthcare, long-term care, and other determinants (education expenditure and unemployment benefits, see also Table 3.6). The negative contribution of government spending on health and long-term care to the sustainability gap is particularly high (greater than 1.5 pps. of GDP) for the NL, MT, DK, AT, PT, ES, SI, LU and IE. Expenditure on pensions is estimated to widen the sustainability gap in sixteen countries, especially in SI, LU, MT and DE (greater than 1.5 pps. of GDP). Overall, the contribution of the total cost of ageing to long-term sustainability risks is expected to be very significant, exceeding 2 pps. of GDP, in SI, MT, LU, LT, AT, NL, DE, SK, CZ, the UK and BE.

Graph 3.6: **The S2 sustainability indicator and its components**



Source: Commission services

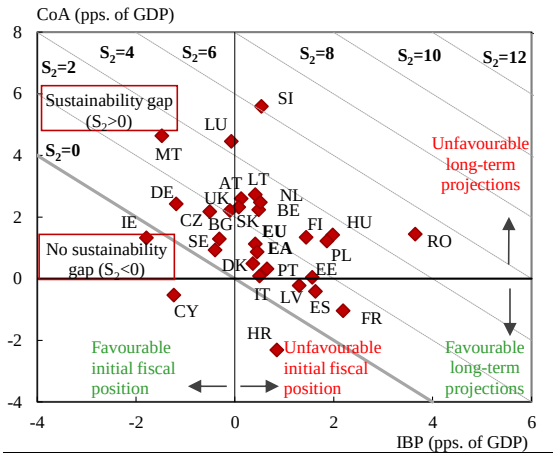
The sustainability gap in around half the Member States is due to both an unfavourable initial fiscal position and the cost of ageing. This is reflected in the position of a significant number of countries in the top right quadrant in Graph 3.7, which maps the Member States according to their respective values for the S2 indicator and the two components (costs of ageing and IBP). The sustainability gap (S2) is the sum of the vertical and horizontal distances of each point from the solid diagonal line, along which the sustainability gap is equal to zero. Moving from left to right along the horizontal axis, countries are required to undertake a larger adjustment to stabilise their debt ratios given their initial budgetary position (IBP), and before considering the long-term costs of ageing. Along the vertical axis, a higher adjustment is required due to the long-term change in age-related costs (CoA).

([49]) For the long-term sustainability indicator S2, the following thresholds are used to assess the scale of the sustainability challenge: 1) if S2 is lower than 2, the country is assigned low risk; 2) if S2 is between 2 and 6, the country is assigned medium risk; 3) if S2 is greater than 6, the country is assigned high risk (see European Commission, 2012a and 2016).

([50]) More specifically, this component of S2 is given by the gap between the current or initial structural primary balance and the debt-stabilising primary balance to ensure sustainability.

([51]) The long-term budgetary projections (incorporated in the calculation of the sustainability indicators presented here) have been published in European Commission (2015a).

Graph 3.7: **The EU countries mapped across the S2 components**



Source: Commission services

Almost all Member States have an unfavourable initial fiscal position and/or adverse expected developments in the cost of ageing. Cyprus is the only Member State with a favourable initial fiscal position and a favourable impact from the projected budgetary cost of population ageing. The dotted diagonals in Graph 3.7 are 'isogap' lines: two countries located on the same line have the same sustainability gap (S2) over an infinite horizon, though they may have different initial budgetary positions and different ageing-related costs. Among the fourteen Member States that have a low long-term sustainability risk, Cyprus, Croatia and Ireland are the only Member States that have a negative S2 sustainability gap and therefore lie in the area south-west of the solid line. LU, MT, UK, CZ, DE BG, SE and IE are located in the top left quadrant reflecting a favourable initial budgetary position in 2019 but an unfavourable impact of projected age-related costs. With the exception of Ireland, the favourable initial budgetary position in these countries (under the assumption of no-fiscal policy change) is not sufficient to guarantee long-term sustainability, given the expected long-term increase in ageing-related expenditure. The other countries (LV, FR, ES, EE and HR) lie in the bottom right quadrant, with favourable developments in long-term age-related spending but an unfavourable initial budgetary position. In the case of Croatia, the drop in age-related spending more than offsets the unfavourable initial fiscal position, thereby leading to a positive conclusion on the country's estimated long-term sustainability.

Table 3.6: **Results of the S2 indicator and the Intertemporal Net Worth (INW)**

	S2			CoA				INW
	S2	IBP	CoA	Pensions	HC	LTC	Others	
BE	2.7	0.5	2.2	1.0	0.2	1.1	-0.1	-312.6
BG	1.0	-0.3	1.3	0.9	0.2	0.1	0.1	-36.4
CZ	1.7	-0.5	2.2	0.6	0.7	0.5	0.4	-144.6
DK	0.9	0.4	0.5	-1.1	0.5	1.6	-0.5	-45.6
DE	1.2	-1.2	2.4	1.6	0.3	0.0	0.6	-46.3
EE	1.6	1.6	0.0	-1.2	0.3	0.4	0.4	-87.0
IE	-0.5	-1.8	1.3	0.7	0.9	0.7	-0.9	798.9
ES	1.2	1.6	-0.4	-0.6	0.8	1.1	-1.6	-135.6
FR	1.1	2.2	-1.0	-1.7	0.6	0.6	-0.5	-87.2
HR	-1.5	0.8	-2.3	-2.6	0.6	0.0	-0.3	153.3
IT	0.6	0.5	0.1	-0.8	0.5	0.6	-0.3	-20.7
CY	-1.8	-1.2	-0.5	0.3	0.2	0.2	-1.2	314.4
LV	1.1	1.3	-0.2	-1.2	0.4	0.1	0.5	-86.8
LT	3.1	0.4	2.7	1.1	0.0	0.7	0.9	-239.6
LU	4.4	-0.1	4.5	2.6	0.4	1.2	0.1	-812.1
HU	3.4	2.0	1.4	0.6	0.5	0.3	0.0	-217.8
MT	3.2	-1.5	4.6	2.0	1.4	0.9	0.4	-298.3
NL	3.0	0.5	2.5	0.2	0.6	2.6	-0.9	-228.7
AT	2.7	0.1	2.6	0.5	0.9	1.0	0.2	-196.7
PL	3.1	1.9	1.2	-0.1	0.8	0.6	0.0	-171.6
PT	1.0	0.7	0.3	-0.5	1.7	0.2	-1.1	-12.8
RO	5.1	3.7	1.4	0.0	0.5	0.5	0.3	-368.1
SI	6.1	0.5	5.6	3.4	0.8	1.0	0.4	-511.5
SK	2.4	0.1	2.3	1.2	1.3	0.2	-0.3	-158.5
FI	2.8	1.4	1.3	-0.8	0.5	1.5	0.1	-147.8
SE	0.5	-0.4	0.9	-0.6	0.3	1.1	0.2	-4.9
UK	2.1	-0.1	2.2	0.9	0.9	0.3	0.1	-237.9
EU-28	1.5	0.4	1.1	0.1	0.6	0.6	-0.2	-103.2
EA	1.3	0.5	0.9	-0.1	0.6	0.7	-0.3	-68.4

Source: Commission services

An alternative forward-looking fiscal measure of sustainability, the Intertemporal Net Worth, flags sustainability risks for almost all the EU Member States. The Intertemporal Net Worth (INW) ([52]) is defined as the total of the discounted sum of future primary balances under current policies and current net worth (the difference between assets and liabilities, i.e. the negative of net debt) ([53]). The results for INW are presented in Table 3.6, which also summarises the relevant information on the S2 components. The INW is negative for all Member States except Cyprus, Croatia and Ireland, while it is strongly negative for Luxemburg and Slovenia. These results point to the need for further fiscal consolidation and reforms of welfare systems to keep age-related expenditures (pensions and health care) under control, in order to bring future liabilities in line with the capacity to generate assets.

3.2.5. The required structural primary balance

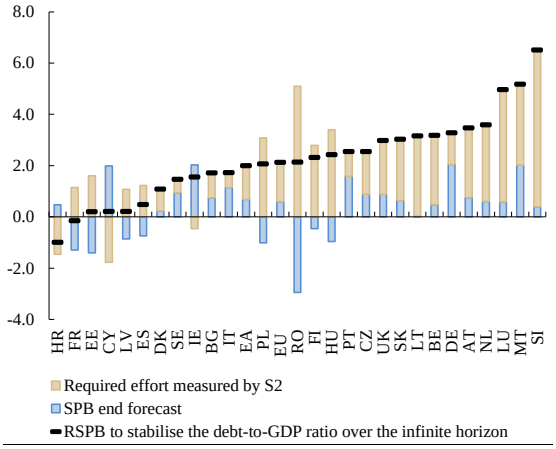
It is informative to examine, in addition to the fiscal gap measured by the S2 indicator, the overall size of the required structural primary balance (RSPB) to close the sustainability gap.

([52]) The INW indicator is calculated by using its direct correspondence with the S2 indicator. Data on assets are from AMECO - Financial assets: general government (see Annex A2 for the mathematical derivation of the INW from the S2 indicator).

([53]) See European Commission (2012a).

The RSPB is the sum of the structural primary balance in 2019 (i.e. end of forecast period) and the required additional effort measured by S2 to stabilise the debt ratio. The RSPB is estimated at 6.5% of GDP for Slovenia and at or slightly more than 5.0% of GDP for Malta and Luxembourg. Graph 3.8 shows that for sixteen Member States the structural primary surplus required to stabilise debt in the long term exceeds 2.0% of GDP.

Graph 3.8: **The required structural primary balance to stabilise the debt-to-GDP ratio over the infinite horizon (% and pps. of GDP)**



Source: Commission services

3.3. SENSITIVITY ANALYSIS OF SUSTAINABILITY INDICATORS

The S1 and S2 indicators are sensitive to changes in key assumptions of the baseline no-policy change scenario. Fiscal projections under the baseline scenario, which assumes that current fiscal policies remain unchanged in the medium or long term, are surrounded by uncertainties over a longer horizon. Given these uncertainties, risks can be assessed by comparing current fiscal policies with alternative scenarios. The two risk scenarios considered here are based on alternative health-care and long-term care projections ('AWG risk scenario') and the historical patterns of the structural primary balance ('historical SPB scenario') ([54]).

The 'AWG risk scenario' quantifies sustainability challenges arising from higher non-demographic cost drivers of health-care and long-term care spending. Sensitivity of the age-related spending to non-demographic cost pressures outlines the impact from rising healthcare and long-term care costs in excess of those expected from purely demographic factors. The drivers of upward pressures on health and long-term care spending are typically associated with technological changes (e.g. development of new drugs and treatments) and institutional factors (e.g. widening of healthcare coverage).

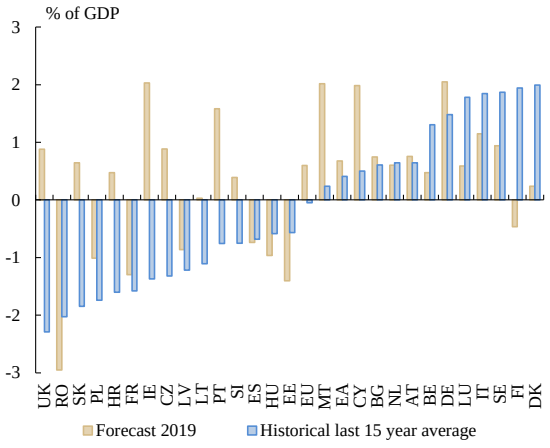
The 'historical SPB scenario' outlines sustainability challenges based on the past pattern of structural primary balances. The underpinning assumption is that the structural primary balance beyond the forecast period converges gradually over a 4-year horizon to the last 15-year historical average of structural primary balances. All the other macroeconomic assumptions are kept as in the baseline scenario.

The outcomes of the historical SPB scenario provide indications of oversized sustainability challenges. As illustrated in Graph 3.9, the structural primary balance after the last forecast year (2019) is significantly higher than the 15-year historical average for IE, the UK, SK, PT, CZ and HR. This suggests that a current high primary balance might lead to 'fiscal fatigue' beyond the medium term and thus fiscal sustainability risks might be greater than those outlined by the baseline fiscal sustainability gaps. By contrast, projections of a particularly loose current fiscal position after 2019 compared to the historical SPB average might not be the most likely outcome beyond the medium-term horizon. This suggests that risks to fiscal sustainability could be overestimated for some countries, such as Finland, Denmark and Luxembourg. As shown by Graphs 3.10 and 3.11, sustainability risks from the historical SPB scenario can be much higher or lower than those highlighted by the baseline scenario ([55]).

([54]) See Box 3.2 of this report for further details.

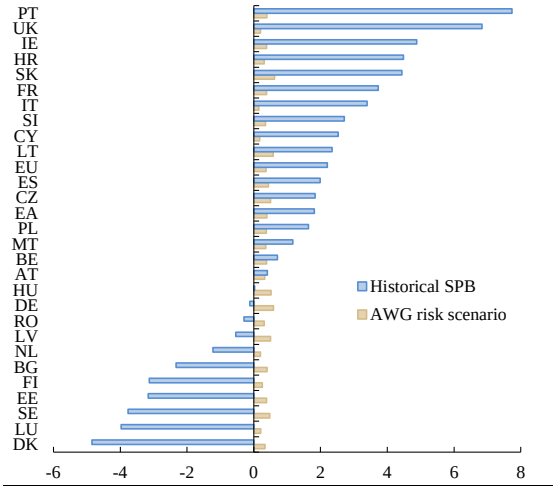
([55]) When interpreting results of fiscal indicators calculated over the historical SPB scenario, two different effects must be taken into account: one is clearly related to the different pattern between the historical SPB and its baseline; while the other one derives from the historical scenario's specific design (based on 4-year convergence period).

Graph 3.9: **The 15-year average of historical SPB average versus the SPB forecast in 2019**



Source: Commission services

Graph 3.10: **S1 - Difference from the baseline scenario (pps. of GDP)**



Source: Commission services

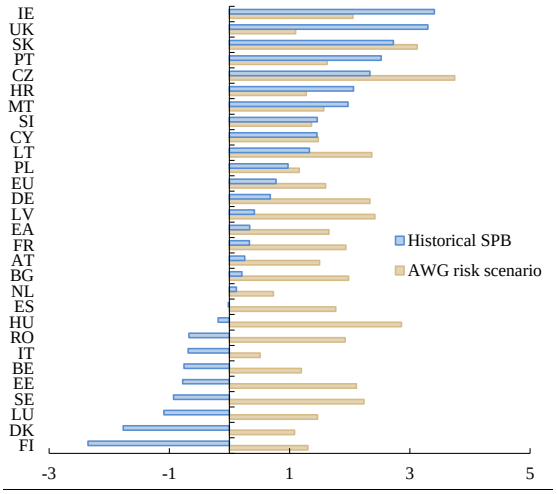
In the medium term, non-demographic related costs of ageing contribute to a higher S1 sustainability gap in all the EU countries. For the EU-28 and the EA, the cumulated adjustment required by 2024 to reach a debt-to-GDP ratio of 60% in 2032 under the AWG risk scenario, is around 0.4 pp. of GDP higher than under the baseline scenario. Across countries, the gap between the two scenarios ranges narrowly from 0.2 pp. of GDP for IT, LU, NL and the UK to 0.6 pp. of GDP for Germany, Lithuania and Slovakia (see Graph 3.10).

The required fiscal adjustment in the medium term relative to the historical pattern of structural primary balances varies widely across the EU. The required adjustment would be higher by 2.2 and 1.8 pps. of GDP for the EU-28 and the EA as a whole than under the baseline scenario. The deviations from the baseline required adjustment are above 4 pps. for IE, HR, PT, SK and the UK. A negative deviation is displayed by several countries, such as DK, LU, SE, EE, FI and BG, which implies that the fiscal consolidation history of these countries would envisage a better fiscal sustainability than in the baseline scenario. These gaps relative to the baseline are also higher than those resulting from the AWG risk scenario, as shown in Graph 3.10.

The long-term projections built around the non-demographic drivers on future health and long-term care costs imply a higher S2 sustainability gap. The AWG risk scenario requires a higher permanent adjustment than in the baseline scenario by around 1.6 pps. of GDP on average in the EU-28 and 1.7 pps. of GDP in the EA. Across the countries, the sustainability gap between the risk and the baseline scenarios varies from 0.5 pp. in Italy to 3.7 pps. of GDP in the Czech Republic. Coping with future cost pressures from non-demographic drivers would be more challenging for the Czech Republic, Hungary and Slovakia (see Graph 3.11).

The required permanent adjustment if the structural primary balance converged to its historical average varies also widely across countries. The fiscal sustainability gap would be by 0.8 and 0.3 pps. of GDP higher than in the baseline scenario for both the EU-28 and the EA as a whole. The deviations from the baseline required adjustment are above 2.0 pps. of GDP for IE, the UK, SK, PT, CZ and HR. Negative deviations from the baseline in the case of FI, DK, LU, SE, BE, EE, IT and RO reflect a more favourable history of fiscal balances, which requires a lower fiscal adjustment in order to ensure long-term sustainability.

Graph 3.11: **S2 – Difference from the baseline scenario (pps. of GDP)**



Source: Commission services

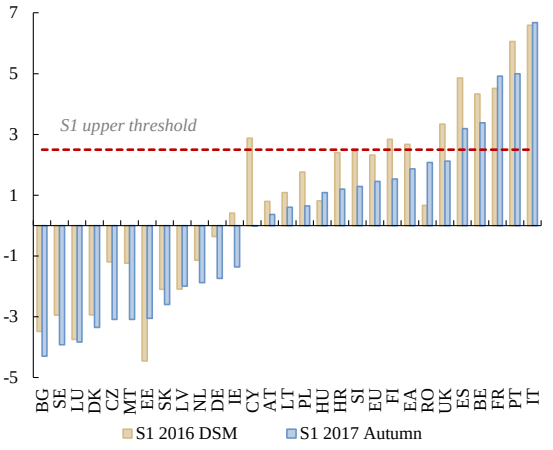
3.4. COMPARISON WITH PREVIOUS RESULTS

This section compares the results of the S1 and S2 indicators with those presented in the Debt Sustainability Monitor 2016 (DSM 2016 henceforth). Having maintained constant the cost of ageing between this report and the previous one ([56]), the variation in the fiscal indicators is mainly due to the changes in the initial budgetary position and/or the debt requirement (in relation to S1) ([57]).

Medium-term sustainability indicator

Medium-term sustainability risks continue to subside. The S1 sustainability gap is lower by 0.9 and 0.8 pps. of GDP for both the EU-28 and the EA as a whole. In the case of the EU-28, medium-term sustainability remains at medium risk, while for the EA the risk category improves from high to medium ([58]). As shown by Graph 3.12, most of the EU Member States have maintained their risk category, except for Cyprus, Finland and the UK, for which the sustainability risk improves from high to medium, and for Ireland, which improves from medium to low risk. Although the risk categories for RO, FR, HU and IT remained unchanged, the latest S1 results indicate that these Member States need a slightly higher fiscal adjustment to ensure medium-term sustainability. In the case of Estonia and Romania, the additional required adjustment is 1.4 pps. of GDP higher than estimated in the DSM 2016. The Member States with a substantial drop in their required adjustment include Cyprus (-3 pps. of GDP) as well as the Czech Republic, Malta and Ireland, with a reduction of just under 2 pps. of GDP in each of the three countries.

Graph 3.12: **S1 comparison with DSM 2016 (pps. of GDP)**



Source: Commission services

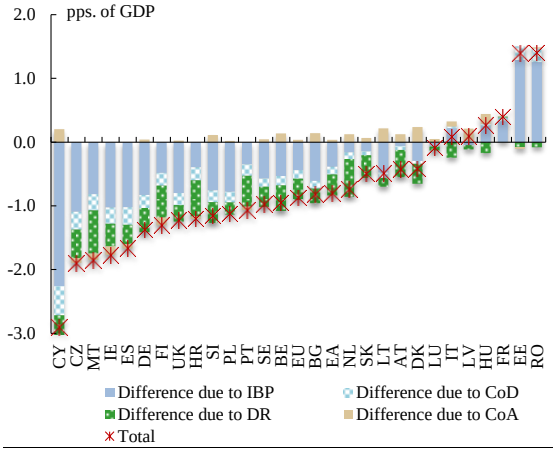
The improvement in medium-term sustainability risks in the EU-28 and the EA reflects, in almost equal measure, the improved budgetary position and the lower debt requirement. As shown in Graph 3.13, in the case of Estonia and Romania, the significant increase in the additional adjustment required to ensure medium-term suitability almost entirely reflects a deterioration in the initial budgetary position, in terms of a deterioration in the structural primary balance in this new round of forecasts. For the four Member States with the highest drop in their required adjustment required (Cyprus, Czech Republic, Malta and Ireland), the improved S1 indicator primarily reflects the improved initial budgetary position and also the significant contribution from the debt requirement, in line with the lower initial debt level.

([56]) Nevertheless, small changes are possible because of the different projection horizon.

([57]) The positive changes mean that the fiscal indicators and/or their components have increased between the DSM 2016 and this Report.

([58]) See DSM 2016 for a discussion on the limits of providing an overall risk assessment for the EU / EA based on GDP-weighted averages.

Graph 3.13: **Components of change in S1 (DSM 2017 based on Commission 2017Autumn forecast compared to DSM 2016 based on Commission 2016 Autumn forecast)**



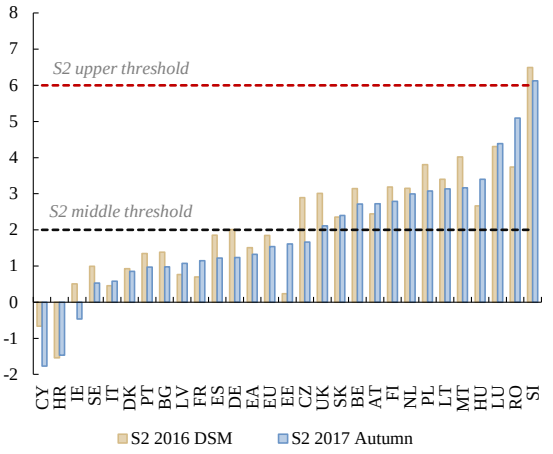
Source: Commission services

The S1 indicator for the EU-28 and the EA has fallen to its lowest level of the past five years. This may be seen from Graph 3.16, which shows a cross-country comparison by risk classification based on the S1 indicator along various waves of Commission forecasts ([59]). For the EU aggregate, the drop in the S1 indicator to 1.5 pps. of GDP on the basis of the autumn 2017 forecast follows a period since 2012 when the indicator appeared to broadly stabilise at around 2.0 pps. of GDP. This underlines the impact of the continued consolidation effort and structural reforms undertaken in the aftermath of the economic and financial crisis, as well as the improved economic outlook. The number of high-risk countries had widened from five to nine between 2012 and 2014, while five countries (IT, PT, FE, BE and ES) are classified as facing high risk in the medium term in this edition of the Debt Sustainability Monitor Report.

Long-term sustainability indicator

Long-term sustainability risks have also declined in a large majority of Member States. Compared to the DSM 2016, the S2 sustainability gap has fallen by 0.3 pps. of GDP for the EU-28 and 0.2 pps. of GDP for the EA. The risk categories for the EU-28 and the EA remain unchanged at low risk, as Graph 3.14 shows. The only Member State with a different long-term risk category compared to the DSM 2016 is the Czech Republic, whose risk profile improves from medium to low risk. Slovenia, although still at high risk, is closer to the medium-risk threshold. Among countries at medium-risk, the latest results indicate greater long-term fiscal sustainability challenges for Romania, Hungary and Austria.

Graph 3.14: **S2 comparison with DSM 2016 (pps. of GDP)**

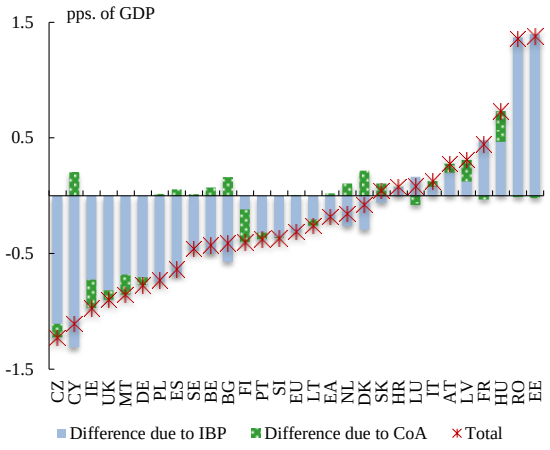


Source: Commission services

When an infinite horizon is taken into account (S2), the required adjustment due to the IBP components has become tighter in nine countries, and in Romania and Estonia the change is larger than 1.0 percentage point of GDP compared to the DSM 2016 (see Graph 3.15).

([59]) The threshold value between the medium and high risk categories has been set to reflect the 0.5 pps. of GDP benchmark fiscal consolidation effort per year (over 5 years) since the Spring 2015 forecasts; while previously the adjustment period was assumed to end by 2020. So, in the FSR 2012 the threshold was set at 3.0 pps. of GDP to reflect a fiscal adjustment period of 6 years and later it was further reduced to 2.5 and 2.0 pps. of GDP (Spring and Autumn 2014).

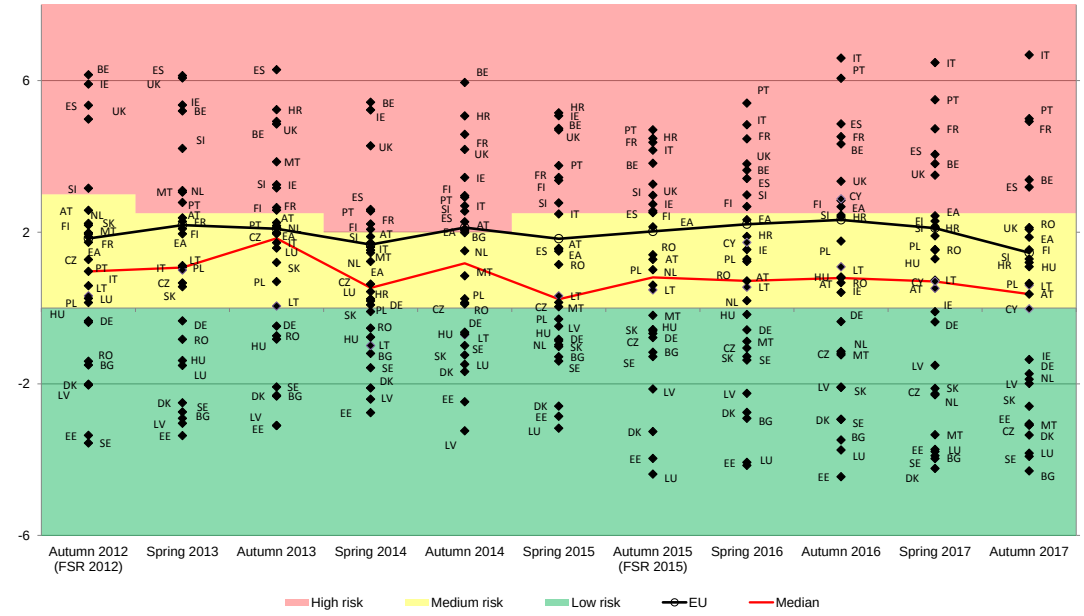
Graph 3.15: **Components of change in S2 (DSM 2017 based on Commission 2017 Autumn forecast compared to DSM 2016 based on Commission 2016 Autumn forecast)**



Source: Commission services

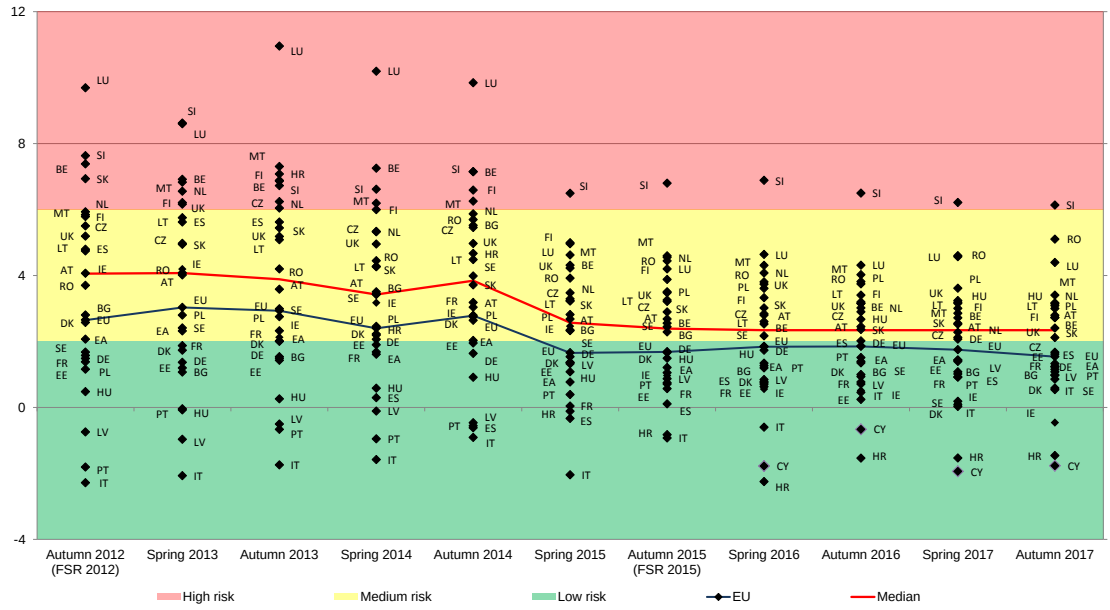
The number of Member States with a low risk for long-term sustainability increased from seven in autumn 2014 to sixteen in the current DSM. This is seen in Graph 3.17, which allows a comparison between values of the S2 indicator across consecutive Commission forecast vintages (from autumn 2012 up to autumn 2017). The S2 sustainability gaps for the EU-28 and the EA, which were at medium-risk until 2014, followed an overall downward trend over the past five years. This reflects the fiscal consolidation undertaken following the economic and financial crisis, as well as the general improvement in pension projections in the 2015 Ageing Report as result of more favourable demographic assumptions and the impact of enacted pension reforms. In the case of Ireland, Spain and Latvia, the volatility of the long-term fiscal sustainability gap results from an initial weak budgetary position around the years of the economic and financial crisis, followed by strong consolidation thereafter. The improvements in the S2 indicator for Luxembourg and Slovenia reflect to a large extent changes in the long-term projection of age-related expenditure.

Graph 3.16: **The S1 sustainability indicator across Commission forecast vintages (pps. of GDP)**



Source: Commission services

Graph 3.17: **The S2 sustainability indicator across Commission forecast vintages (pps. of GDP)**



Source: Commission services

Box 3.1: A complementary tool to monitor fiscal stress

Over the recent years, the Commission has developed a comprehensive toolkit to monitor fiscal risks, in particular those likely to materialize in the short-term. Following the euro area sovereign debt crisis, the Commission substantially enhanced its fiscal surveillance framework, with on one hand, successive reforms of the Stability and Growth Pact, and on the other hand, the introduction of new tools to assess fiscal sustainability risks (see European Commission (2016a) for a comprehensive presentation). In particular, an early warning indicator of fiscal stress (the S0 indicator) was developed in 2011 (Berti et al., 2012; European Commission, 2011), based on a non-parametric 'signalling approach', with a view to detect first signs of fiscal distress.

Complementing the Commission analysis of short-term fiscal risk based on the S0 indicator with an additional model-based tool could be useful. The literature on early warning systems (EWS) distinguishes between different methodological approaches. The 'signalling approach', used for the S0 indicator, has gained popularity over the last few years (De Cos et al., 2014), in particular because it allows the consideration of a large set of variables with heterogeneous data availability. There is nonetheless no clear *a priori* methodological superiority of this approach compared to other, model-based, approaches (Baldacci et al., 2011), each method presenting its own strengths and weaknesses (see Table 1) ([1]). Other institutions rely on scoring systems (see Lennkh et al., 2017 for the ESM; rating agencies).

Table 1: **Comparison of two different early warning indicators' approaches**

	Signalling approach (used for S0)	Regression approach (used for L0)
Description	Composite fiscal stress indicator calculated as the weighted proportion of variables signalling fiscal stress. A variable signals fiscal stress when it reaches a value at or beyond a certain threshold. This threshold is determined endogenously (for each variable and the composite indicator) so that it minimises the number of incorrect (false negative / positive) signals. The weight used for each variable entering the composite indicator is determined by its signalling power.	Panel model where the probability of fiscal stress (dependent binary variable that takes value 1 if a 'crisis' occurs) is regressed on a set of 'independent' variables. The threshold beyond which the probability is considered as signalling a 'crisis' can be determined *ex-post* so that it minimises false negative / positive signals.
Advantages	Non-parametric approach. Accommodates for differences in data availability in unbalanced panels. Allows incorporating a large number of variables. Permits a relatively transparent mapping from individual variables to an aggregate index.	Takes into account correlations between variables and allows testing for their statistical significance. Enables including control variables. Provides an estimate of the probability of entering in fiscal distress.
Limits	Focuses on bivariate association between a trigger variable and crises, without controlling for other factors. Hence, correlations between (explanatory) variables are ignored. Statistical significance of each early warning variable cannot be tested directly.	Relies on a pre-defined functional form (logit / probit). Requires longer time-series. Limits the number of variables to be used (to preserve degree of freedom). Threshold used to determine whether a 'crisis' is signalled can be to some extent conventional.
Selected recent papers	De Cos et al. (2014) Berti et al. (2012) Baldacci et al. (2011)	Bassanetti et al. (2016) Catao et al. (2013) Gourinchas and Obstfeld (2012)

Source: Pamies Sumner and Berti (2017)

In this Box, a complementary fiscal stress indicator, based on a logit model (the L0 indicator), is estimated. This indicator presents the advantage of relying on a parsimonious set of variables that have been tested for their conditional statistical significance. It also allows taking into account correlations between variables and is found to have an overall satisfactory in-sample performance (see Pamies Sumner and Berti, 2017). The reduced model obtained is very close to Gourinchas and Obstfeld (2012). One of the drawbacks of this approach however is that some variables cannot be included in the regressions, despite their potential 'signalling' value, due to data gaps. The logit model confirms the importance of monitoring macro-financial variables to assess countries' vulnerabilities to fiscal distress (such as private credit flows, current account balances and GDP growth; see Table 2). It also provides some evidence that the change in the public debt ratio is a particularly important predictor of fiscal distress events (as in Bassanetti et al., 2016).

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([1]) The two main approaches used in the literature are presented in Table 1. However, some studies rely on less standard statistical techniques such as classification tree analysis (e.g. Manassee and Roubini, 2009), or extreme bound analysis (e.g. Bruns and Poghosyan, 2016).

Box (continued)

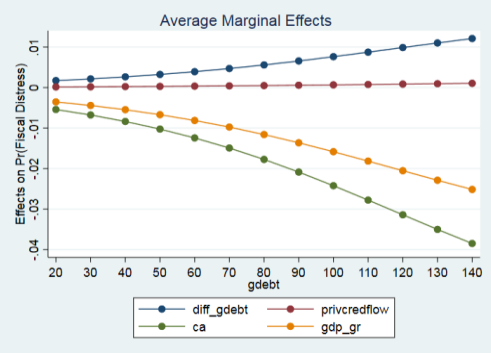
Table 2: **Logit regression results (dependent variable: probability of fiscal distress)**

VARIABLES	Coefficients	Average marginal effects
L1.gross public debt (% GDP)	0.0339***	0.00109***
	(0.0114)	(0.000372)
L1.change in gross public debt (% GDP)	0.111*	0.00358*
	(0.0576)	(0.00189)
L1.private sector credit flows (% GDP)	0.00955*	0.000308*
	(0.00532)	(0.000170)
L1. current account balance (3-year backward MA, % GDP)	-0.353***	-0.0114***
	(0.0619)	(0.00239)
L3.real GDP growth (%)	-0.231***	-0.00744***
	(0.0615)	(0.00228)
World GDP growth	-0.578***	-0.0186***
	(0.150)	(0.00511)
Constant	-4.819***	
	(0.910)	
Observations	416	
Number of id	28	
Pseudo R2	0.393	
Log likelihood	-48.70	
AUROC	0.927	
Fixed effects	no	

(1) The AUROC is a measure of overall predictive accuracy of the model. An uninformative model would have a value of 0.5; a perfect predictor would have a value of 1.
Marginal effects of a given regressor measure the change in probability for one unit change in the regressor. Given the non-linearity of logit models, these marginal effects are not constant (i.e. their values change with the regressors' values). Therefore, these effects are calculated for each value of the regressor and then averaged. Average marginal effects appear on the whole relatively low, given the rare occurrence of fiscal distress events in our set of advanced economies (as compared to emerging economies). Most of variables are lagged, and 'best' lags in terms of significance and predictive power are kept.
Source: Pamies Sumner and Berti (2017)

The level of public debt would particularly matter in the presence of macro-competitiveness imbalances. An interesting feature of the model-based approach is that it allows accounting for the correlation between the different variables. Illustrating the interactions between macroeconomic and fiscal sides, the impact of macro-competitiveness variables on the probability of fiscal distress is found to increase with the level of public debt (see Graph 1). In other words, macroeconomic imbalances are more likely to trigger fiscal distress events when fiscal vulnerabilities are at the same time important ([2]).

Graph 1: **Average marginal effects on the probability of fiscal distress of explanatory variables depending on the public debt level**



(1) gdebt stands for the gross public debt to GDP ratio, diff_gdebt stands for the change in the gross public debt to GDP ratio; privcredflow stands for private credit flows to GDP ratio; ca stands for the 3-year moving average of current account balances (as a share of GDP) and gdp_gr stands for real GDP growth.
Source: Pamies Sumner and Berti (2017)

The L0 indicator confirms to some extent the signal sent by the S0 indicator for the upcoming year, with some nuances however. The logit model can be used to calculate the probability for a given country to be at risk of fiscal distress in the upcoming year (2018) based on the estimated coefficients presented in Table 2, and the contemporaneous (2017) or lagged values of the explanatory variables ([3]). Based on the values available at the time of the A*utumn forecast 2017*, two countries are found to have a probability of fiscal distress in the short-term above the critical risk threshold: the United-Kingdom and Cyprus. These results are to some extent in line with the signal sent by the sub-indexes composing S0, showing vulnerabilities on the macro-financial side in Cyprus and on the fiscal side in the United-Kingdom. However, these vulnerabilities do not appear sufficient to lead to risks of fiscal distress in the short-term according to the S0 overall indicator (see Table 3).

Contrary to the L0 indicator, the S0 indicator allows considering several additional factors, mitigating short-term

([2]) Differently to a linear model, with a logit model, marginal effects are not constant and depend on the values of the regressors (see also explanations accompanying Table 2).

([3]) Only for the world GDP growth, a forecast value is used (as this variable is not lagged in the model, see Table 2).

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Box (continued)

risks of fiscal stress. For instance, in the case of the United-Kingdom, the long average maturity of public debt (around 15 years versus 7 years on average in the euro area) ([4]) helps containing public gross financing needs (despite an elevated stock of public debt) ([5]). This variable, which has a relatively important signalling power, cannot be included in the logit approach, given data limitations. In the case of Cyprus, (official) loans make up a large share of public debt (around 67% according to Eurostat in 2016, against an EU average of 15%), the country having benefitted in recent years from loans of the ESM and other international assistance ([6]). Therefore, public gross financing needs (here proxied by the sum of the budgetary deficit and debt securities' amortizations) are limited. This also contributes to reduce short-term risks of fiscal stress. On the macro-financial side, several variables that could not be included in the L0 indicator are also relatively better oriented in the United-Kingdom (e.g. net international investment position).

The L0 indicator permits to identify cases that need to be more closely monitored despite contained risks to date. For example, in some countries (such as the United-Kingdom, Cyprus and to a lower extent, Italy and France), given the high (and sometimes non-decreasing) level of public debt, any (further) deterioration of macroeconomic indicators (e.g. current account balance, GDP growth), or public debt dynamics could expose these countries to changes in financial markets' risk appreciation.

Table 3: **'Signal' of fiscal distress in the upcoming year: S0 and sub-indexes versus logit model**

	S0	Fiscal sub-index	Fin.-compet. sub-index	L0
BE	0.35	0.35	0.34	1.8%
BG	0.25	0.00	0.39	0.0%
CZ	0.19	0.00	0.28	0.1%
DK	0.30	0.08	0.41	0.0%
DE	0.08	0.00	0.12	0.0%
EE	0.20	0.09	0.25	0.1%
IE	0.28	0.19	0.32	0.0%
ES	0.37	0.57	0.27	0.7%
FR	0.24	0.43	0.13	3.0%
HR	0.20	0.08	0.26	0.3%
IT	0.36	0.47	0.31	3.6%
CY	0.44	0.19	0.57	5.9%
LV	0.24	0.08	0.33	0.2%
LT	0.21	0.00	0.33	0.6%
HU	0.39	0.61	0.27	0.1%
NL	0.20	0.00	0.31	0.0%
AT	0.07	0.07	0.07	0.3%
PL	0.25	0.08	0.34	0.4%
PT	0.36	0.31	0.39	2.7%
RO	0.20	0.22	0.18	0.3%
SI	0.13	0.07	0.16	0.1%
SK	0.30	0.09	0.40	0.4%
FI	0.10	0.08	0.11	1.5%
SE	0.12	0.00	0.19	0.0%
UK	0.42	0.45	0.40	6.9%
threshold	0.46	0.36	0.49	5.5%

(1) For the S0 overall index, fiscal and financial-competitiveness sub-indexes, the usual thresholds are used (0.46, 0.36 and 0.49 respectively). For the L0 indicator, we use a critical threshold of 5.5%, which is the one found to minimise type I and type II errors (see Pamies Sumner and Berti, 2017). As explained before, the nature of the two indicators is different and the values should not be interpreted in the same fashion (in the case of S0, the values correspond to the weighted proportion of variables signalling a risk of fiscal distress; in the case of L0, the values correspond to the estimated probability of being at risk of fiscal distress).
Source: Commission services

([4]) See ECB debt securities data (August 2017).
([5]) Another important, more qualitative factor, is the monetary policy framework.
([6]) For instance, in 2016 and 2017, official loans represented over 60% of total public debt according to national figures (Cyprus DPMO).

Box 3.2: Long-term fiscal sustainability assessment: ways to strengthen the interpretation of the S2 indicator

Ensuring long-term fiscal sustainability has been a long-standing concern in the EU. Since the early 2000's, the European Commission (DG ECFIN) and the Council (Economic Policy Committee) have prepared on a regular basis long-term budgetary projections (published in the Ageing Report). Building on Blanchard et al. (1990) seminal work, the European Commission introduced in the 2006 Sustainability Report a long-term fiscal gap indicator named the S2 fiscal sustainability indicator, taking into account these long-term budgetary projections. Since then, long-term fiscal sustainability has been mainly assessed through the S2 indicator.

The S2 fiscal sustainability indicator constitutes a strong benchmark to measure long-term fiscal sustainability challenges. First, the S2 indicator relies on a well-grounded theoretical framework i.e. the inter-temporal budget constraint (IBC). Indeed, this indicator measures the immediate and permanent budgetary adjustment required to fulfil the IBC over the infinite horizon. It holds under a no-Ponzi game condition, according to which the government does not roll over its debt by continuously issuing new debt (see Annex for more details and Escolano, 2010). As a starting point, it uses the primary balance adjusted for the cycle (SPB) as a neutral proxy for 'no-fiscal policy change'. Then, because of its very long-term perspective, the S2 indicator allows gauging the 'full' scale of the fiscal sustainability challenge due to population ageing over the coming decades. Furthermore, it provides a benchmark value of the size of fiscal imbalances, without relying on any ad hoc debt target ([1]). The IBC 'only' implies that public debt stabilises in the long-term, meaning covering future debt servicing and costs of ageing. Finally, the computation of the S2 indicator relies on commonly agreed methodologies and assumptions, fulfilling the double objective of transparency and comparability across EU Member States.

However, the S2 indicator presents a number of shortcomings. Thus, complementary indicators and scenarios need to be considered to strengthen the reading and interpretation of this indicator.

First, the S2 indicator is based on underlying assumptions that are subject to significant uncertainties. This issue has been highlighted in previous Fiscal Sustainability Reports and is inevitable when projecting developments in public finances over a long period of time. For example, gains in life expectancy have often been under-estimated in the past (e.g. Balassone et al, 2008). Future developments in total factor productivity (TFP) growth in the far future are equally difficult to predict (e.g. Crafts and Mills, 2017). Convergence trends assumed in the central scenario (e.g. regarding interest rates, unemployment rates) are also subject to uncertainties. Another type of uncertainties relates to policy implementation risks, given the typical long phasing-in of some reforms (in particular, pension reforms). Moreover, the value of the S2 indicator critically depends on the initial budgetary position, which can rapidly change especially during crisis periods.

Looking at past projection exercises, some countries have seen large revisions in their S2 sustainability indicator (see Graph 1), either due to swings in their initial budgetary position (e.g. Ireland, Spain and Latvia), or to revisions in demographic projections with strong impacts on projected costs of ageing (e.g. Luxembourg and Slovenia) ([2]). The revisions in the risk classification have been somehow more limited.

([1]) On the other hand, the S1 indicator, which relies on a finite version of the budget constraint, imposes a convergence to a debt target of 60% of GDP (in line with SGP provisions) in around 15 years.

([2]) Of course, in other cases, revisions have been driven by reforms, especially in the area of pensions.

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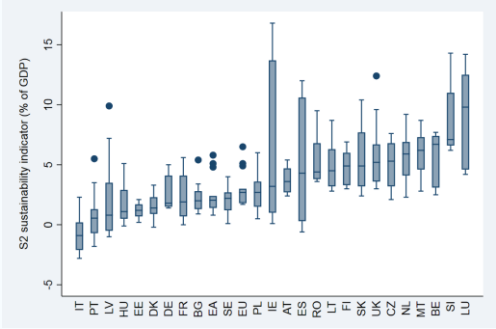
Box (continued)

Graph 1: **Summary distribution of the estimations of the S2 sustainability indicator over the last 15 rounds of projections for EU Member States (pps. of GDP)**



(1) Each box plot illustrates the distribution of the S2 sustainability indicator over the last 15 rounds of projections, from 2009 until 2017 by each EU Member State. The middle line subdividing the box represents the median, while the length of the box represents the interquartile range. For instance, the top and the bottom of the box correspond to the 75th and 25th percentile values. The top and bottom branches represent the upper and lower adjacent values of the S2 indicator, i.e. the maximum and the minimum values excluding the outliers. The dots beyond the branches correspond to outlier values, e.g. more or less than 3/2 times of the upper or lower quartile respectively.
Source: Commission services

In order to strengthen the interpretation of the S2 indicator, due account should be given to sensitivity analysis. In this report, as in the DSM 2016 and the FSR 2015, two main alternative scenarios are considered (see also section 3.3): the *'AWG risk scenario'* assuming a faster growth of health-care and long-term care costs (due to non-demographic drivers such as technological change and institutional factors e.g. related to coverage) ([3]); the *'historical SPB scenario'* assuming that the structural primary balance converges back to its historical average. This last scenario can be deemed more 'appropriate' in countries having strongly consolidated their public finances in recent years – compared to past more 'profligate' behaviours. In this Box, we complement these standard sensitivity tests by three additional ones: the *'population scenario'* where a two year additional increase in life expectancy at birth in the long-term is assumed (compared to the central scenario); the *'TFP risk scenario'* where TFP growth is assumed to converge to 0.8% in the long-term instead of 1% in the central scenario; the *'interest rate scenario'* where long-term interest rates are assumed to converge to higher values in the long-run compared to the central scenario (4% in real terms against 3% in the central case) ([4]).

The sensitivity of the S2 indicator to underlying assumptions differs across countries depending on structural and institutional factors. For instance, countries with automatic adjustment mechanisms in their pension systems appear more resilient with respect to an increase in life expectancy (e.g. Cyprus, Latvia and Slovakia; see Table 1 'population scenario'). Indexation rules of social benefits are equally important for the sensitivity of the S2 indicator to productivity developments. In countries where pension benefits are indexed to wages, the S2 indicator is largely immune to changes in productivity growth, compared to countries with price-indexation (e.g. France and Italy, see 'TFP risk scenario'). The degree of maturity of social security systems is another key factor implying that countries will be more or less vulnerable to alternative assumptions on health-care and long-term care trends. For example, when considering non-demographic drivers, the Czech Republic, Slovakia and Hungary record much higher long-term fiscal gaps due to important catching-up effects (see 'AWG risk scenario'). In Member States, where fiscal policy was historically 'looser' than over recent years, converging back to past behaviours would imply a larger fiscal gap to ensure long-term fiscal solvency (e.g. Ireland, the United Kingdom, Slovakia and Portugal, see 'historical SPB scenario'). Finally, higher interest rates tend to have overall smaller impacts on the S2 indicator. On one hand, higher interest rates increase future interest payments, entailing a higher fiscal adjustment needed to meet the IBC; on the other hand, higher interest rates decrease the present value of future ageing costs, lowering fiscal gaps. The first effect dominates in countries such as Croatia, Italy, France and Portugal, while the latter one is more pronounced in Luxembourg and Malta (see 'interest rate scenario').

([3]) More details can be found in the Ageing Report 2015.

([4]) An additional alternative scenario with more adverse developments in the labour market (e.g. a lower employment rate compared to the central scenario) could also be envisaged.

(Continued on the next page)

Box (continued)

Table 1: **The S2 sustainability indicator under different scenarios**

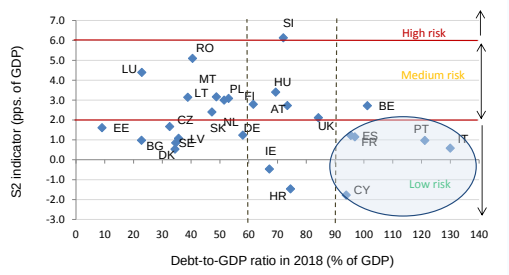
	S2 central scenario	S2 Alternative scenarios					Standard deviation
		Population	AWG risk	Historical SPB	TFP risk	Interest rate	
BE	2.7	4.1	3.9	2.0	3.3	3.1	0.8
BG	1.0	1.6	3.0	1.2	1.0	0.8	0.7
CZ	1.7	2.7	5.4	4.0	1.9	1.6	1.4
DK	0.9	2.0	1.9	-0.9	0.7	0.9	0.9
DE	1.2	3.0	3.6	1.9	2.2	1.4	0.9
EE	1.6	2.3	3.7	0.8	1.7	1.6	0.8
IE	-0.5	0.6	1.6	2.9	-0.1	0.2	1.1
ES	1.2	2.2	3.0	1.2	1.6	2.0	0.7
FR	1.1	2.2	3.1	1.5	1.9	2.1	0.6
HR	-1.5	-0.7	-0.2	0.6	-1.1	-0.1	0.8
IT	0.6	1.4	1.1	-0.1	1.4	1.7	0.5
CY	-1.8	-1.7	-0.3	-0.3	-1.4	-1.2	0.7
LV	1.1	1.4	3.5	1.5	1.2	1.3	0.9
LT	3.1	3.9	5.5	4.5	3.3	3.5	0.8
LU	4.4	5.2	5.9	3.3	5.2	3.8	0.9
HU	3.4	4.2	6.3	3.2	3.7	3.4	1.0
MT	3.2	4.5	4.7	5.1	3.2	2.7	1.2
NL	3.0	4.4	3.7	3.1	2.8	2.8	0.6
AT	2.7	3.7	4.2	3.0	3.2	2.8	0.5
PL	3.1	3.5	4.2	4.1	3.3	3.1	0.4
PT	1.0	2.2	2.6	3.5	1.8	1.8	0.9
RO	5.1	5.5	7.0	4.4	5.4	5.2	0.7
SI	6.1	7.3	7.5	7.6	6.2	5.9	0.8
SK	2.4	2.7	5.5	5.1	2.6	2.2	1.4
FI	2.8	3.8	4.1	0.4	3.3	3.0	1.3
SE	0.5	1.5	2.8	-0.4	0.5	0.5	0.9
UK	2.1	3.2	3.2	5.4	2.2	2.5	0.8
EU28	**1.5**	**2.7**	**3.1**	**2.3**	**2.0**	**2.0**	**0.5**
EA	1.3	2.5	3.0	1.7	2.0	1.9	0.5
Median	**2.1**	**3.2**	**4.0**	**2.9**	**2.3**	**2.2**	**0.7**
St. deviation	1.8	1.9	2.0	2.2	1.8	1.6	:

Source: Ageing Report 2015, Commission services

Second, appraising the feasibility of possible government actions is also important when interpreting the values of the S2 indicator. As pointed in Blanchard et al. (1990), what a positive fiscal gap implies depends to some extent on the initial value of the primary balance. If it is already at a high level (either due to a high level of taxation or suppressed spending levels), any additional adjustment, even if small, may be difficult to achieve for a given country. Therefore, in this report, as in the DSM 2016 and the FSR 2015, the 'required structural primary balances' ([5]) are calculated and benchmarked to the history of primary balances in the EU. In some countries, such as Italy and Portugal, the S2 indicator stands at a low level, below the critical threshold of 2 pps. of GDP (used to define the medium risk category), yet, given the relatively high initial primary balance, the required sustained primary balance appears high compared to historical standards (see associated percentile ranks below or close to 15% in the summary heat map presented in Annex A9) ([6]).

Third, as well known, the S2 indicator largely abstracts from risks linked to high debt levels. The intertemporal budget constraint does not require that the debt level stabilises at a specific value, and the adjustment implied by the S2 indicator might in fact lead to debt stabilising at relatively high levels. By looking at the S2 values and the current level of public debt ratio, only a weak relationship between the two is found (see Graph 2). Some countries are deemed on a sustainable long-term path (*low* fiscal sustainability gaps) despite their initial high level of debt, such as Italy and Portugal. The reading of the S2 indicator needs therefore to be made in conjunction with the analysis of shorter-term developments, in particular linked to debt levels.

Graph 2: **S2 indicator and initial public debt ratio**



Source: Commission services

([5]) The required structural primary balance is simply the sum of the base year structural primary balance and required adjustment estimated by the S2 indicator.

([6]) Another related aspect concerns the use of the S2 indicator for policy recommendations. As pointed in the past, the S2 indicator taken alone cannot be considered as a direct policy indicator. It gives a benchmark measure of fiscal imbalances, and of their drivers, but neither informs on the optimal sequence of primary balances, nor on how they should be achieved. However, the Commission developed a horizontal assessment framework, based on the S2 indicator and other approaches, as a basis to address sustainability-related country recommendations (see Eckefeldt et al., 2014).

4. ADDITIONAL RISKS AND MITIGATING FACTORS FOR DEBT SUSTAINABILITY

This chapter discusses extra information useful in assessing debt sustainability. The factors presented here do not enter the calculation of sustainability indicators and do not influence the risk classification. However, they provide a valuable context to understand the variables and methods previously described in this report.

The public debt profile (or public debt "structure"), government contingent liabilities, and certain government assets are relevant when assessing a country's overall sustainability of public finances. These factors help answer some important questions: *i)* liquidity-related: within the actual explicit level of government liabilities, which share has a short remaining maturity, is volatile or entails currency risks? *ii)* solvency-related: is the actual explicit level of government liabilities accurate? Is there a risk that government liabilities grow larger, how large can they become if risks materialise, and which back-stops on the assets side can be exploited to mitigate the risks?

4.1. RISKS RELATED TO PUBLIC DEBT PROFILE

The structure of public debt financing by maturity, creditor base or by currency of denomination can describe more in detail additional risks associated with public debt. With this aim, three variables of debt profile are used ([60]): i) the share of short-term debt in total public debt (at original maturity); ii) the share of debt denominated in foreign currency in total public debt, and iii) the share of debt held by non-residents in total public debt. Each of these variables is analysed using thresholds of fiscal risk obtained through the signals' approach, the same as in the computation of S0 ([61]), and fiscal risk levels are determined accordingly, i.e.: i) high risk (red), if the results are at or above the threshold of fiscal risk from the signals' approach; ii) medium risk (yellow), if the results 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. The results are reported for all countries in the form of a joint heat map (Table 4.1) and separately for each country in the statistical fiches in Annex A10.

A large share of short-term public debt – that is, debt with a maturity of less than one year - indicates higher rollover risk at any given debt level as it implies that a government relies on temporary market financing. From this angle, fiscal risks exist for most countries except Bulgaria, Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Austria, Poland, Slovenia and Slovakia (Table 4.1). These liquidity risks associated to short-term debt can be mitigated if a country is able to roll this debt over to longer maturities and, in the case of external short-term debt, by the level of a country's international reserves ([62]).

A large share of debt in foreign currency entails risks related to exchange rate fluctuations. As advanced economies finance themselves overwhelmingly in their own currency, currency-related fiscal risks are largely absent for the EU countries that have adopted the euro (Table 4.1.). However, foreign currency-denominated debt may pose risks in some Central and Eastern European countries (CEEC) - Bulgaria ([63]), Czech Republic, Croatia, Poland and Romania - which have higher exposure to exchange rate risks. For these, hedging of foreign currency positions can mitigate such risks ([64]), whereas pegs or currency boards also significantly reduce exposure to fiscal risks from the share of public debt in foreign currency ([65]).

A large share of public debt in the hands of non-residents may be a sign of volatility of capital holdings, though it can also signal strong

([60]) See European Commission (2014b).

([61]) For details on the signals' approach see Chapter 1 of the European Commission (2016). This methodology shows that, based on historical events, the three variables appear to be very good leading indicators of fiscal stress. See Annex A1 and Chapter 3 for more details.

([62]) These qualifiers are not considered in the DSM. 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 flows and its capacity to service its short-term external debt.

([63]) 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.

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

([65]) 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 (2017b) - Chapter 2, Box 2.2.

confidence in a well-performing economy ([66]). In the heat map 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 v Germany (right side of the shaded cells). Several countries with large shares of foreign held public debt are at this juncture associated with creditor confidence (Belgium, Ireland, France, Latvia, Lithuania, Austria, Slovenia, Slovakia and Finland), whereas for Poland, Cyprus and Portugal this large share of foreign held debt is more prone to volatility due to high sovereign risks and speculative investment.

However, certain international creditors pose no fiscal risks, this being the case for lenders such as the IMF, EFSF, ESM or other institutions associated to adjustment programmes. A more detailed breakdown of government debt by holder shows that a few countries potentially at risk according to the broader foreign creditor base indicated above (Portugal, Cyprus, Ireland) feature such stable sources of lending (Graph 4.1). In other EU countries debt mostly shifted in the past two years either to domestic central banks or to financial sector holders from the rest of the EA. For almost all EA countries the signals of investor confidence illustrated in Table 4.1 are confirmed by two aspects: for larger EA economies, comparatively more significant shares of government debt are in the hands of non-EA central banks (the case of Germany, France, the Netherlands, Belgium, Austria, Finland); for smaller EA economies, the rest of the EA financial sector has become a more important holder of government debt than these issuers' domestic financial sector.

The analysis of risks arising from the debt profile need not be confined to these indicators and the associated benchmarks. Other factors, some of which mentioned above, such as the exchange rate regime, the role of the central bank in mitigating short-term liquidity needs, the capacity of the market to absorb debt etc., 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, etc., may also be important in this regard.

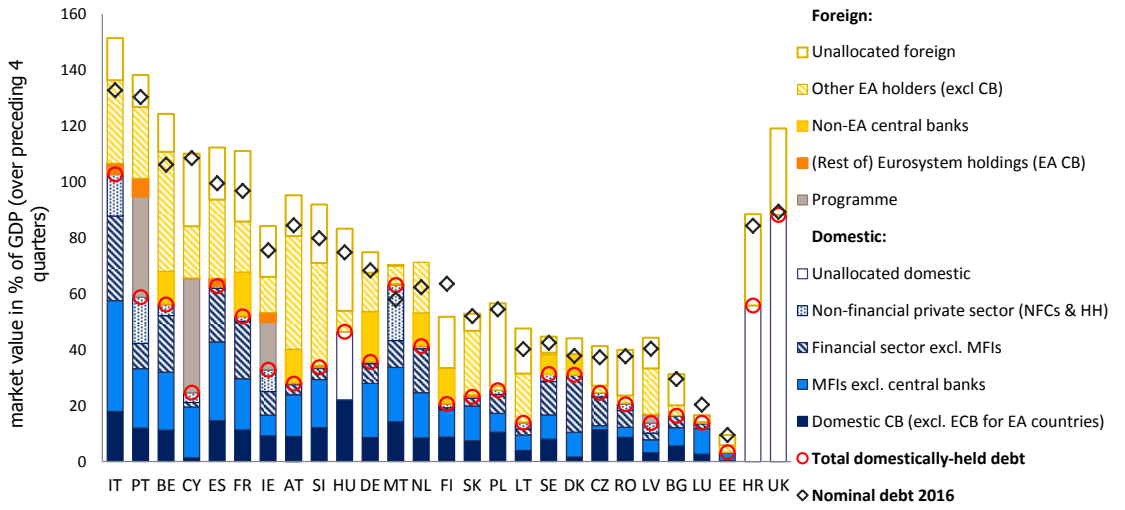
([66]) Moreover, when government debt is traded on the secondary market, is it sometimes difficult to keep track of the residency of the creditors.

Table 4.1: **Risks related to the public debt profile, by country (2016)**

	Short-term public debt (original maturity)	Public debt in foreign currency	Public debt held by non-residents
	Shares of total debt (%):		
BE	**7.9**	0.0	**54.1**
BG	0.3	**82.1**	48.7
CZ	0.9	**44.8**	42.2
DK	**11.3**	1.5	30.1
DE	**9.1**	4.4	47.5
EE	2.5	0.0	65.0
IE	6.3	4.8	**59.7**
ES	**8.7**	0.3	45.0
FR	**10.1**	2.8	**52.0**
HR	6.5	**76.5**	37.5
IT	**13.1**	0.2	32.7
CY	1.6	5.2	79.4
LV	3.4	15.9	**72.4**
LT	1.0	27.4	**69.3**
LU	**6.9**	0.0	35.7
HU	**18.5**	28.7	41.7
MT	6.1	0.0	10.5
NL	**10.4**	1.2	41.4
AT	4.9	1.1	**71.3**
PL	0.8	**35.1**	54.5
PT	**16.7**	8.6	58.2
RO	**6.9**	**52.4**	48.4
SI	4.8	0.1	**67.1**
SK	2.0	6.0	**52.8**
FI	**8.8**	1.7	**69.8**
SE	**21.6**	26.4	29.4
UK	**16.0**	0.0	n.a.

(1) One–off events in relation to short term debt may influence significantly its share in overall public debt – e.g. governments may choose to use short-term initial maturities due to interest rates. (2) The results in this heat map need also to be regarded in the broader perspective of shares of GDP; for Estonia for example this share is negligible. (3) Upper and lower thresholds: (i) Share of short-term public debt: upper threshold 6.57%; lower threshold 5.3%; (ii) Share of public debt in foreign currency: upper threshold 31.58%; lower threshold 25%; (iii) Share of public debt held by non-residents: upper threshold 49.01%; lower threshold 40%. Spread on 10-year; government bonds vs. Germany – 2016 average - upper threshold 231; lower threshold 185 (see also Annex A6 and A7). (4) Short-term debt shares for NL exclude currency and other deposits (data unavailable).
Source: Eurostat, ECB. ECB for the share of general government debt in foreign currency for DK, AT, FI, SE, UK; the share of public debt by non-residents for DK, and the average spread on 10-year government bonds v Germany; Eurostat for all the other cases.

Graph 4.1: **Holders of government debt, 2016-Q4, market value, % of GDP**



(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 grey 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 MFI is reported. The split between banks and central bank is an estimate based on annual nominal data. 'Non-EA central banks' refers to holdings by international organisations and non-EA central banks as reserve assets. 'International central banks' represents holdings of total debt securities issued by the country, not just government-issued securities.
Source: ECB, Eurostat, ECB financial accounts for domestic, Eurostat IIP and IMF CPIS for foreign holdings. Minor sources: Government finance statistics and ECB MFI balance sheets (for CB holdings), Commission and IMF (for programme liabilities).

4.2. RISKS RELATED TO GOVERNMENTS' CONTINGENT LIABILITIES

Government liabilities may be direct or contingent, explicit or implicit, depending on the criterion used for classification (Box 4.1). General government gross debt (Maastricht or EDP debt) used for debt sustainability analysis in the other chapters of this report constitutes direct explicit liabilities on the government's balance sheet at a given point in time. Governments incur such liabilities through borrowing (short- and long-term loans or debt securities, e.g. bonds) or in the form of currency and deposits. ([67]) Beyond this measure, there are other government commitments which could usefully indicate future fiscal risks. These commitments represent implicit and contingent liabilities, an area in which estimation methods are still developing and depend largely on the available reporting by countries.

([67]) For the definition of Maastricht debt and the instruments not included in it (SDR allocations, liabilities related to insurance, pensions and standardised guarantees and other accounts, payable) see section 5.3 and Annex A9 of the European Commission (2016).

The contingent liability risk analysis module of this report consists of three tools: *i)* statistics on explicit contingent liabilities – state guarantees, *ii)* statistics on potential triggers for contingent liabilities, and *iii)* model estimations of implicit contingent liabilities using bank stress scenarios (SYMBOL model) – Box 4.2, section 4.2.1.and section 4.2.2.

4.2.1. Contingent liabilities, primarily related to the banking sector

The banking sector is often the main trigger of contingent liabilities. As expected at this juncture, credit flows to the private sector and house price movements hardly pose risks, whereas non-performing loans (NPLs) are still largely problematic in the EU, though they further decreased or stabilised across the board (Table 4.2). The only exceptions flagging higher risks from private sector credit flows are Belgium and, to a lesser extent, Malta and Cyprus, while for house prices high risks are present in Hungary. The ratio of bank loans to deposits signals high risks for four countries (Denmark, Sweden, Germany and Finland) while in a few other countries it indicates moderate risks (Luxembourg, the Netherlands, Italy, Spain, Ireland and France).

Box 4.1: **Classification of government liabilities – What is contingent? What is implicit?**

There are two main criteria to classify the sources of government obligations and thereby determine the scale of public sector commitments.

According to the first criterion, the extent to which a source of obligations is legally binding, government liabilities can be either explicit i.e. legally stipulated (e.g. sovereign debt, various types of state guarantees or insurance schemes recognized by law or contract), or implicit i.e. liabilities not backed up by law, but underpinned by an expectation of materialising or a moral obligation of the government reflecting public and interest group pressures (e.g. future budgetary expenditure on public pensions, health care, social security schemes, potential absorption of losses generated by different events such as disasters, bailouts etc).

From the point of view of the second criterion, certainty of materializing, liabilities can be either direct i.e. certain to be incurred by the government (such as debt, present and future budgetary spending commitments on pensions, health care) or contingent on the occurrence of uncertain events outside the government's full control (e.g. execution of guarantees and insurance, costs from defaults, financial institutions failure, environmental disasters, wars, etc.) [(1)].

Implicit and contingent liabilities are therefore not mutually exclusive concepts, but different dimensions of categorization. Within this classification, contingent liabilities are uncertain government obligations that can be either explicit when backed up by legal provision or implicit when the scope is open.

Assessing the value of implicit and contingent liabilities and commitments requires an understanding of the probability that situations giving rise to such liabilities occur, as well as assumptions on the size of these liabilities under various possible scenarios, i.e. assessing the impact or extent of potential exposure. Data limitations may further affect the evaluation of both explicit and implicit contingent liabilities, making it difficult to estimate these categories fully or accurately. For these reasons, this report includes only selected information on explicit and implicit liabilities, focusing mainly on those stemming from the banking sector [(2)].

([1]) For a full classification see Polackova Brixi and Mody (2002) and OECD (2015).
([2]) For more details on the evaluation of fiscal risks from contingent liabilities see European Commission (2014b) and Chapter 2.3 of European Commission (2015c).

NPL ratios appear, on the contrary, to be problematic, for almost all countries with few exceptions (Estonia, Finland and Sweden), continuing to represent a major source of risks. However, NPLs have also continued to decrease across the board, except in Portugal where the NPL ratios increased year-on-year, but at decelerated pace, now just above this variable's threshold. A further qualifier of bad assets, the NPL coverage ratio ([68]), shows that in most countries NPLs are provisioned for in proportions varying between 35% and 65% and that only in few cases NPLs are both high as percent of total loans and provisioned for at levels lower than 33% (Lithuania, Latvia, Denmark) ([69]).

([68]) Defined as the ratio of specific allowances for loans to total gross non-performing loans and advances.

([69]) The NPL coverage ratio is evaluated based on conventional thresholds; moreover, this section does not consider additional mitigating factors to high NPL ratios such as the amount of collateral set aside for non-performing loans (which would also require assumptions on the operation of insolvency procedures in each country and on the market recovery rates of collateral). Section 4.2.2 (SYMBOL model) takes these into account.

Box 4.2: **Three sets of information on government contingent liabilities**

This report contains three sets of information concerning contingent liabilities, primarily related to the banking sector.

The first set is statistics on state guarantees (i.e. explicit contingent liabilities), available in a table in the statistical Annex A9. The classes included ([1]) are government guarantees fixed in the form of a law or a contract in favour of the financial and non-financial sector such as debt guarantees or guarantees on assets held by public and private corporations or households against potential losses from the decrease in these assets' value ([2]); government guarantees (percent of GDP) are reported as overall value as well as disaggregated between one-off and standardised guarantees ([3]). A subset of government guarantees, i.e. government contingent obligations *related to public support to financial institutions in the context of the financial crisis* is separately reported. This includes financial sector support deemed to be triggered by recent episodes of financial instability and potentially contributing to future government liabilities, contingent on future events ([4]); these obligations are reported as total value and disaggregated into *i)* government guarantees on liabilities and assets of financial institutions*; ii)* securities issued by the government under liquidity schemes and *iii)* liabilities of special purpose entities, including those to which certain impaired assets of financial institutions were transferred.

The second set contains six variables capturing short-term risk, indirectly signalling potential future government obligations to support *the banking sector*: private sector credit flow (as share of GDP) ([5]), bank loan-to-deposit ratio, banks' gross non-performing loans (NPLs) as a share of total gross loans (level and y-o-y change), to be read in conjunction with the

([1]) Eurostat statistics on explicit contingent liabilities also cover outstanding liabilities of government controlled entities classified outside the general government, liabilities related to public-private partnerships PPP, and non-performing government loans, but these are not included here due to gaps, limited comparability across countries, and lack of recent data. For a more detailed presentation of explicit liabilities collected by Eurostat see the aforementioned Chapter 2.3 of European Commission (2015c).

([2]) Eurostat data on government guarantees excludes: 1. Government guarantees issued within the guarantee mechanism under the Framework Agreement of the European Financial Stability Facility (EFSF); 2. Derivative-type guarantees meeting the ESA 2010 definition of a financial derivative; 3. Deposit insurance guarantees and comparable schemes; 4. Government guarantees issued on events whose occurrence is very difficult to cover via commercial insurance (earthquakes, large scale flooding, etc.), as explained in Eurostat (2015b).

([3]) A one-off guarantee is an individual guarantee for which guarantors are not able to reliably estimate the risk of calls. One-off guarantees are linked to debt instruments (e.g. loans, bonds). Standardised guarantees are guarantees issued in large numbers, usually for fairly small amounts, along identical lines. It is not possible to estimate precisely the default risk of each loan, but it is possible to estimate how many, out of a large number of such loans, will default. Examples are mortgage loan guarantees, student loan guarantees, etc. See Eurostat (2015b).

([4]) This data is collected regularly by Eurostat with the EDP notifications, in the supplementary tables for the financial crisis (data collection started with the October 2009 EDP notification). Data provided by Member States in these tables indicates the potential maximum impact that could (theoretically) arise for government finances from such contingent liabilities (see Eurostat, 2015a). Similarly to the broader category of government guarantees, government deposit insurance guarantees are not included in the contingent liabilities related to financial sector support in the context of the financial crisis.

([5]) This variable that is also an indicator in the scoreboard of the macroeconomic imbalance procedure (MIP) is used here in a narrower way, capturing risks of fiscal stress from vulnerabilities in the financial sector. The thresholds used here are based on a different methodology than in the MIP so the results would not coincide with the countries flagged in the Alert Mechanism Report (AMR) 2018.

(Continued on the next page)

Box (continued)

provision rate of these NPLs, and the nominal house price index as y-o-y change ([6]). These variables are presented in the form of a heat map whereby the thresholds of fiscal risk have been calculated using the signals' approach ([7]), with the upper risk thresholds corresponding to the original signals' approach thresholds and lower threshold of risk set at about 80% of the original thresholds (Table 4.2.). They are discussed in section 4.2.1.

Both the table with statistics on government's contingent liabilities and the heat map on potential triggers of government contingent liability risks from the banking sector are reported country by country in the statistical Annex A9.

The third and last - the SYMBOL model - simulates a set of results for implicit contingent liabilities based on a severe banking stress scenario. These estimates of the residual burden on public finances after the legal safety net has been used are presented in section 4.2.2.

([6]) The change in the nominal house price index has been found in the literature to be a good leading indicator of banking crises. Messages from this variable need nonetheless to be interpreted with caution. In the context of an early-warning system of possible fiscal stress only relatively high positive values of the variable flash red in the heat map, signalling risks of bubbles building up. Yet, in crisis context, negative values of the variable could also pose risks (due to the loss in value of properties repossessed by banks), aspect that needs to be considered in the data interpretation/risk assessment. The MIP scoreboard uses this indicator in deflated terms and with thresholds calculated based on a different methodology (statistical approach).

([7]) See Chapter 3 and Annex A1 for more details.

Table 4.2: **Potential triggers for contingent liabilities from the banking sector, by country (2016)**

	Private sector credit flow (% GDP)	House price nominal index change (%)	Bank loan-to-deposit ratio (%)	NPL ratio (% of total gross loans)	NPL ratio change (pps 2016 v 2015)	NPL coverage ratio (%)
BE	**13.3**	2.6	105.0	**3.2**	-0.7	44.1
BG	4.0	7.0	71.7	**12.5**	-1.2	57.8
CZ	4.4	7.2	83.1	**2.5**	-0.8	62.5
DK	3.9	4.7	**333.4**	**3.1**	-0.6	**30.0**
DE	3.8	6.0	**149.7**	**2.5**	-0.5	37.4
EE	5.9	4.8	105.8	1.3	-0.6	**31.7**
IE	-19.0	7.5	115.2	**13.6**	-4.9	35.5
ES	-3.6	4.6	117.6	**5.7**	-0.7	43.7
FR	-6.2	1.0	112.3	**3.7**	-0.4	51.8
HR	-0.1	0.9	75.5	**10.1**	-2.4	63.3
IT	0.6	-0.8	126.9	**15.3**	-1.5	48.9
CY	10.2	0.3	83.9	**44.8**	-4.2	39.7
LV	0.3	8.5	74.9	**3.2**	-0.8	**28.6**
LT	4.3	5.4	97.4	**3.8**	-1.3	**30.4**
LU	1.5	6.0	130.1	1.1	0.0	44.7
HU	-3.6	**13.4**	77.7	**11.5**	-2.4	63.9
MT	11.1	5.6	56.0	**4.4**	-3.0	35.9
NL	1.5	5.3	127.1	**2.5**	-0.2	35.2
AT	3.2	8.5	104.5	**5.3**	-1.6	55.1
PL	4.7	1.9	95.7	**6.1**	-0.6	58.8
PT	-2.2	7.1	93.2	**19.5**	**0.5**	43.6
RO	0.6	6.0	67.4	**10.1**	-4.5	65.8
SI	-0.8	3.3	68.4	**14.4**	-7.1	63.9
SK	9.2	6.7	104.6	**4.2**	0.1	55.0
FI	2.2	0.6	**148.0**	1.6	0.0	**29.5**
SE	7.6	8.6	**219.5**	1.0	-0.2	**28.8**
UK	8.2	7.0	91.0	1.9	-0.5	**30.5**

1) Upper and lower thresholds (see Annex A7): (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 13.21; lower threshold 11; iii)Bank loans-to-deposits ratio: upper threshold 133.37%; lower threshold 107%; (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: upper threshold 66%; lower threshold 33%;
Source: Eurostat (MIP scoreboard for the private sector credit flow and the change in nominal house price index; EBA risk dashboard for the bank loans-to-deposits ratio, the share of non-performing loans and the NPL coverage ratio.

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

The economic and financial crisis has shown how a government's decision to support a distressed banking sector, i.e. the materialisation of contingent liabilities risks, can sizeably impact public finances.

To estimate the potential impact of banking losses on public finances ([70]) SYMBOL (Systemic Model of Banking Originated Losses) is used. This 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 ([71]) uses unconsolidated

([70]) Second-round effects linked to the fiscal consequences of possible bank failures are not taken into account. As explained in European Commission (2016) Part 5.2.2 and in Part IV, Chapter 2 of European Commission (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.

([71]) More details are reported in European Commission (2016). SYMBOL has been used by the European Commission for the ex-ante quantitative impact assessment of several

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.

The model gauges the potential residual burden on government budgets after all cushioning layers of the legal safety net available to absorb shocks (capital, bail-in, resolution funds) have been deployed (Box 4.3). The impact of a banking crisis is split into that on the government deficit and that on gross public debt directly.

As in last year's exercise, **the model takes into account asset quality via potential increases in the size of bank losses from non-performing loans** ([72]). **Four main assumptions are made**: first, results are calibrated to match the gravity of the 2008-2012 crisis ([73]), i.e. a severe and systemic crisis event. Second, the impact of non-performing loans (NPLs) is considered only in the current situation and its effect is supposed to become negligible in the long term. Third, a conservative assumption is used whereby all simulated bank excess losses and recapitalisation needs that cannot be covered by the safety net fall on public finances. Fourth, the safety net is considered able to fully rule out contagion effects, meaning that in the main scenario systemic banks are recapitalised and non-systemic banks are liquidated. ([74])

Implicit contingent liabilities from total funding needs, i.e. losses in excess of capital and recapitalisation needs - at 8% and 10.5% of RWA - are estimated for the short term (Q1-2018) and long term (2028) scenarios (see Box 4.3 for the methodology, Table 4.3 for the results).

Bank losses in excess of capital are assumed to be covered by public injections of funds to the banking sector, affecting equally public deficit and gross and net debt. Conversely, recapitalisation is deemed recoverable since capital injection is done in exchange of shares (partial government ownership of the bank) being recorded as a financial transaction affecting neither the deficit nor net debt, but only gross debt through the stock-flow adjustment. ([75])

Thanks to a cascade intervention of regulatory tools, the estimated budgetary impact of a major crisis associated with excess bank losses is negligible in the short term (2018) for most countries except Cyprus; in the long term (2028) this impact is in all cases almost zero. As for recapitalisation needs with direct impact on debt levels, the situation is more nuanced (Table 4.3.) ([76]). In the short term, where the effect of NPLs is included, most EU countries' contingent liabilities are estimated to be lower than 1% of GDP even in the 10.5% recapitalisation scenario. However Cyprus, the highest isolated case, would have contingent liabilities of 7.6% of GDP under the 10.5% recapitalisation scenario. Five countries (ES, LU, IT, PT, BG) are estimated to have recapitalisation needs between 1% - 4% of GDP under both recapitalisation levels. In most of these cases the results are related to the level of NPL ratios (CY, PT, IT, BG, LU ([77]). In the long term,

legislative proposals (see Marchesi et al, 2012; European Commission, 2011; Cariboni et al, 2012; Cannas et al, 2013; Cariboni et al, 2015), for the cumulative evaluation of the entire financial regulation agenda (ERFRA, European Commission, 2014b), and for the estimation of contingent liabilities linked to public support to the EU banking sector (European Commission, 2011, 2012a and 2016; Benczur et al, 2015).

([72]) see European Commission (2017b) - Chapter 4, Box 4.1.

([73]) 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's DG Competition State Aid Scoreboard, European Commission (2014a) and Benczur et al. (2015).

([74]) 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.

([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 http://ec.europa.eu/eurostat/documents/1015035/2041337/ESTAT-decision-Criteria-for-classif-of-gov-capital-injec.pdf) and the earlier July 2009 Decision http://ec.europa.eu/eurostat/documents/1015035/2041337/FT-Eurostat-Decision-9-July-2009-3--final-.pdf).

([76]) This round of SYMBOL results may differ in some cases from those of last year not only due to changes in the banks' balance sheets, but also for sample-related reasons (e.g. CY, AT, ES, EE, FI, PL, DE), the sample being in most cases larger this round. This set of results is based on Orbis Bank Focus 2016 as opposed to Bankscope used last year, in the meantime discontinued. In fact, since both data repositories belong to the same provider Bureau van Dijk, this could be regarded as a data migration or a change of name, rather than a different database.

([77]) In the case of Luxembourg, NPL driven losses are mostly due to one specific bank which accounts for about 75% of NPL driven losses of Luxembourg. Moreover Luxembourg has a very large banking sector compare to its GDP; Total assets over GDP is 15 while the EU average is about 2.5.

when NPL effects are considered negligible, all countries would go to below 1% of GDP estimated exposure. Hence, completing the implementation of the safety net implies a decrease of the estimated overall risks at EU level over time.

Table 4.3: **Implicit contingent liabilities from banks' excess losses and recapitalisation needs under the short-term and long-term scenario (% GDP)**

	Initial (2018 Q1) short-term scenario			Final (2028) long-term scenario		
	Excess Losses	ExL Recap 8%	ExL Recap 10.5%	Excess Losses	ExL Recap 8%	ExL Recap 10.5%
	To deficit and debt	Directly to debt	Directly to debt	To deficit and debt	Directly to debt	Directly to debt
BE	0.00%	0.10%	0.20%	0.00%	0.02%	0.05%
BG	0.05%	0.56%	1.12%	0.00%	0.04%	0.08%
CY	0.17%	4.10%	7.60%	0.02%	0.21%	0.80%
CZ	0.02%	0.15%	0.29%	0.01%	0.06%	0.12%
DK	0.04%	0.16%	0.26%	0.03%	0.13%	0.21%
DE	0.01%	0.07%	0.14%	0.00%	0.01%	0.04%
EE*	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%
IE*	0.00%	0.30%	0.68%	0.00%	0.04%	0.19%
ES	0.03%	1.17%	2.54%	0.01%	0.28%	0.85%
FR	0.02%	0.26%	0.51%	0.00%	0.03%	0.11%
HR	0.06%	0.19%	0.33%	0.01%	0.02%	0.04%
IT	0.04%	0.77%	1.35%	0.00%	0.02%	0.09%
LV	0.00%	0.03%	0.07%	0.00%	0.01%	0.01%
LT*	0.00%	0.07%	0.14%	0.00%	0.01%	0.02%
LU	0.04%	1.19%	2.38%	0.04%	0.18%	0.47%
HU*	0.02%	0.20%	0.42%	0.01%	0.11%	0.25%
MT*	0.03%	0.45%	0.97%	0.01%	0.05%	0.11%
NL	0.02%	0.14%	0.22%	0.00%	0.02%	0.07%
AT	0.00%	0.16%	0.34%	0.00%	0.02%	0.06%
PL	0.01%	0.14%	0.32%	0.01%	0.06%	0.15%
PT	0.01%	0.55%	1.17%	0.01%	0.09%	0.27%
RO	0.01%	0.14%	0.29%	0.00%	0.03%	0.07%
SI	0.00%	0.12%	0.27%	0.00%	0.02%	0.06%
SK	0.00%	0.07%	0.17%	0.00%	0.01%	0.04%
FI	0.00%	0.01%	0.03%	0.00%	0.00%	0.00%
SE	0.01%	0.03%	0.04%	0.01%	0.02%	0.03%
UK	0.03%	0.14%	0.23%	0.01%	0.08%	0.13%
EU28	0.02%	0.39%	0.73%	0.01%	0.06%	0.15%

(1): All figures are % of the corresponding economy's GDP. Data as of December 2016.
(2) (*) Asterisks denote countries with sample representativeness issues.
Source: Commission services

Put differently, contingent liabilities have a high potential impact on public finances only for a very limited subset of countries and only in the short term. Table 4.4 presents the risk that banking sector-related implicit contingent liabilities of at least 3% of GDP materialise, hitting public finances. The colour coding of the heat map reflects the relative magnitude of the theoretical probabilities of such an event (see Annex A8 for the details of heat map calibration). Since 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 4.3. 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: **Risk (theoretical probability) of public finances being hit by more than 3% of GDP in case of a systemic event involving excess losses and recapitalisation needs**

	Initial (2018 Q1) short-term		Final (2028) long-term	
	Excess loss and Recap Needs 8%	Excess loss and Recap Needs 10.5%	Excess loss and Recap Needs 8%	Excess loss and Recap Needs 10.5%
BE	0.00%	0.00%	0.00%	0.00%
BG	0.00%	0.01%	0.00%	0.00%
CY	0.11%	0.57%	0.01%	0.03%
CZ	0.00%	0.00%	0.00%	0.00%
DK	0.00%	0.01%	0.00%	0.01%
DE	0.00%	0.00%	0.00%	0.00%
EE*	0.00%	0.00%	0.00%	0.00%
IE*	0.01%	0.02%	0.00%	0.00%
ES	0.02%	0.08%	0.01%	0.02%
FR	0.00%	0.00%	0.00%	0.00%
HR	0.00%	0.00%	0.00%	0.00%
IT	0.00%	0.01%	0.00%	0.00%
LV	0.00%	0.00%	0.00%	0.00%
LT*	0.00%	0.00%	0.00%	0.00%
LU	0.02%	0.07%	0.01%	0.01%
HU*	0.00%	0.00%	0.00%	0.00%
MT*	0.01%	0.03%	0.00%	0.00%
NL	0.00%	0.00%	0.00%	0.00%
AT	0.00%	0.00%	0.00%	0.00%
PL	0.00%	0.00%	0.00%	0.00%
PT	0.01%	0.03%	0.00%	0.01%
RO	0.00%	0.00%	0.00%	0.00%
SI	0.00%	0.00%	0.00%	0.00%
SK	0.00%	0.00%	0.00%	0.00%
FI	0.00%	0.00%	0.00%	0.00%
SE	0.00%	0.00%	0.00%	0.00%
UK	0.00%	0.00%	0.00%	0.00%

(1) Green: low risk (theoretical probability not exceeding 0.05%). Yellow: medium risk (theoretical probability between 0.05% - 0.2%). Red: high risk (theoretical probability exceeding 0.2%).
(2) (*) Asterisks denote countries with sample representativeness issues.
Source: Commission services

Box 4.3: **SYMBOL (Systemic Model of Banking Originated Losses) methodology to estimate the potential impact of banking losses on public finances**

SYMBOL illustrates how the regulatory framework set up by the Commission in recent years would limit the impact of a systemic banking crisis on public finances.

Three pieces of legislation are considered: the new Capital Requirement Regulation and Directive IV (CRDIV), ([1]) 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)([2]); the Bank Recovery and Resolution Directive (BRRD), ([3]) which introduced bail-in ([4]) and national resolution funds, ([5]) and the Single Resolution Mechanism Regulation (SRMR), ([6]) which introduced the Single Resolution Fund (SRF). To reflect the phasing-in ([7]) of the safety-net tools foreseen by this body of legislation, two regulatory scenarios are modelled. ([8])

An initial (2018 Q1) short-term scenario with safety net in progress, comprising:

- Bank total capital and risk-weighted assets (RWA) taken directly from the banks' balance sheets, adjusted to the new definitions proposed in the CRDIV. ([9])
- Non-performing loans contribute to losses in the banking system of each country and their magnitude has been estimated according to the Equation 1 below.
- Extra capital buffers for G-SIIs [and O-SII] prescribed by the Financial Stability Board (FSB). ([10])
- Bail-in: modelled as a worst-case scenario whereby a Loss Absorbing Capacity (LAC) is built to represent, together with regulatory capital, 8% of TA. ([11])

([1]) See European Parliament and Council (2013).
([2]) Very few banks which are OSII are affected by extra buffer (not considered).
([3]) See European Parliament and Council (2014a).
([4]) 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.
([5]) Funds financed by banks to orderly resolve failing banks, avoiding contagion and other spill-overs.
([6]) See European Parliament and Council (2014b).
([7]) 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.
([8]) In the estimation G-SII buffers are applied only to the parent group. G-SIIs requirements on Total Loss Absorbing Capacity (TLAC) are not considered. See Financial Stability Board (2014).
([9]) These decrease capital and increase RWA. To properly estimate the effects of these CRDIV improved definitions, the results of the Basel III monitoring exercise (Quantitative Impact Study, QIS), run by the European Banking Authority are used. Since Basel III definitions of RWA and capital reflect better banks' true risk and capital quality, SYMBOL adjusts inputs to reflect these definitions even in scenarios where CRDIV is not yet implemented.
([10]) See Financial Stability Board (2016).
([11]) The BRRD does not establish a harmonized 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 TA. 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 8% of their TA. In practice banks with total capital under this threshold are assumed to meet the 8% minimum threshold via bail-in 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 TA.

(Continued on the next page)

Box (continued)

Table 1: **Scenario settings**

Scenario	Extra loan losses due to NPIs	Total regulatory capital	Risk Weighted Assets	Bail-in	National / Single RF	Deposit Guarantee Scheme	Recapitalization levels for systemic banks
Initial (2018 Q1) short-term	Yes	K^{QIS} + 3/4 of buffers for G-SIIs	RWA^{QIS}	Yes	Yes, 5% TA cap, after LAC of 8% has been called in	No	8% RWA^{QIS}
				Capital plus bail-in	3/10 of full target (end of Q1 2018)		
				8% TA	No ex-post contributions		10.5% RWA^{QIS}
Final (2028) long-term	No	Max {K^{QIS}; 10.5%·RWA^{QIS} + buffers for G-SIIs}	RWA^{QIS}	Yes	Yes, 5% TA cap, after LAC of 8% has been called in	No	8% RWA^{QIS}
				Capital plus bail-in	At full target		
				8% TA	No ex-post contributions		10.5% RWA^{QIS}

(1) K and RWA are the capital and risk weighted assets as of end 2016 balance sheet or estimated by JRC. Superscript QIS refers to CRDIV adjusted values.
Source: Commission services

- Resolution Funds ([12]) - national (NRFs, for Member States not part of the Banking Union) and single (SRF, for Banking Union members) – phased-in in proportion of 3/10 of their target or long-run level ([13]) and contributing to resolution absorbing losses by up to 5% of the TA of the insolvent bank, provided that at least 8% LAC has already been called in. ([14])

A final (long-term) 2028 scenario as of when a completely phased-in safety net comprises:

- Bank total capital reflecting the CRDIV improved definition and an increased minimum level ([15]) set at the maximum between the CRDIV adjusted capital and 10.5% of the CRDIV adjusted RWA. ([16])
- Extra capital buffers for G-SIIs [and O-SII]: fully built at the levels posted by the Financial Stability Board.
- Bail-in: as in the 2018 scenario.
- Resolution Funds: Both NRFs and SRF fully in place and able to absorb losses of up to 5% of the TA of the insolvent bank provided that at least 8% LAC has already been called in.

Table 1 summarizes the scenarios and recapitalization levels considered.

The 2018 scenario considers that insufficient provisioning of non-performing loans may lead to an overestimation of capital and to an under estimation of losses, thus capturing the effect of NPLs on the banking sector.

In the 2028 scenario banks are first "topped up" to the required minimum capital and, in case of G-SIIs and O-SIIs to the corresponding extra capital buffer.

In both scenarios, only the subset of banks considered systemic will go into resolution and recapitalize (European Commission (2016) explains how systemic banks are selected). All

([12]) 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.

([13]) 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.

([14]) In case of excess demand for SRF funds, funds are rationed in proportion to demand (i.e., proportionally to excess losses and recapitalization needs after the minimum bail-in, capped at 5% of TA at bank level).

([15]

([16]) Before running the simulation, banks are "topped up" to this increased level of minimum capital requirement. In practice, it affects only a small subset of banks, as most already hold capital exceeding the long-run requirement.

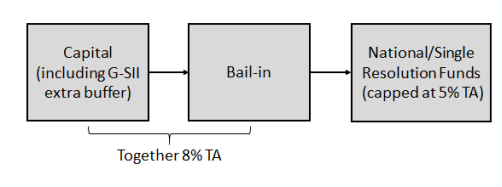
(Continued on the next page)

Box (continued)

remaining banks are assumed not to be systemic and to be liquidated in case of distress. Under each scenario two levels of bank recapitalization are considered: 8% and 10.5% of each bank's RWA, representing the minimum level of capital and capital conservation buffer set by the CRDIV. The extra capital buffers built for G-SIIs or O-SIIs are not recapitalised.

Graph 1 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. ([17])

Graph 1: **Order of intervention of resolution tools**



Source: Commission services

For further details on the SYMBOL model and the methodology and the sample used to run simulations see European Commission (2016) and Annex A8.

([17]) Additional tools are available to absorb residual losses and recapitalization needs, including additional bail-in liabilities, leftover resolution funds and the deposit guarantee scheme. See *Benczur et al. (2015)* for a discussion.

4.3. THE VALUE OF GOVERNMENT ASSETS AND NET DEBT

Debt figures examined in all the other chapters of this report are based on what is known as Maastricht (or EDP) debt, i.e. total general government ([78]) debt outstanding at the end of the year in gross and consolidated terms at nominal (face) value. Maastricht debt reflects financial liabilities for a subset of debt instruments - currency and deposits, debt securities and loans ([79]). Using debt figures in gross terms means that the financial (or non-financial) assets owned by the government are not netted out. Using consolidated figures means that any liability of a general government unit that is an asset of another general government unit is netted out and does not add to the general government total.

The choice of gross debt as benchmark indicator is natural since Maastricht debt represents the policy-relevant variable for fiscal surveillance in the EU and has a number of advantages. Firstly, it allows keeping a clear record of the government's contractual obligations, tracking developments in gross financial liabilities separately from those in assets which may be particularly volatile due to asset price movements when assets are marked to market. Secondly, gross debt is more widely used and a more straightforward concept to work with in opposition with the methodology of computing net liabilities or net debt. The latter may prove intricate due to the granularity of asset categories that could be chosen to offset liabilities and the fact that the selection criterion, assets liquidity, is not clear-cut (liquidity may vary over time and depends on the existence of a market for each instrument and each individual asset - e.g. the market for a particular type of loan may be difficult to identify). For these reasons defining net debt is not a straightforward task. Several different net debt measures exist, with advantages and disadvantages ([80]), and these may lead to differing conclusions.

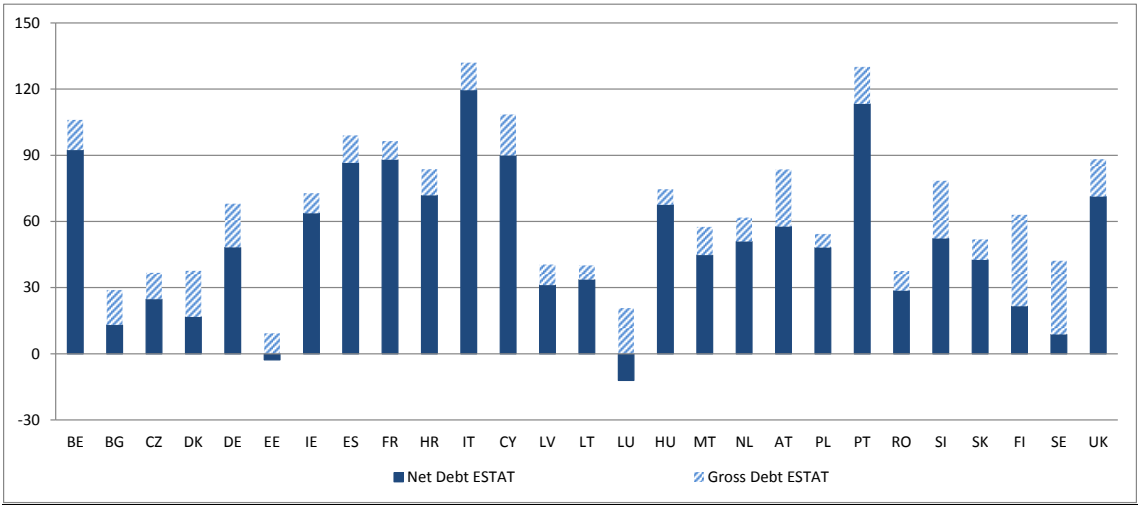
Nonetheless, taking assets into account may provide a useful perspective on the current and future sustainability of public finances. This is so because the income generated by government assets may contribute to offsetting debt in two alternative ways: *i)* from returns on assets over the period during which these assets are held on the government's books (property income) ([81]) or *ii)* from the value at which assets could be traded if the government decided to redeem them. The first source of proceeds (property income) from both financial (debt and non-debt instruments) and non-financial assets is already accounted for in the structural primary balance calculation and future adjustments to property income are included in the medium- and long-term fiscal sustainability indicators ([82]). The second source refers only to a subset of (debt instruments-related) financial assets and is covered by this section in the government net debt concept presented below.

Consequently, discussing net debt serves an illustrative purpose. The value of government assets may become a relevant complementary indicator, useful for solvency analysis, in particular when assets are significant and liquid ([83]). Net debt can thus provide a more informed view on the countries' current debt sustainability through the lenses of the government's ability to repay its debt at a particular point in time ([84]).

In some countries there are significant differences between gross and net debt figures (Austria, Germany, Denmark, Estonia, Finland, Luxembourg, Slovenia and Sweden) ([85]) (Graph 4.2**).** These differences may be explained by various factors such as reinforcements in cash and

([78]) General government consists of central government, state government (if applicable), local government and social security funds (if applicable).
([79]) See Annex A9 of the European Commission (2016) for a more detailed definition, including the composition and valuation method used.
([80]) Different countries and institutions use different approaches in terms of composition and valuation method. For a description of methodological differences between Eurostat and IMF/WEO see Section 5.3 and Annex A9 of the European Commission (2016).
([81]) For a description of how property income is assumed to contribute to medium- and long-run projections see European Commission (2017b) - Annex A8.
([82]) On the latter see Annex A8 of the European Commission (2016).
([83]) It may turn out that these liquid types of assets such as deposits are uncommon for the government or that they may already serve as collateral.
([84]) Broader concepts of netting assets and liabilities such as net financial worth and net worth can also be used. These are provided by National Accounts balancing items. As regards net worth, data coverage of non-financial assets is still under development.
([85]) Gross and net are compared from the same source to avoid the incidence of methodological differences.

Graph 4.2: **Gross and net government debt (% of GDP), 2016**



(1) See Annex A9 of the Fiscal Sustainability Report 2015 for details on the net debt definition used here. "Net debt" represents Commission services calculations based on Eurostat data (ESA 2010 methodology). Both assets and liabilities of Social Security Funds (part of general government) are included in the net debt concept based on Eurostat data, these funds' assets and liabilities featuring in the measure of net debt in the categories Currency and deposits, Debt securities and Loans.
Source: Commission services based on Eurostat data

reserves held during the crisis (Denmark), government take-over of defeasance structures (Germany, Austria) and large amounts of government financial assets

notably of social security funds, characteristic to some countries (Denmark, Finland, Sweden, Estonia) or assets in the form of currency, deposits, loans and debt securities held by other units within the general government sector (Slovenia – bad bank related, Luxembourg – due to market valuation of debt securities in a period of falling interest).

The contrast between gross and net debt essentially portrays how the size of government financial assets varies considerably across countries. This reflects, *inter alia*, differences in pension systems, exposure to (crisis-related) events or country-specific approaches underpinning the build-up of buffers, provisions and reserves. Some countries post negative net debt figures (i.e. positive net assets) due to traditionally low gross debt-to-GDP ratios combined with relatively significant asset holdings (Estonia, Luxembourg).

Generally, it is evident that accounting for financial assets puts gross debt in perspective. Yet, liquidity-related reasons make it advisable to read results under a double proviso *i)* similar asset values may stand for different asset qualities, opaque to the fact that higher rated assets (e.g. bonds) trade more easily than lower rated ones: *ii)* reducing gross debt through a sale of assets remains a largely theoretical idea, hinging on the assumption that the asset categories selected can be totally liquidated.

Not least, country rankings by net debt remained fairly similar to those on gross debt over the recent preceding years (2009-2015), a few exceptions being observed for Finland and Sweden ([86]). Moreover, OECD research shows that markets do not seem to react to net financial liabilities more than they do to gross financial liabilities ([87]), indicating that cautions such as asset quality and feasibility of asset liquidation mentioned above are in fact already internalised. Additionally, one shortcoming of the calculations calling for caution is that in the data used, assets will react to market movements (revaluation of debt securities), while liabilities will not.

([86]) Eurostat (2014) and calculations based on 2013-2016 Eurostat data.
([87]) OECD (2015).

5. OVERALL ASSESSMENT OF FISCAL SUSTAINABILITY CHALLENGES

5.1. INTRODUCTION

This chapter brings together in a synthetic way the main results on debt sustainability analysis and fiscal sustainability indicators presented in the rest of the report. Results (based on Autumn 2017 Commission forecast) are systematised here in the context of the horizontal assessment framework already presented and used in the FSR 2015 and the DSM 2016. Results are summarised in an overall summary heat map of fiscal sustainability risks per time dimension (short, medium and long run). The framework is meant to allow identifying the scale, nature and timing of fiscal sustainability challenges. It therefore aims at ensuring a comprehensive and multidimensional assessment of sustainability risks, which is key to devise appropriate policy responses. It should nonetheless be kept in mind that quantitative results and ensuing risk assessments based on this horizontal framework should always be complemented with a broader reading and interpretation of results, so as to give due account to country-specific contexts.

5.2. APPROACH USED IN THE ASSESSMENT OF SHORT-, MEDIUM- AND LONG-TERM FISCAL SUSTAINABILITY CHALLENGES

5.2.1. Assessment of short-term fiscal sustainability challenges

The fiscal stress risk indicator S0 is used to evaluate fiscal sustainability challenges over the short term (the upcoming year) ([88]). In particular, countries are deemed to face high short-term risks of fiscal stress whenever the S0 indicator is above its critical threshold. In all other cases, countries are deemed to be at low short-term risk ([89]).

Beyond the values of S0 used to reach an overall short-term risk assessment, other variables are considered. These variables are reported in cross-country tables and country by country fiches (see Annexes A9 - A10), including i) values of the two fiscal and financial-competitiveness sub-indexes (incorporating only fiscal and macro-financial variables respectively), ii) the individual variables incorporated in the composite indicator S0 (see also chapter 3), and iii) the variables included in the heat maps on risks related to the structure of public debt financing and government contingent liabilities (see also chapter 4). These variables are meant to support the reading and interpretation of S0 results on a country by country basis.

5.2.2. Overall assessment of medium-term fiscal sustainability challenges

Medium-term fiscal sustainability challenges are assessed based on the joint use of the DSA and the S1 indicator. The joint use of the DSA and S1 indicator, introduced with the FSR 2015, allows capturing medium-term sustainability challenges in a more comprehensive way than the synthetic assessment based on the medium-term fiscal gap indicator S1. In particular, the integration of DSA results in medium-term risk assessments enables taking into account the impact of different economic and fiscal assumptions (notably more adverse circumstances than the baseline no-fiscal policy change scenario) on the projected evolution of public debt over the next 10 years. ([90]) The integration of DSA results is also expected to confer more stability to medium-term risk evaluations, as DSA conclusions (centred on the debt stock) tend to be more stable than S1 values, which are relatively more sensitive to changes in the initial budgetary position from one forecast to the next. On the other hand, the S1 indicator appears relatively more suited to capture risks for public finances stemming from population ageing. ([91])

([88]) The results of the S0 indicator are presented in chapter 3; the methodology used is presented in Annex A1 and Berti et al. (2012).

([89]) The threshold for S0, calculated using the "signal approach" is 0.46.

([90]) The reference S1 indicator used in the medium-term risk assessment is grounded on the baseline scenario.

([91]) S1 is a particularly suited tool to assess the impact of ageing, thanks to the decomposition of the indicator that allows singling out the cost of ageing contribution to the fiscal gap in terms of overall discounted value. Debt projections are a less appropriate tool to serve this purpose as the contribution of the cost of ageing to the overall debt stock, year by year, as could be extracted from the DSA, would be much less intelligible than the S1 age-related sub-component.

A prudent approach is used to determine the overall medium-term risk category. The horizontal assessment framework on sustainability challenges sets at potential high medium-term sustainability risk countries that are deemed to be either at overall high risk based on DSA results and / or at high risk based on the S1 indicator. In other words, a country is considered to face high sustainability challenges in the medium-term if either its DSA or baseline S1 or both point in that direction. For the attribution of a medium risk level, the criterion applies the same way: a country is considered to be at medium sustainability risk in the medium term if either its DSA or S1 point in that direction (while none of the two indicates high risks).

Approach used in the overall DSA assessment

The overall DSA assessment is based on deterministic debt projections under a set of scenarios, and on stochastic debt projections. In particular, two main scenarios are used for the DSA assessment: i) the baseline no-fiscal policy change scenario, and ii) the historical structural primary balance (SPB) scenario. Additionally, the overall DSA assessment relies on results for three negative sensitivity tests (on nominal growth, interest rates and the government primary balance), as well as stochastic projections, a tool that allows assessing the impact of individual and joint macroeconomic shocks around baseline projections.

The approach used allows for a transparent and comprehensive risk assessment mapping, from individual scenarios to an overall DSA assessment. Practically, for each of the DSA scenarios, sensitivity tests, and stochastic projections, individual assessments are made (in terms of high / medium / low risk for the country under examination) that are then aggregated into an overall DSA assessment per country. A country's DSA results into an assessment of potential overall high risk if baseline no-fiscal policy change projections point to such a high level of risk, or alternatively if the latter point to an overall medium risk assessment but potential high risks are highlighted by alternative scenarios (historical SPB scenario; sensitivity tests on macro-fiscal assumptions) or stochastic projections. This second criterion for a high-risk assessment allows prudentially capturing upward risks around baseline projections in cases where the latter appear to entail medium risks. The economic rationale followed to reach the overall DSA assessment is explained in detail through decision trees in Annex A6.

The DSA assessment takes into account debt levels, debt paths, and the plausibility of underlying fiscal assumptions. For the DSA scenarios, variables used in the assessment are: i) the level of gross public debt over GDP *at the end of projections* (2028); ii) the year at which the debt ratio peaks over the 10-year projection horizon (which provides a synthetic indication on debt dynamics); and iii) the position of the average SPB (in the overall SPB distribution for all EU-28 countries over 1980-2017) assumed over the projection period under the specific scenario (as summarised by its percentile rank, which gives a sense of how common/uncommon the assumed fiscal stance is relative to cross-country historical record). The first two variables (end-of-projection debt ratio and debt peak year) are used also in the assessment of each of the sensitivity tests.

Due account is also given to macro-financial uncertainties through stochastic projections. The stochastic projection results are evaluated based on the following two indicators: i) the probability of a debt ratio at the end of the 5-year stochastic projection horizon (2022) greater than the initial debt ratio (in 2017), which captures the probability of a higher debt ratio due to the joint effects of macroeconomic shocks; ii) the difference between the 90^{th} and the 10^{th} debt distribution percentiles, measuring the width of the stochastic projection cone, i.e. the estimated degree of uncertainty surrounding baseline projections. Annex A6 reports all upper and lower thresholds used for each of the individual variables and indicators mentioned above.

Beyond these projections, other scenarios are performed as a way to complement the analysis of medium-term fiscal sustainability challenges. These additional scenarios are reported in chapter 2, the overall cross-country tables (see Annex A9) and the country fiches (see Anne A10), and are used to complement the analysis of medium-term challenges. These scenarios include the Stability and Growth Pact (SGP) scenario, the Stability and Convergence Programme scenario, the Draft Budgetary Plan scenario, the fiscal reaction

function scenario, combined historical scenarios, enhanced sensitivity tests on interest rates and growth, as well as sensitivity tests on exchange rates for relevant countries.

Approach used in the assessment of medium-term challenges based on S1

The medium-term fiscal sustainability S1 indicator measures the size of the fiscal gap that needs to be closed to bring debt ratios to 60% of GDP. More precisely, the S1 indicator measures the fiscal adjustment required (in terms of structural primary balance) to bring debt ratios to 60% of GDP in 15 years (currently in 2032). For the S1 indicator, the identification of medium-term sustainability challenges relies on calculations grounded on the baseline scenario. Countries are deemed to face potential high / medium / low sustainability risks in the medium term, according to S1, depending on the value taken by the indicator under the aforementioned scenario. As in the FSR 2015 and the DSM 2016, the values of the S1 indicator are gauged with regard to the benchmark structural fiscal adjustment required in the SGP (a structural adjustment of up to 0.5 pps. of GDP per year) ([92]).

Additional S1 calculations are provided in order to measure the sensitivity of this indicator to underlying assumptions. S1 calculations under two alternative scenarios are provided in the cross-country tables and the country fiches: the historical SPB scenario and the AWG risk scenario (incorporating less favourable ageing cost projections). These alternative calculations aim at supporting the reading and interpretation of the reference S1 results. For each of the scenarios mentioned, S1 values are accompanied by the indication of the relative position (in the SPB distribution for all EU-28 countries over 1980-2017) of the related required structural primary balance (RSPB). This allows grasping more easily how common/uncommon the implied fiscal position is ([93]). Thresholds used for the S1 sub-components and the percentile rank of the RSPB are reported in Annex A6.

5.2.3. Overall assessment of long-term fiscal sustainability challenges

The long-term fiscal sustainability S2 indicator is used to identify long-term fiscal sustainability challenges. The S2 indicator measures the fiscal adjustment required (in terms of structural primary balance) in order to meet the inter-temporal budget constraint over an infinite horizon (including to cover future costs of ageing). Countries are considered at high / medium / low sustainability risk in the long run depending on the value taken by the reference S2 indicator, calculated on the basis of the baseline scenario. These values are considered against a set of relevant thresholds, based on empirical evidence looking at past episodes of fiscal consolidations ([94]).

Analogously to what done for S1, additional S2 calculations are provided in order to stress test the values of this indicator to alternative assumptions. Such a sensitivity analysis is all the more needed that any long-term projection exercise is surrounded by important uncertainties (see Box 3.2 in the Chapter 3 of this report). In particular, two alternative scenarios are considered: the SPB historical scenario and the AWG risk scenario. These projections are also meant to support the reading and interpretation of S2 results. Similarly to S1, S2 values under all scenarios are accompanied by an indication of the relative position of the related RSPB (in the SPB distribution for all EU-28 countries over 1980-2017).

As well known, the S2 indicator largely abstracts from risks linked to high debt levels. The inter-temporal budget constraint does not imply that the debt ratio stabilises at a specific

([92]) Given that the adjustment is assumed to take place over 5 years, according to the S1 standard definition, the upper threshold of risk is therefore set at 2.5 pps. of GDP, while the lower threshold is at 0 pps. of GDP. Countries are considered at high risk when the S1 value is above 2.5 pps. of GDP, and at medium risk when S1 is between 0 and 2.5 pps. of GDP.

([93]) As already pointed by Blanchard et al. (1990), what a given fiscal gap value (such as S1 or S2) implies will vary across countries, depending in particular on the initial level of the primary balance. A positive S1 (or S2) value may indeed be considered more worrisome in cases where this initial value is already high (meaning for example limited room to increase tax pressure or reduce spending). The RSPB reported in this report allows considering this aspect.

([94]) Lower and upper thresholds of risk for S2 are set at 2 and 6 pps. of GDP respectively, as in the FSR 2015 and the DSM 2016. Countries with S2 above 6 pps. of GDP are therefore deemed to be at high risk, while being at medium risk if S2 is between 2 and 6 pps. of GDP.

value, and the adjustment implied by the S2 indicator might in fact lead to debt stabilising at relatively high levels. Therefore, this indicator has to be considered with caution for high-debt countries (also in relation with SGP requirements). This is why the multi-dimensional approach presented in this report needs to be considered in a holistic way.

5.3. MAIN RESULTS

5.3.1. Short-term fiscal sustainability challenges

No EU Member State (among those object of analysis in this report) appears to be at high fiscal sustainability risk in the short run, based on S0. Risks of short-term fiscal stress have very significantly receded relative to the first crisis years. For instance, the comparison of 2017 values for S0, signalling risks for 2018, with 2009 values, highlighting risks for 2010, witnesses a striking difference in this respect, as shown in Chapter 3. Short-term challenges are nevertheless identified in some countries, either on the fiscal side (in Spain, France, the United Kingdom, Hungary and Italy), or on the macro-financial side (in Cyprus). However, these vulnerabilities are not deemed acute enough to lead to overall risks of fiscal stress in the short-term.

5.3.2. Medium-term fiscal sustainability challenges

Ten countries are deemed at high fiscal sustainability risk in the medium-term, as a result of inherited high post-crisis debt burdens, weak forecasted fiscal positions in some cases and / or sensitivity to unfavourable shocks. This concerns Belgium, Spain, France, Croatia, Italy, Hungary, Portugal, Romania, Finland and the United-Kingdom. In particular:

– In half of these countries (Belgium, Spain, France, Italy and Portugal), both the DSA and the S1 indicator point to high risks. In these five countries, the DSA high risk classification is driven by the high level of projected debt by 2028 (above 90% of GDP) in the baseline no-fiscal policy change scenario, in line with the inherited elevated post-crisis debt burdens (see Chapter 2). An increasing projected trend of the debt to GDP ratio also reinforces this classification in the case of France, pointing to a weak forecasted fiscal position (measured by the structural primary balance).

– In the other half (Croatia, Hungary, Romania, Finland and the United United-Kingdom), this high medium-term risk category is driven by the overall DSA assessment, while the S1 indicator signals medium risks. In these countries, the DSA result is driven by a debt ratio at the end of projections, under the baseline no-fiscal policy change scenario, above the 60% of GDP Treaty reference value, accompanied by high risks highlighted by one or more of the alternative debt projection scenarios or sensitivity tests.

In five additional countries, medium-term fiscal sustainability risks are deemed medium, often driven by debt ratios still above 60% of GDP by 2028 in the fiscal no-fiscal policy change scenario and / or alternative ones. This concerns Cyprus, Lithuania, Austria, Poland and Slovenia. In all cases, but Lithuania, both the DSA and the S1 indicator point to medium risks. In particular:

– In Cyprus, Austria and Slovenia, the medium DSA risk assessment is due to a debt ratio still above 60% of GDP by 2028 in the baseline no-fiscal policy change scenario and one or more alternative scenarios and sensitivity tests. In the case of Poland, an increasing debt ratio, above 60% of GDP by 2028, in the sensitivity tests explain the medium risk DSA assessment.

– In Lithuania, the DSA risk assessment points to low risks, due to debt levels remaining below 60% of GDP by 2028, despite increasing trends, in the baseline and alternative scenarios and sensitivity tests considered. Despite a contained level of public debt, the S1 indicator signals medium-risks in line with fast increasing ageing costs ([95]).

The remaining twelve EU countries are found to be at low risk in the medium-term. These countries include Bulgaria, Czech Republic, Denmark, Germany, Estonia, Ireland, Latvia, Luxembourg, Malta, the Netherlands, Slovakia and

([95]) The S1 level is however relatively close to the threshold (at 0.6 pps. of GDP), and the required structural primary balance points to a manageable additional fiscal effort.

Sweden. In three cases however (Bulgaria, Ireland and Latvia), stochastic projections point to some vulnerabilities, in line with the important underlying volatility of these economies.

5.3.3. Long-term fiscal sustainability challenges

In the long-term, only Slovenia appears to be at high fiscal sustainability risk, while another twelve countries are deemed to be at medium risk. In Slovenia, the high level of the S2 indicator is mainly driven by the projected cost of ageing, and in particular by pension expenditures. In the twelve countries found to be at medium risk, the projected increase of age-related expenditures contributes to the long-term fiscal gap with a varying intensity (see Chapter 3):

- In the majority of these twelve countries (Luxembourg, Malta, Lithuania, the Netherlands, Austria, Belgium, Slovakia and the United Kingdom), projected age-related costs are the main (if not unique) driver of long-term fiscal sustainability challenges.

- In the others (Romania, Hungary, Poland and Finland), the unfavourable initial budgetary position largely contributes to the S2 indicator, mainly due to a negative structural primary balance.

The remaining fourteen countries are classified at low fiscal sustainability risk in the long term (including Czech Republic, Estonia, Germany, Spain, France, Latvia, Bulgaria, Portugal, Denmark, Italy, Sweden, Ireland, Croatia and Cyprus). In Ireland, Croatia and Cyprus, the long-term fiscal gap is negative. However, some qualifiers need to be taken into account in some cases:

- In some countries (e.g. Czech Republic and Portugal), the low level of the S2 indicator is conditional on maintaining a high structural primary balance in the long-term, and can be deemed ambitious by historical EU standards (a low percentile rank associated to the required SPB) ([96]).

- Furthermore, as the adjustment implied by the S2 indicator might lead to a debt stabilising at relatively high levels, this indicator has to be taken with some caution for high-debt countries (e.g. Italy, Portugal, Spain and France).

Under more adverse fiscal assumptions, long-term fiscal challenges would be more acute in most countries. For instance, under the AWG risk scenario (with more dynamic projected health-care costs), the majority of countries would be at either high (2 countries) or medium (22 countries) fiscal sustainability risk. Only Croatia, Italy and Cyprus would still be classified at low risk in this case. If the initial structural primary balance reverted back to historical averages (often less favourable than forecast values), long-term fiscal gaps would also be higher in the majority of countries (17 countries), with unfavourable changes in risk classification in the Czech Republic, Ireland and Portugal (from low to medium).

5.3.4. Comparison with the DSM 2016 results

The short-term risk classification is unchanged compared to last year. As in the DSM 2016, no country is found to be at risk of fiscal stress in the short-term, according to the S0 indicator.

A limited number of changes in the medium-term risk classification, based on the joint use of the DSA tool and the S1 indicator, are found, yet overall pointing to reduced risks:

- In four countries, the risk classification has improved towards safer levels: in Cyprus, Poland and Slovenia, from high to medium risk, and in Ireland from medium to low risk. In all these cases, the improvement in the initial budgetary position explains the change in the risk category (e.g. large improvement in the forecasted structural primary balance and debt ratio in Cyprus).

- In Romania on the other hand, the medium-term risk classification has worsened from medium to high risk, largely driven by the

([96]) This is also the case of Germany and Italy, although in these two countries, the country-specific historical average SPB is found to be relatively high (close or even higher than the last forecast value of the SPB).

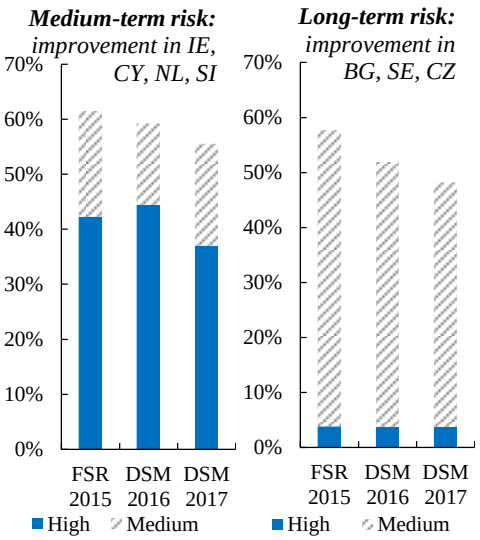
deterioration of the forecasted structural primary balance.

In the long-term, the risk classification has changed only in one country (Czech Republic). The improvement (from medium to low risk) in this country is explained by a more favourable initial budgetary position. This relative stability of the long-term risk classification compared to the DSM 2016 is due to the projected costs of ageing remaining largely unchanged, being based on the Ageing Report 2015 ([97]).

Looking at the evolution of the risk classification across the last three editions of the FSR / DSM, an overall improvement is observed. A slightly decreasing proportion of countries classified at high / medium risk in the medium- and long-term is observed when comparing different vintages of the FSR / DSM (see Graph 5.1). Moreover, no country is deemed to be at high risk of fiscal distress in the short-term since the FSR 2015. As pointed out in this report, a better economic and fiscal outlook, very supportive financial conditions and structural reforms in certain cases explain this encouraging trend.

However, fiscal sustainability challenges are still important in the medium- and long-term. For instance, in the medium-term, around half of Member States are still classified at high or medium-risk, of which more than a third is classified at high risk. These remaining challenges are often linked to still high public debt burdens, the legacy of the last crisis. Furthermore, the slight overall improvement in the long-term risk classification is due to sounder initial fiscal positions. Yet, the report highlights the sensitivity of long-term fiscal gaps to underlying assumptions. Overall, with around half of EU Member States still classified at medium- to high risk in the long-term, often driven by projected increases in ageing costs, additional reforms in the area of pensions and / or health-care seem needed in several cases.

Graph 5.1: **Proportion of countries classified at medium- to high-risk in the FSR 2015, the DSM 2016 and the DSM 2017**



Source: Commission services

([97]) Small differences can be observed in cases due to the change of the initial year considered for the projections.

Table 5.1: **Fiscal sustainability assessment by Member State (in bracket, classification in the DSM 2016, based on Commission Autumn 2016 forecasts, whenever the risk category has changed)**

	Overall SHORT-TERM risk category	Debt sustainability analysis - overall risk assessment	S1 indicator - overall risk assessment	Overall MEDIUM-TERM risk category	Overall LONG-TERM risk category
BE	LOW	HIGH	HIGH	HIGH	MEDIUM
BG	LOW	LOW	LOW	LOW	LOW
CZ	LOW	LOW	LOW	LOW	LOW (MEDIUM)
DK	LOW	LOW	LOW	LOW	LOW
DE	LOW	LOW	LOW	LOW	LOW
EE	LOW	LOW	LOW	LOW	LOW
IE	LOW	LOW (MEDIUM)	LOW (MEDIUM)	LOW (MEDIUM)	LOW
ES	LOW	HIGH	HIGH	HIGH	LOW
FR	LOW	HIGH	HIGH	HIGH	LOW
HR	LOW	HIGH	MEDIUM	HIGH	LOW
IT	LOW	HIGH	HIGH	HIGH	LOW
CY	LOW	MEDIUM (HIGH)	MEDIUM (HIGH)	MEDIUM (HIGH)	LOW
LV	LOW	LOW	LOW	LOW	LOW
LT	LOW	LOW	MEDIUM	MEDIUM	MEDIUM
LU	LOW	LOW	LOW	LOW	MEDIUM
HU	LOW	HIGH	MEDIUM	HIGH	MEDIUM
MT	LOW	LOW	LOW	LOW	MEDIUM
NL	LOW	LOW	LOW	LOW	MEDIUM
AT	LOW	MEDIUM	MEDIUM	MEDIUM	MEDIUM
PL	LOW	MEDIUM (HIGH)	MEDIUM	MEDIUM (HIGH)	MEDIUM
PT	LOW	HIGH	HIGH	HIGH	LOW
RO	LOW	HIGH (LOW)	MEDIUM	HIGH (MEDIUM)	MEDIUM
SI	LOW	MEDIUM (HIGH)	MEDIUM	MEDIUM (HIGH)	HIGH
SK	LOW	LOW	LOW	LOW	MEDIUM
FI	LOW	HIGH	MEDIUM (HIGH)	HIGH	MEDIUM
SE	LOW	LOW	LOW	LOW	LOW
UK	LOW	HIGH	MEDIUM (HIGH)	HIGH	MEDIUM

Source: Commission services

Table 5.2: **Final DSA risk classification: detail of the classification**

HIGH RISK	MEDIUM RISK	LOW RISK
Baseline scenario at high risk	**Baseline scenario at medium risk**	**Baseline scenario at low risk (confirmed by other scenarios)**
BE, ES, FR, IT, PT	CY, AT, SI	BG, CZ, DK, DE, EE, IE, LV, LT, LU, MT, NL, SK, SE
Baseline scenario at medium risk (At least one) other scenario* at high risk due to:	**Baseline scenario at low risk (At least one) other scenario* at medium risk due to:**	
Debt level at high risk: HR, UK Debt peak year at high risk: HU, RO, FI	Debt level at medium risk: PL	

Source: Commission services

Table 5.3: **Summary heat map on fiscal sustainability challenges**

	BE	BG	CZ	DK	DE	EE	IE	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK
Heat map for short-term risks in EU countries																											
S0 overall index	0.35	0.25	0.19	0.30	0.08	0.20	0.28	0.37	0.24	0.20	0.36	0.44	0.24	0.21	0.12	0.39	0.05	0.20	0.07	0.25	0.36	0.20	0.13	0.30	0.10	0.12	0.42
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 EU countries																											
S1 indicator in EU countries																											
	BE	BG	CZ	DK	DE	EE	IE	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK
S1 indicator - Baseline scenario	3.4	-4.3	-3.1	-3.4	-1.7	-3.1	-1.4	3.2	4.9	1.2	6.7	0.0	-2.0	0.6	-3.8	1.1	-3.1	-1.9	0.4	0.6	5.0	2.1	1.3	-2.6	1.5	-3.9	2.1
S1 indicator - overall risk assessment	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	MEDIUM	HIGH	MEDIUM	LOW	MEDIUM	LOW	MEDIUM	LOW	LOW	MEDIUM	MEDIUM	HIGH	MEDIUM	MEDIUM	LOW	MEDIUM	LOW	MEDIUM
Sovereign-debt sustainability risks in EU countries																											
	BE	BG	CZ	DK	DE	EE	IE	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK
Baseline no-policy change scenario	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	MEDIUM	HIGH	MEDIUM	LOW	LOW	LOW	MEDIUM	LOW	LOW	MEDIUM	LOW	HIGH	MEDIUM	MEDIUM	LOW	MEDIUM	LOW	MEDIUM
Debt level (2028)	94.8	13.8	25.9	24.1	40.6	19.4	48.3	95.1	105.7	74.9	129.9	68.2	33.8	48.8	16.4	69.9	29.3	38.6	61.7	60.0	114.5	64.9	64.9	35.1	67.9	20.4	80.4
Debt peak year	2017	2017	2017	2017	2017	2028	2017	2017	2028	2017	2017	2017	2017	2028	2017	2017	2017	2017	2017	2028	2017	2028	2017	2017	2028	2017	2017
Average Structural Primary Balance (2019-2028) Percentile rank	48%	43%	40%	53%	25%	75%	25%	68%	74%	48%	35%	25%	70%	56%	46%	71%	25%	45%	42%	71%	29%	88%	49%	45%	65%	39%	40%
Historical SPB scenario	MEDIUM	LOW	LOW	LOW	LOW	LOW	MEDIUM	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	LOW	LOW	MEDIUM	LOW	LOW	MEDIUM	MEDIUM	HIGH	LOW	MEDIUM	LOW	LOW	LOW	HIGH
Debt level (2028)	89.1	14.8	42.1	11.3	44.7	13.2	72.3	94.7	107.7	90.1	125.1	78.6	36.4	57.3	8.1	67.3	41.6	38.3	62.5	65.2	130.8	58.3	72.9	52.5	50.5	13.7	102.5
Debt peak year	2017	2017	2028	2017	2017	2028	2028	2017	2028	2028	2017	2017	2017	2028	2017	2017	2017	2017	2017	2028	2028	2028	2017	2028	2017	2017	2028
Average Structural Primary Balance (2019-2028) Percentile rank	37%	44%	66%	31%	28%	69%	62%	68%	75%	69%	28%	37%	72%	68%	32%	68%	41%	45%	44%	75%	55%	83%	64%	71%	36%	29%	74%
Negative shock (-0.5p.p.) on nominal GDP growth	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	MEDIUM	HIGH	MEDIUM	LOW	LOW	LOW	HIGH	LOW	LOW	MEDIUM	MEDIUM	HIGH	MEDIUM	MEDIUM	LOW	HIGH	LOW	MEDIUM
Debt level (2028)	100.2	14.9	27.5	25.8	43.4	20.0	51.2	100.5	111.1	79.4	137.6	72.8	35.5	51.0	17.3	73.8	31.3	41.1	65.3	62.9	121.5	67.4	68.5	37.2	71.3	21.9	84.9
Debt peak year	2017	2017	2017	2017	2017	2028	2017	2028	2028	2017	2028	2017	2017	2028	2017	2028	2017	2017	2017	2028	2017	2028	2017	2017	2028	2017	2017
Positive shock (+1p.p.) to the market interest rates on new debt	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	LOW	LOW	HIGH	LOW	LOW	MEDIUM	MEDIUM	HIGH	MEDIUM	MEDIUM	LOW	HIGH	LOW	MEDIUM
Debt level (2028)	100.6	14.4	28.0	25.7	43.7	20.3	50.5	101.4	111.4	80.5	138.9	70.4	35.6	51.8	17.0	74.6	31.1	41.2	65.0	63.5	121.9	68.3	69.0	36.6	71.9	22.2	84.8
Debt peak year	2017	2017	2017	2017	2017	2028	2017	2028	2028	2028	2028	2017	2017	2028	2017	2028	2017	2017	2017	2028	2017	2028	2017	2017	2028	2017	2017
Negative shock on the PB over the two forecast years	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	LOW	LOW	MEDIUM	LOW	LOW	MEDIUM	MEDIUM	HIGH	HIGH	MEDIUM	LOW	MEDIUM	LOW	MEDIUM
Debt level (2028)	98.1	14.6	29.3	26.4	41.0	21.3	54.3	95.8	109.3	82.0	132.9	72.3	33.9	49.8	17.9	72.5	31.3	41.7	62.8	62.4	117.1	70.2	67.8	39.5	69.9	21.1	83.7
Debt peak year	2017	2017	2017	2017	2017	2028	2017	2017	2028	2028	2028	2017	2017	2028	2017	2017	2017	2017	2017	2028	2017	2028	2017	2017	2028	2017	2017
Stochastic projections	MEDIUM	MEDIUM	LOW	LOW	LOW	LOW	MEDIUM	HIGH	HIGH	MEDIUM	HIGH	MEDIUM	MEDIUM	MEDIUM	LOW	MEDIUM	LOW	LOW	LOW	LOW	HIGH	MEDIUM	LOW	LOW	LOW	LOW	LOW
Probability of debt in 2022 greater than in 2017 (%)	26%	28%	29%	15%	1%	100%	23.3%	33%	62%	37%	33%	14%	36%	44%	38%	40%	7%	3%	16%	50%	30%	76%	20%	25%	57%	3%	28%
Difference between the 10th and 90th percentile in 2022 (p.p. of GDP)	29.9	33.9	22.2	15.9	15.8	4.0	32.1	18.2	13.5	43.3	25.4	44.1	37.5	33.7	21.7	40.1	21.3	17.2	28.1	21.5	38.8	36.8	27.1	29.3	19.2	11.6	19.7
Debt sustainability analysis - overall risk assessment	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	LOW	LOW	HIGH	LOW	LOW	MEDIUM	MEDIUM	HIGH	HIGH	MEDIUM	LOW	HIGH	LOW	HIGH
Overall MEDIUM-TERM risk category	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	MEDIUM	LOW	HIGH	LOW	LOW	MEDIUM	MEDIUM	HIGH	HIGH	MEDIUM	LOW	HIGH	LOW	HIGH
Heat map for long-term risks in EU countries																											
	BE	BG	CZ	DK	DE	EE	IE	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK
S2 indicator - Baseline scenario	2.7	1.0	1.7	0.9	1.2	1.6	-0.5	1.2	1.1	-1.5	0.6	-1.8	1.1	3.1	4.4	3.4	3.2	3.0	2.7	3.1	1.0	5.1	6.1	2.4	2.8	0.5	2.1
Overall LONG-TERM risk category	MEDIUM	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	LOW	MEDIUM	HIGH	MEDIUM	MEDIUM	LOW	MEDIUM

(1) In this table, only the relevant information used for the risk classification is included. The report contains more detailed information. The thresholds used are presented in Annex A6.

Source: Commission services

ANNEX A1

The early-detection indicator of fiscal stress risk

A1.1. 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 A1.1: **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 such as 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): ([98])

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

$$= \arg\min_{t_i \in T_i} \left(\frac{FN_i(t_i)}{Fs} + \frac{FP_i(t_i)}{Nfs} \right) \qquad (1)$$

$i = 1,.., n$

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; ([99]) *n* = total number of variables used.

It is straightforward to see from (1) that in the minimisation problem 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 $i = 1,\ldots, n$) 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). ([100]) In 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

([98]) 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.

([99]) 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.

([100]) See, for instance, Reinhart, Goldstein and Kaminsky (2000); Hemming, Kell and Schimmelpfennig (2003).

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. ([101]) In this case the optimal threshold for variable i (t_i^*) is obtained as:

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

$i = 1,\ldots,n$

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.

A1.2. 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). ([102]) 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:

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

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. ([103]) The variables are therefore assigned higher weight in the composite indicator, the higher their past forecasting accuracy. ([104])

([101]) See, for instance, Reinhart, Goldstein and Kaminsky (2000); Hemming, Kell and Schimmelpfennig (2003).

([102]) 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).

([103]) 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).

([104]) 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 A2

The medium- and long-term sustainability indicators (S1, S2) and the intertemporal net worth indicator (INW)

A2.1 NOTATION

t : time index. Each period is one year

t_0 : last year before the long-term projection (e.g. 2017)

$t_0 + 1$: first year of the long-term projection period. Start of the fiscal adjustment

t_1 : end of the fiscal adjustment (relevant for S1)

t_2 : target year for the debt ratio (e.g. 2030, relevant for S1)

t_3 : final year of the long-term projection period (e.g. 2060)

Notice that $t_0 < t_1 < t_2 < t_3$.

D_t : debt-to-GDP ratio (at the end of year t).

PB_t : ratio of structural primary balance to GDP

$\Delta\mathrm{PB}_t \equiv \mathrm{PB}_t - \mathrm{PB}_{t_0}$: 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

c : the annual increase in the primary structural balance during fiscal adjustment (i.e. between $t_0 + 1$ and t_1) (relevant for S1).

$S_1 \equiv c(t_1 - t_0)$: the value of the S1 indicator, i.e. the total fiscal adjustment.

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.

A2.2 DEBT DYNAMICS

By definition, the debt-to-GDP ratio evolves according to:

$$D_t = (1 + r_t)D_{t-1} - \mathrm{PB}_t. \qquad (1)$$

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 ($-\mathrm{PB}_t$).

Repeatedly substituting for D_t, the debt ratio at the end of some future year $T > t$ can be expressed similarly, as:

$$D_T = D_{t-1}\alpha_{t-1;T} - \sum_{i=t}^{T}(\mathrm{PB}_i\alpha_{i;T}). \qquad (2)$$

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.

Important warning

It should be noted that the actual calculation of the S1 and S2 indicators also accounts for property income and tax revenue on pensions, although they are not explicitly included in the derivations in order to simplify them and to facilitate the interpretation of results. Their inclusion would be trivial, implying "adding" terms to the formulas similar to that for "ageing costs" ΔA_t.

A2.3 DERIVATION OF THE S1 INDICATOR

The S1 indicator is defined as the constant annual improvement in the ratio of structural primary balance to GDP, from year $t_0 + 1$ up to year t_1, that is required to bring the debt ratio to a given level by year t_2. ([105]) In addition to accounting for the need to adjust the initial intertemporal budgetary position and the debt level, it incorporates financing for any additional

([105]) This is in contrast to the S2 indicator, which is defined as an immediate, one-off adjustment.

expenditure until the target date arising from an ageing population.

During the S1 adjustment, the primary balance (as a percentage of GDP) increases by a constant annual amount $c > 0$ each year starting from $t_0 + 1$ through t_1. The adjustment is assumed to be permanent. Under the assumed consolidation schedule, the change in the primary balance is thus given by

$$\mathrm{PB}_i = \mathrm{SPB}_{t_0} + c(i - t_0) - \Delta A_i + \Delta PI_i + CC_i \qquad \text{(3i)}$$

$$\text{for } t_0 < i \leq t_1$$

$$\mathrm{PB}_i = \mathrm{SPB}_{t_0} + \underbrace{c(t_1 - t_0)}_{= S_1} - \Delta A_i + \Delta PI_i + CC_i \qquad \text{(3ii)}$$

$$\text{for } t_2 \geq i > t_1$$

Using (2), the debt ratio target D_{t_2} can then be written as:

$$D_{t_2} = D_{t_0}\alpha_{t_0;t_2} - \sum_{i=t_0+1}^{t_2} \left(\mathrm{PB}_i \alpha_{i;t_2}\right) \qquad (4)$$

Replacing (3i)-(3ii) into (4) yields:

$$D_{t_2} = D_{t_0}\alpha_{t_0;t_2} - \sum_{i=t_0+1}^{t_1} \left(\mathrm{SPB}_{t_0} + c(i - t_0)\right)\alpha_{i;t_2}$$

$$- \sum_{i=t_1+1}^{t_2} \left(\mathrm{SPB}_{t_0} + \underbrace{c(t_1 - t_0)}_{= S_1}\right)\alpha_{i;t_2} \qquad (5)$$

$$+ \sum_{i=t_0+1}^{t_2} \left((\Delta A_i - \Delta PI_i - CC_i)\,\alpha_{i;t_2}\right)$$

After some straightforward manipulations, ([106]) we can decompose the S1 into the following main components:

$$S_1 \equiv \underbrace{c(t_1 - t_0)}_{T} =$$

$$= \underbrace{\frac{D_{t_0}(\alpha_{t_0;t_2} - 1)}{\sum_{i=t_0+1}^{t_2}(\alpha_{i;t_2})} - \mathrm{SPB}_{t_0} - \frac{\sum_{i=t_0+1}^{t_2}(\Delta PI_i \alpha_{i;t_2})}{\sum_{i=t_0+1}^{t_2}(\alpha_{i;t_2})} - \frac{\sum_{i=t_0+1}^{t_2}(CC_i \alpha_{i;t_2})}{\sum_{i=t_0+1}^{t_2}(\alpha_{i;t_2})}}_{A}$$

$$+ \underbrace{c\frac{\sum_{i=t_0+1}^{t_1}\left((t_1 - i)\alpha_{i;t_2}\right)}{\sum_{i=t_0+1}^{t_2}(\alpha_{i;t_2})}}_{B} + \underbrace{\frac{D_{t_0} - D_{t_2}}{\sum_{i=t_0+1}^{t_2}(\alpha_{i;t_2})}}_{C} \qquad (6)$$

$$+ \underbrace{\frac{\sum_{i=t_0+1}^{t_2}(\Delta A_i \alpha_{i;t_2})}{\sum_{i=t_0+1}^{t_2}(\alpha_{i;t_2})}}_{D}$$

where (T) is the total adjustment (the S1 indicator by definition); (A) the strict initial budgetary position (i.e. the gap to the debt-stabilising primary balance); (B) the cost of delaying the adjustment; (C) the required additional adjustment due to the debt target (DR); and (D) the additional required adjustment due to the costs of ageing (LTC). The total initial budgetary position (IBP) is the sum of A and B i.e. includes the cost of delaying the adjustment.

A2.4 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. ([107])

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:

([106]) Add and subtract D_{t_0} on the LHS of (5). In the second term on the LHS, rewrite $c(i - t_0) = S_1 - c(t_1 - i)$, then exchange $-S_1 \cdot \sum_{i=t_0+1}^{t_2}(\alpha_{i;t_2})$ on the LHS for D_{t_2} on the RHS. Finally, divide by $\sum_{i=t_0+1}^{t_2}(\alpha_{i;t_2})$, simplify, and group the terms as in (6).

([107]) 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.

$$D_t = D_{t_0}\alpha_{t_0;t} - \sum_{i=t_0+1}^{t}\left(\mathrm{PB}_i\alpha_{i;t}\right). \quad (7)$$

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:

$$\begin{aligned} D_{t_0} &= \lim_{t\to\infty}\left(\frac{D_t}{\alpha_{t_0;t}}\right) + \lim_{t\to\infty}\sum_{i=t_0+1}^{t}\left(\frac{\mathrm{PB}_i}{\alpha_{t_0;i}}\right) \\ &= \lim_{t\to\infty}\left(\frac{D_t}{\alpha_{t_0;t}}\right) + \sum_{i=t_0+1}^{\infty}\left(\frac{\mathrm{PB}_i}{\alpha_{t_0;i}}\right) \end{aligned} \quad (8ii)$$

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.

$$D_{t_0} = \sum_{i=t_0+1}^{\infty}\left(\frac{\mathrm{PB}_i}{\alpha_{t_0;i}}\right) \quad (9ii)$$

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:

$$\mathrm{PB}_i = \mathrm{SPB}_{t_0} + S_2 - \Delta A_i + \Delta PI_i + CC_i \quad \text{for} \quad i > t_0. \quad (10)$$

Then the intertemporal budget constraint (9ii) becomes

$$D_{t_0} = \sum_{i=t_0+1}^{\infty}\left(\frac{\mathrm{PB}_{t_0} + S_2 - \Delta A_i + \Delta PI_i + CC_i}{\alpha_{t_0;i}}\right). \quad (9iii)$$

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 ([108]). The latter is equivalent to the modified golden rule, stating that the nominal interest rate exceeds the real growth rate (i.e. $\lim_{t\to\infty} r_t > 0$). ([109])

After some rearranging, ([110]) we can decompose the S2 into the following two components:

$$\begin{aligned} S_2 = \\ = \underbrace{\frac{D_{t_0}}{\sum_{i=t_0+1}^{\infty}\left(\frac{1}{\alpha_{t_0;i}}\right)} - \mathrm{SPB}_{t_0} - \frac{\sum_{i=t_0+1}^{\infty}\left(\frac{\Delta PI_i + CC_i}{\alpha_{t_0;i}}\right)}{\sum_{i=t_0+1}^{\infty}\left(\frac{1}{\alpha_{t_0;i}}\right)}}_{A} \\ + \underbrace{\frac{\sum_{i=t_0+1}^{\infty}\left(\frac{\Delta A_i}{\alpha_{t_0;i}}\right)}{\sum_{i=t_0+1}^{\infty}\left(\frac{1}{\alpha_{t_0;i}}\right)}}_{B} \end{aligned} \quad (11)$$

where (A) is the initial budgetary position i.e. the gap to the debt stabilising primary balance ([111]);

([108]) The latter is an application of the ratio test for convergence.
([109]) See Escolano (2010) for further details on the relationships among the stability of the debt ratio, the IBC and the no-Ponzi game condition.
([110]) In addition, constant multiplicative terms are systematically taken out of summation signs.
([111]) 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

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:

$$S_2 = \underbrace{rD_{t_0} - \mathrm{SPB}_{t_0} - r\sum_{i=t_0+1}^{\infty}\left(\frac{\Delta PI_i + CC_i}{\alpha_{t_0;i}}\right)}_{A} + \underbrace{r\sum_{i=t_0+1}^{\infty}\left(\frac{\Delta A_i}{\alpha_{t_0;i}}\right)}_{B} \qquad (13i)$$

If the interest-growth rate differential and the structural primary balance are constant after a certain date (here $t_3 = 2060$), equation (11) can be rewritten as:

$$S_2 = \frac{D_{t_0}}{\sum_{i=t_0+1}^{2059}\left(\frac{1}{\alpha_{t_0+1;i}}\right) + \frac{1}{r\alpha_{t_{0+1};2059}}} - \mathrm{SPB}_{t_0} - \frac{\sum_{i=t_0+1}^{2059}\left(\frac{\Delta PI_i + CC_i}{\alpha_{t_0+1;i}}\right) + \frac{\Delta PI_{2060} + CC_{2060}}{r\,\alpha_{t_{0+1};2059}}}{\sum_{i=t_0+1}^{2059}\left(\frac{1}{\alpha_{t_0;i}}\right) + \frac{1}{r\,\alpha_{t_{0+1};2059}}} + \frac{\sum_{i=t_0+1}^{2059}\left(\frac{\Delta A_i}{\alpha_{t_0+1;i}}\right) + \frac{\Delta A_{2060}}{r\,\alpha_{t_{0+1};2059}}}{\sum_{i=t_0+1}^{2059}\left(\frac{1}{\alpha_{t_0;i}}\right) + \frac{1}{r\,\alpha_{t_{0+1};2059}}} \qquad (13ii)$$

where $r_t = r$ and $\Delta A_t = \Delta A_{2060}$ for $t \geq t_3 = 2060$.

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 $t_3 = 2060$).

To see this, rewrite (9ii) as:

$$D_{t_0} = \sum_{i=t_0+1}^{\infty}\left(\frac{\mathrm{PB}_i}{\alpha_{t_0;i}}\right) = \sum_{i=t_0+1}^{t_3}\left(\frac{\mathrm{PB}_i}{\alpha_{t_0;i}}\right) + \sum_{i=t_3+1}^{\infty}\left(\frac{\mathrm{PB}_i}{\alpha_{t_0;i}}\right) \qquad (14i)$$

Using (7) and the fact that for $t \geq t_3$ the primary balance and interest-growth rate differential stay constant at $\mathrm{PB}_t = \mathrm{PB}_{t_3}$ we can rearrange (14i) to obtain the debt ratio at t_3:

$$D_{t_3} = D_{t_0}\alpha_{t_0;t_3} - \sum_{i=t_0+1}^{t_3}\left(\mathrm{PB}_i\alpha_{i;t_3}\right) = \sum_{i=t_3+1}^{\infty}\left(\frac{\mathrm{PB}_i}{\alpha_{t_3;i}}\right) = \sum_{i=1}^{\infty}\left(\frac{\mathrm{PB}_{t_3}}{(1+r_{t_3})^i}\right) = \frac{\mathrm{PB}_{t_3}}{r_{t_3}} \qquad (14ii)$$

We can generalising the above to each $t \geq t_3$ by using (7) with the initial year changed to t_3 instead of t_0, we see that for each year after t_3, the debt ratio remains unchanged at this value:

$$\begin{aligned} D_t &= D_{t_3}\alpha_{t_3;t} - \sum_{i=t_3+1}^{t}\left(\mathrm{PB}_i\alpha_{i;t}\right) \\ &= \frac{\mathrm{PB}_{t_3}}{r_{t_3}}\left(1+r_{t_3}\right)^{t-t_3} - \mathrm{PB}_{t_3}\sum_{i=t_3+1}^{t-t_3}\left(1+r_{t_3}\right)^{t-i-1} \\ &= \underbrace{\left[\left(1+r_{t_3}\right)^{t-t_3} - r_{t_3}\left(\frac{1-\left(1+r_{t_3}\right)^{t-t_3}}{1-\left(1+r_{t_3}\right)}\right)\right]}_{=1}\frac{\mathrm{PB}_{t_3}}{r_{t_3}} \\ &= \frac{\mathrm{PB}_{t_3}}{r_{t_3}} \equiv \bar{\bar{D}} \quad \text{for} \quad t \geq t_3 \end{aligned} \qquad (15)$$

where $\bar{\bar{D}}$ 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:

$$\mathrm{PB}_{t_3} = \mathrm{SPB}_{t_0} + \Delta PI_{t_3} + CC_{t_3} + S_2 - \Delta A_{t_3} \qquad (16)$$

Replacing (16) into (15), the constant (steady-state) debt ratio ($\bar{\bar{D}}$) is given by:

$$\bar{\bar{D}} = \frac{\mathrm{PB}_{t_3}}{r_{t_3}} = \frac{\mathrm{SPB}_{t_0} + \Delta PI_{t_3} + CC_{t_3} + S_2 - \Delta A_{t_3}}{r_{t_3}} \qquad (17)$$

for $t \geq t_3$

identical manner as age-related costs ΔA_t (i.e. term (B)), but with an opposite sign.

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:

$$D_t + \sum_{i=t+1}^{\infty}\left(\frac{\Delta A_i}{(1+r)^{i-t}}\right) - \sum_{i=t+1}^{\infty}\left(\frac{\Delta PI_i + CC_i}{(1+r)^{i-t}}\right) = D_{t_0} + \sum_{i=t_0+1}^{\infty}\left(\frac{\Delta A_i}{(1+r)^{i-t_0}}\right) - \sum_{i=t_0+1}^{\infty}\left(\frac{\Delta PI_i + CC_i}{(1+r)^{i-t_0}}\right) \quad (18)$$

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 2060), holding only as an approximation during transitory phases (i.e. for time-varying interest rate differentials). ([112])

A2.5 DERIVATION OF THE INW INDICATOR

The inter-temporal net worth (INW) indicator can be interpreted as a measure of government's net financial wealth, assuming unchanged policies and including projected/implicit future liabilities due to ageing.

INW is given by net worth (a_{t_0}) in the base year (t_0) minus the discounted sum of all future primary balances required to secure inter-temporal sustainability (i.e. S2). Net worth is the difference between government assets and liabilities i.e. the negative of net debt.

Accordingly, the inter-temporal net worth indicator is derived from S2 as:

$$\mathrm{INW}_{t_0} = a_{t_0} - S_2 \sum_{i=t_0+1}^{\infty}\left(\frac{1}{\alpha_{t_0;i}}\right) \quad (19)$$

For a constant discount factor, using (12) equation (19) simplifies to:

$$\mathrm{INW}_{t_0} = a_{t_0} - \frac{S_2}{r} \quad (20)$$

([112]) 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 A3
The Stability and Growth Pact scenario

In the SGP scenario, it is assumed that, for countries under EDP, a structural fiscal adjustment in compliance with the Council recommendations is maintained until the excessive deficit is corrected. Thereafter, a structural consolidation effort, determined according to the preventive arm of the Pact, as clarified by the January 2015 European Commission Communication regarding SGP flexibility and the February 2016 ECOFIN Commonly agreed position, ([113]) is maintained until the MTO is reached. For countries that are not under EDP, the annual fiscal adjustment required to reach the MTO is determined according to the aforementioned documents ([114]) and applied as from 2019. More details are contained in Table A3.1.

Table A3.1: **SGP scenario: main features**

Date	Countries under EDP	Countries not under EDP (but whose SB < MTO in 2018)	Countries not under EDP (and whose SB >= MTO in 2018)
2018	fiscal consolidation (in terms of SB) fixed by Council recommandation	SB = forecast value	SB = forecast value (>= MTO)
2019 until excessive deficit (if any) corrected		fiscal consolidation (in terms of SB) determined by the matrix (for cyclical conditions), investment and structural reforms' clauses (flexibility communication)	SB constant (>= MTO)
excessive deficit (if any) corrected until MTO reached	fiscal consolidation (in terms of SB) determined by the matrix (for cyclical conditions), investment and structural reforms' clauses (flexibility communication)		
MTO reached until end of projections (2028)	SB constant (>= MTO)	SB constant (>= MTO)	

Source: Commission services

For Member States under EDP, the recommended fiscal adjustment is applied in 2018. This concerns only Spain (requirement adjustment of 0.5 pps. of GDP in 2018). For countries not under EDP and for countries under EDP, once the excessive deficit will have been corrected, the annual fiscal adjustment required to reach the MTO is determined according to the matrix defined in the flexibility Communication (see Table A3.2). This matrix specifies the appropriate fiscal adjustment, required under the preventive arm of the SGP, taking better account of the cyclical situation of individual Member States. The level of requested fiscal effort is also modulated according to the level of the debt ratio (below or above 60% of GDP) and to the presence of sustainability risks. It should be noted that the SGP scenario (that is built on the *Autumn forecasts* for the year t+1) does not take into account the possible further granting of flexibility (on top of the one granted in the European Semester 2017) to temporarily deviate from the MTO or adjustment path towards it, under the structural reform and / or investment clause (see the aforementioned flexibility Communication). The potential use of the margin of discretion is not taken into account either.

Table A3.2: **Matrix specifying fiscal adjustment towards MTO (preventive arm of the SGP)**

	Condition	Required annual fiscal adjustment	
		Debt below 60% of GDP and no sustainability risk	Debt above 60% of GDP or sustainability risk
Exceptionnaly bad times	Real growth < 0% or output gap < -4	no adjustment needed	
Very bad times	-4 <= output gap < -3	0	0.25
Bad times	-3 <= output gap < -1.5	0 if growth below potential, 0.25 if growth above potential	0.25 if growth below potential, 0.5 if growth above potential
Normal times	-1.5 <= output gap < 1.5	0.5	> 0.5
Good times	output gap >= 1.5	> 0.5 if growth below potential, >= 0.75 if growth above potential	>= 0.75 if growth below potential, >= 1 if growth above potential

Source: Commission services

Under the preventive arm of the SGP, the structural balance is assumed to converge to its MTO value, as set by Member States to ensure sustainability, including taking into account future ageing-related liabilities and debt level (see European Commission, 2017d). Therefore, differently to the baseline no-fiscal policy change scenario, future changes in ageing costs are 'compensated' e.g. through expenditure re-allocation ([115]).

The fiscal effort required for 2019 and onwards under the SGP preventive arm, taking into account the flexibility allowed by the SGP, is incorporated in our debt projections as reported in Table A3.3. In 2019, required fiscal adjustment ranges from 0 pps. of GDP for countries that would have already (over-)reached their MTO (e. g. DE or NL) to 1.0 pp. of GDP in the case of ES, HU and SI. By 2025,

([113]) Regulation 1466, as clarified by the Commission Communication regarding SGP flexibility. See also the Commonly agreed position on flexibility within the SGP as endorsed by the ECOFIN Council of 12 February 2016 (Council document number 14345/15).

([114]) See previous footnote for more details.

([115]) In the baseline no-fiscal policy change scenario, the structural balance is projected by assuming a constant structural primary balance (before costs of ageing) at the last forecast value, then integrating successively ageing costs and the interest rate bill. Hence, in the baseline scenario, expected increases (or decreases) of ageing costs are not supposed to be compensated.

Table A3.3: **Required fiscal adjustment under the SGP scenario (change in structural balance, pps. of GDP)**

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
BE	0.6	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CZ	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DK	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EE	0.75	0.17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EL	:	:	:	:	:	:	:	:	:	:
ES	1.0	0.7	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0
FR	0.6	0.6	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0
HR	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IT	0.6	0.6	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0
CY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LV	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LU	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HU	1.0	0.7	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AT	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PL	0.5	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PT	0.6	0.6	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0
RO	0.6	0.5	0.5	0.5	0.5	0.5	0.2	0.0	0.0	0.0
SI	1.0	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SK	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FI	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
UK	0.6	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Commission services

all countries will have reached their MTO in this scenario.

ANNEX A4

Decomposing debt dynamics and projecting the interest rate on public debt

A7.1 DECOMPOSING THE DEBT DYNAMICS

Deterministic public debt projections are based on a general identity characterising the evolution of the stock of debt. In a simplified version, the evolution of the public 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 public debt to GDP ratio in year t

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

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

i_t represents the implicit interest rate on public debt ([116])

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.

([116]) By simplicity, it is assumed that this interest rate is the same for public 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. ([117])

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).

([117]) This presentation, based on the public debt ratio identity equation, allows grasping the impact of real GDP growth and inflation on the debt motion coming from direct valuation effects (as public 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 public debt) contribute to the debt dynamic. ([118]) 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 (see Box 2.2 of the report for more details).

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 public debt denominated in euros

α^{usd} represents the share of total public 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 public debt not only in non-euro area countries, but also in euro area countries (among which public debt issued in USD can be significant).

([118]) 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).

A7.2 PROJECTING THE IMPLICIT INTEREST RATE ON PUBLIC DEBT

As seen from equation (1), a key driver of the debt motion is the implicit interest rate on public debt. Projecting the implicit interest rate on public 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 public debt (between short-term and long-term public debt, and between maturing, rolled-over or not, and non-maturing public 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 ([119])

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 public debt (and $(1 - \alpha_{t-1})$ is the share of long-term debt in total public debt). ([120])

Our model considers two types of public 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, public debt can be decomposed between new debt (debt issued to cover new financing requirements), ([121]) maturing debt (i.e. existing debt that is maturing within the year ([122]) and that needs to be repaid), rolled-over (i.e. whose repayment is

([119]) This corresponds to i_t in the previous section.
([120]) Hence, as indicated by the *t* index, these shares may vary through time depending on the debt dynamic.
([121]) This amount also corresponds to the yearly budgetary deficit.
([122]) Another way to describe it is that this existing debt has a *residual* maturity of less than one year.

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 public debt in year $t-1$

D_{t-1}^{STR} is the maturing and rolled-over short-term public 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 public debt

D_{t-1}^{LTR} is the maturing and rolled-over long-term public 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 public 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 public debt in year $t-1$ (and $(1-\beta_{t-1})$ is the share of outstanding long-term debt in total long-term public 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 public 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 public 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 public debt, an increase of market interest rates will transmit more or less quickly to the implicit interest rate on public debt.

In the projections, the following assumptions are made:

- i_t^{LT} is supposed to converge linearly to 5% in nominal terms (3% in real terms) for all countries by the T+10 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 0.83) for all countries by the T+10 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 public debt, based on the shares given by Estat (of short-term and long-term public debt), ([123]) whenever public debt is projected to increase; ([124])

- 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 public debt, based on the share of short-term public debt given by Estat, whenever public debt is projected to increase; ([125])

([123]) More precisely, we use the average shares over the last 3 years available.
([124]) Otherwise, in the cases where public debt is projected to decrease, for instance, in case of a budgetary surplus, no new debt needs to be issued.
([125]) Otherwise, in the cases where public 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 public

- 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 public debt is projected to increase. ([126]) This fraction is estimated based on the Estat data on the share of long-term public debt and on the ECB data on the share of existing long-term debt maturing within the year. ([127])

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.

The Table below reports the main parameters used to project public debt composition and the implicit interest rate. From this table, it can be seen that there is an important variability within the EU in terms of public debt maturity structure: indeed, if the share of short-term public debt was below 10% in the majority of MSs (19), it was above 20% in SE, and around 15% in HU, PT, UK and IT on averge in 2014-16. The share of long-term debt-securities maturing within the year was the lowest in IE, UK and LU on average in 2012-17 (around 7% at the most), while it reached the highest values in DE, RO and ES (around 14-16%).

Table A4.1: **Debt maturity structure: key parameters used in the projections, by country**

	Share of ST debt (% total debt)	Share of LT debt maturing every year (% LT debt)	
	Average, 2014-2016	2017	Average, 2012-2017
BE	8.1	10.8	9.5
BG	8.1	5.3	10.7
CZ	4.5	20.8	12.9
DK	10.1	8.0	11.6
DE	9.0	15.2	15.7
EE	2.0	:	:
IE	12.1	4.9	5.2
EL	:	:	:
ES	8.9	10.3	13.7
FR	11.1	4.7	8.8
HR	7.4	15.2	12.0
IT	14.0	10.5	12.2
CY	4.4	1.6	12.6
LV	4.2	8.6	7.8
LT	5.1	17.8	12.8
LU	6.6	0.1	6.8
HU	15.9	10.0	10.4
MT	5.3	10.7	8.0
NL	10.5	13.2	10.9
AT	6.1	9.1	8.5
PL	0.6	11.2	10.7
PT	14.7	10.1	10.5
RO	6.6	7.4	14.6
SI	4.8	12.9	10.8
SK	1.3	0.9	9.7
FI	9.6	7.9	9.6
SE	25.8	12.1	12.5
UK	14.6	7.7	5.8

(1) For the share of long-term maturing every year in Estonia, we use (as starting value) the average of other Baltic countries for as a proxy.
Source: Estat, ECB (CSDB)

debt is assumed to strongly decrease, for example, when a large budgetary surplus allows repaying past maturing debt).
([126]) See previous footnote.
([127]) More precisely, the starting point (currently 2018) is calculated based on the 2017 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 (2017) to the country-specific historical average by the end of the T+10 projection horizon.

ANNEX A5

Stochastic debt projections based on 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. ([128])

A5.1. THE METHOD TO OBTAIN (ANNUAL) STOCHASTIC SHOCKS TO MACROECONOMIC VARIABLES

Stochastic shocks are simulated for five macroeconomic variables entering the debt evolution equation: the government primary balance, nominal short-term interest rate, nominal long-term interest rate, nominal growth rate and exchange rate. First, the methodology requires transforming the time series of quarterly data for each macroeconomic variable x into series of historical quarterly shocks δ_q^x as follows:

$$\delta_q^x = x_q - x_{q-1}$$

A Monte Carlo simulation is then run by extracting random vectors of quarterly shocks over the projection period (2018-22) from 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 growth, and exchange rate for non-EA countries, as follows:

– the shock to the primary balance b in year t is given by the sum of the quarterly shocks to the primary balance:

$$\varepsilon_t^b = \sum_{q=1}^{4} \varepsilon_q^b$$

– the shock to nominal growth g in year t is given by the sum of the quarterly shocks to growth:

$$\varepsilon_t^g = \sum_{q=1}^{4} \varepsilon_q^g$$

– the shock in year t to the nominal exchange rate e 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 in year t to the nominal *short-term* interest rate i^S is given by the sum of the quarterly shocks to the short-term interest rate:

$$\varepsilon_t^{i^S} = \sum_{q=1}^{4} \varepsilon_q^{i^S}$$

The calculation of the shock to the nominal short-term interest rate in annual terms is justified based 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^L 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 ([129]). 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, from 2018 to 2022), the annual shock to long-term interest rate in year t is defined as:

([128]) For more details see Berti (2013).

([129]) The implicit assumption is made here that long-term government bonds are issued at fixed interest rates only.

$$\varepsilon_t^{i^L} = \frac{1}{T}\sum_{q=1}^{4}\varepsilon_q^{i^L} \quad \text{if} \quad t = 2018$$

$$\varepsilon_t^{i^L} = \frac{2}{T}\sum_{q=-4}^{4}\varepsilon_q^{i^L} \quad \text{if} \quad t = 2019$$

$$\varepsilon_t^{i^L} = \frac{3}{T}\sum_{q=-8}^{4}\varepsilon_q^{i^L} \quad \text{if} \quad t = 2020$$

$$\varepsilon_t^{i^L} = \frac{4}{T}\sum_{q=-12}^{4}\varepsilon_q^{i^L} \quad \text{if} \quad t = 2021$$

$$\varepsilon_t^{i^L} = \frac{5}{T}\sum_{q=-16}^{4}\varepsilon_q^{i^L} \quad \text{if} \quad t = 2022$$

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 ([130]):

$$\varepsilon_t^{i^L} = \frac{1}{3}\sum_{q=1}^{4}\varepsilon_q^{i^L} \quad \text{if} \quad t = 2018$$

$$\varepsilon_t^{i^L} = \frac{2}{3}\sum_{q=-4}^{4}\varepsilon_q^{i^L} \quad \text{if} \quad t = 2019$$

$$\varepsilon_t^{i^L} = \sum_{q=-8}^{4}\varepsilon_q^{i^L} \quad \text{if} \quad t \geq 2020$$

([130]) Annual shocks to the long-term interest rate for countries with weighted average maturities of 2 and 4 years will be defined in a fully analogous way.

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^S, and long-term debt, α^L, over total) gives us the annual shock to the implicit interest rate i:

$$\varepsilon_t^i = \alpha^S \varepsilon^{i^S} + \alpha^L \varepsilon^{i^L}$$

A5.2. 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.

A5.3. THE DEBT EVOLUTION EQUATION

Through the steps described above we obtain series, over the whole projection period, of simulated government primary balance, nominal growth rate, implicit interest rate and nominal exchange rate that can be used in the debt evolution equation to calculate debt ratios over a 5-year horizon, starting from the last historical value.

The debt evolution 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 ([131])

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 ([132])

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 2018-22, from which we extract the percentiles to construct the fan charts.

([131]) 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).

([132]) Figures on age-related costs from the European Commission's 2015 Ageing Report were used.

A5.4. THE 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. ([133]) 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 late 90s - early 2000s until the second quarter of 2017 were used to calculate the historical variance-covariance matrix.

([133]) 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.

ANNEX A6

Assessment of fiscal sustainability challenges criteria used

A6.1. THE OVERALL LOGIC FOLLOWED IN FISCAL SUSTAINABILITY ASSESSMENTS

The logic followed in fiscal sustainability assessment is the one used in the Fiscal Sustainability Report 2015 and in the Debt Sustainability Monitor 2016. An overview of the overall logic followed in the new approach and the elements that feature in it is provided in Graph A6.1.

In the remainder of this annex, the renewed approach to reach an overall assessment of medium-term sustainability challenges is described in more detail. A summary overview of the thresholds used in fiscal sustainability assessment (and in particular in the summary heat map in Chapter 5) is provided in Section A6.3.

A6.2. THE APPROACH USED IN THE ASSESSMENT OF MEDIUM-TERM SUSTAINABILITY CHALLENGES

The assessment of medium-term sustainability challenges is based an overall conclusion on the country's DSA *and* on S1 (under the baseline no-fiscal policy change scenario). A country is assessed to be at potential high (medium) risk if either the baseline S1 indicator *or* the DSA or both are highlighted in red (yellow) (see Graph A6.2).

The overall assessment of the country's DSA is reached by looking at debt projection results under two different scenarios (baseline no-fiscal policy change scenario; historical SPB scenario) and a series of negative sensitivity tests (on nominal growth, interest rates and primary balance) around the baseline no-fiscal policy change projections. ([134]) Synthetic stochastic debt projection results are also brought into the picture to reach the overall risk assessment on DSA.

The decision tree that is followed in this respect can be visualised in Graph A6.3. Practically, a country's DSA is deemed to highlight potential high risks if the baseline no-fiscal policy change debt projections are assessed to entail high risks, or if they are deemed to entail medium risks, but high risks are still highlighted by alternative scenarios (the historical SPB scenario or at least one of the sensitivity tests on macro-fiscal assumptions) or by stochastic projections. The high-risk assessment based on the latter criterion is meant to prudentially capture significant upward risks around a baseline that is already considered at medium risk. ([135])

Finally, at the lowest level of granularity, the risk assessment for each debt projection scenario/sensitivity test and for stochastic projections, on which the overall DSA assessment relies, follows an economic rationale that is explained in Graph A6.4. The variables used to summarise deterministic debt projection results are the following:

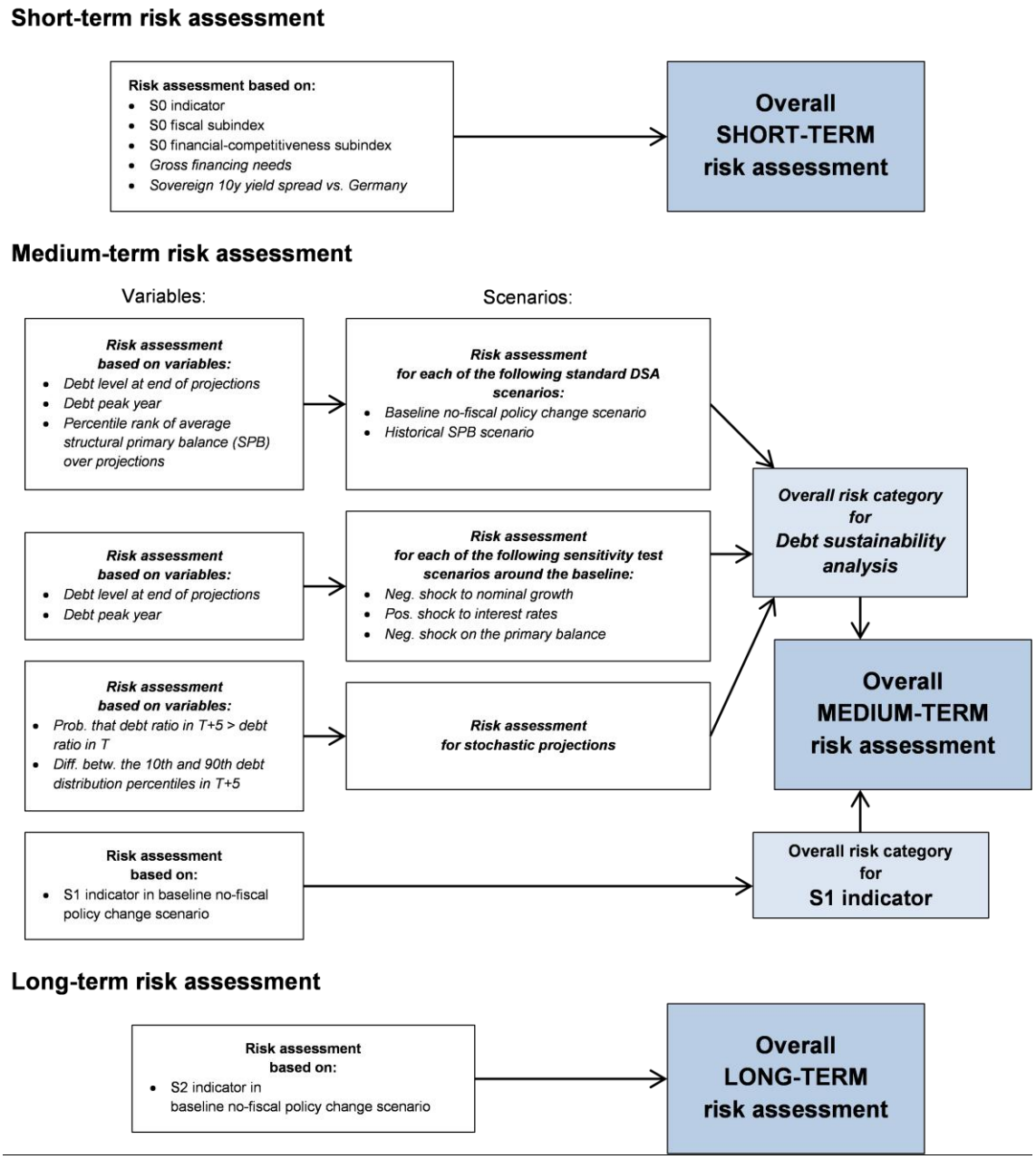
- The level of the debt ratio at the end of projections (2028);
- The year in which the debt ratio peaks over the 10-year projection horizon (providing a synthetic indication of debt dynamics);
- The percentile rank of the average SPB assumed over the projection horizon in the specific scenario (giving a sense of how common/uncommon the fiscal stance assumed in the projections is, relative to the SPB distribution for all EU countries over 1980-2017). ([136])

([134]) Positive sensitivity tests are neglected in the overall assessment as the idea is rather to stress test baseline debt projections against upward risks.

([135]) A prudential approach is what guides this choice. In particular, adopting a high level of prudence has been considered as particularly important in the case of countries being already considered at medium risk under the baseline no-fiscal policy change scenario. In this case, an historical SPB scenario (where fiscal policy is assumed to revert to historical behaviour) in red would be sufficient to lead to a high risk assessment, as indicated in Graph A6.3. This high level of prudence has not been deemed necessary for a country that is, on the contrary, deemed to be at low risk (thus far from vulnerable) under the baseline scenario (in this case a medium or high risk assessment under the historical SPB scenario does not lead in itself to a medium risk assessment).

([136]) For the individual sensitivity test scenarios, the percentile rank of the average SPB over the projection horizon is not used for the scenarios' risk assessment (see Graph A6.4). The reason is that these sensitivity tests are all run around the baseline no-fiscal policy change scenario, for which the variable percentile rank of the average SPB is already used in the assessment.

Graph A6.1: **Decision tree for the multi-dimensional approach to the assessment of fiscal sustainability challenges**

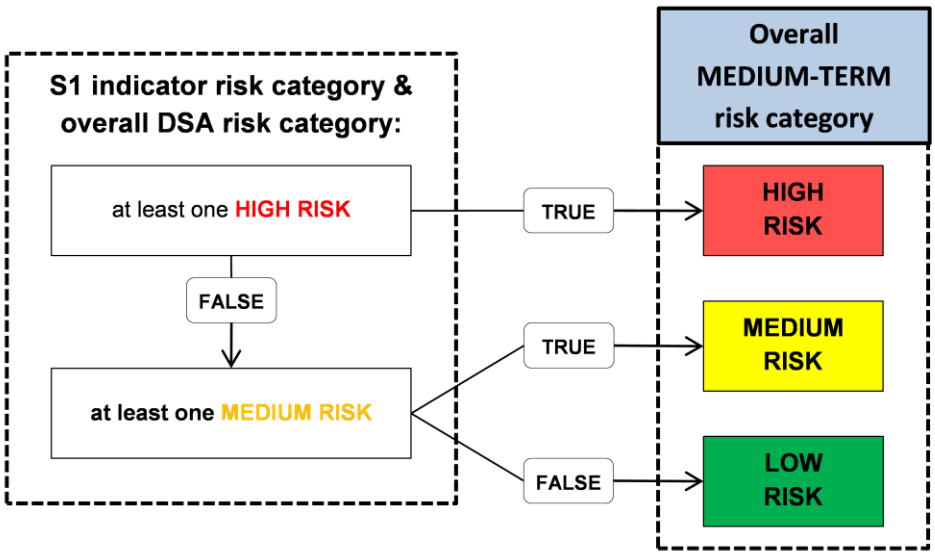


Source: Commission services

Stochastic debt projections are summarised using the following two indicators (as indicated in Chapter 5):

- The probability of a debt ratio at the end of the 5-year stochastic projection horizon (2022) greater than the initial (2017) debt ratio (capturing the probability of a higher debt ratio due to the joint effects of macroeconomic and fiscal shocks);
- The difference between the 10th and the 90th debt distribution percentiles (measuring the width of the stochastic projection cone, i.e. the estimated degree of uncertainty surrounding baseline projections).

Graph A6.2: **Decision tree for the renewed approach to the assessment of medium-term sustainability challenges**



Source: Commission services

As indicated in Graph A6.4, a DSA scenario is highlighted as high risk in case the debt ratio at the end of projections is considered at high risk (above 90% of GDP – see Table A6.1 for thresholds on all DSA variables) or if the debt peak year and the SPB percentile rank are both assessed as high risk, which means that the debt ratio is on a longer (at least up to T+7) increasing path, even with projections that are based on a relatively ambitious SPB (see again Table A6.1 for precise thresholds). ([137])

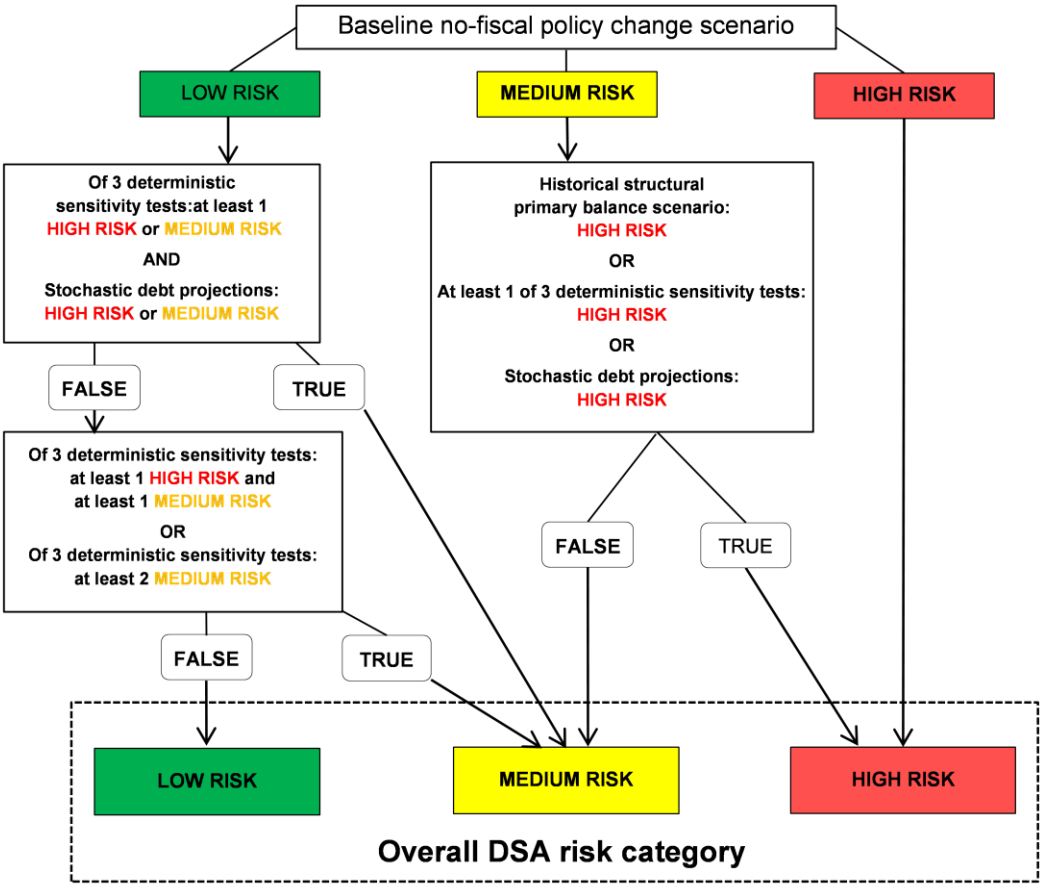
A sensitivity test (on growth, interest rate or the primary balance) is highlighted as high risk if it leads to a debt ratio at the end of projections above 90% (red), or if the end-of-projection debt ratio is between 70% and 90% (thus already significantly above the 60% Treaty reference value) and the debt peak year is highlighted in red, thereby indicating that the debt ratio is still on an increasing path towards the end of projections (up to T+7 at least).

Finally stochastic debt projections are summarised in red if the probability of a debt ratio at the end of the 5 years of projections greater than the initial debt level is assessed as high risk (with different thresholds being set in this case for different groups of countries with different initial debt ratios – see Table A6.1). On the contrary, the fact of having a high level of estimated uncertainty around baseline projections is in itself considered as a sufficient condition for a high-risk assessment but leads to a medium-risk assessment (this high volatility can be associated with very low or relatively low debt levels, in which case it cannot be meaningfully considered as high risk).

As already explained, the overall assessment reached for the country's DSA is then integrated with the assessment reached using the traditional S1 indicator (under the baseline no-fiscal policy change scenario) as indicated in Graph A6.2.

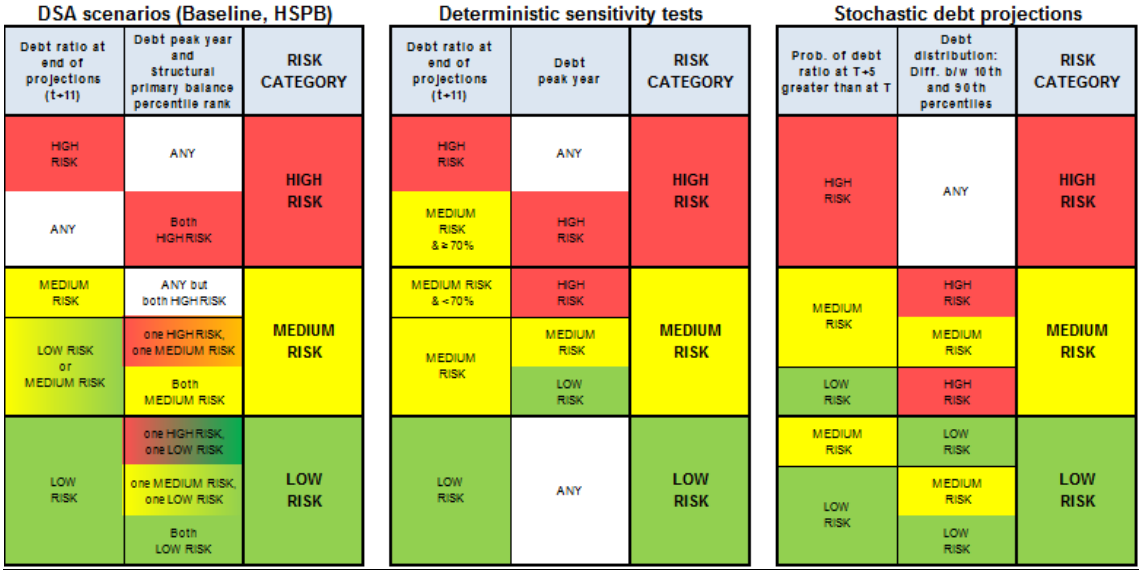
([137]) As indicated in Table A6.1, the SPB percentile ranks used as upper and lower thresholds are 15% and 30%. The 15% percentile rank corresponds to the 85th distribution percentile in the SPB distribution (over all EU countries for 1980-17), which corresponds to an SPB of 3.4% of GDP, while the 30% percentile rank corresponds to the 70th distribution percentile, which is an SPB of 1.5% of GDP.

Graph A6.3: **Decision tree for country risk assessment based on debt sustainability analysis**



Source: Commission services

Graph A6.4: **Assessment criteria used for debt projections, sensitivity tests and stochastic debt projections**



Source: Commission services

Table A6.1: **Thresholds used for DSA variables**

Variable	*Threshold*	
Debt ratio at the end of projections (2028)	***Red:*** above 90% ***Yellow:*** between 60% and 90% ***Green:*** below 60%	
Debt peak year	***Red:*** peak year btw. T+7 and end projections (2024-28), or still increasing at end projections ***Yellow:*** peak year between end of forecasts (T+3) and T+6 (2020-23) ***Green:*** peak year within forecast horizon (2017-19)	
Percentile rank of average SPB over projection period (2019-28)	***Red:*** if smaller than (or equal to) 15% ***Yellow:*** between 15% and 30% ***Green:*** greater than 30%	
Probability of debt ratio at the end of 5-year stochastic projection horizon (2022) greater than initial (2017) debt ratio	Initial (2017) debt ratio at or above 90%:	***Red:*** if probability above 30% ***Yellow:*** if probability strictly positive and at or below 30% ***Green:*** if zero probability
	Initial (2017) debt ratio at or above 55% and below 90%:	***Red:*** if probability above 60% ***Yellow:*** if probability between 30% and 60% ***Green:*** if probability below 30%
	Initial (2017) debt ratio below 55%:	***Yellow:*** if probability above 70% ***Green:*** if probability at or below 70%
Difference between 10th and 90th debt distribution percentiles from stochastic projections	***Red:*** the third of the countries with highest dispersion ***Yellow:*** the third of the countries with intermediate dispersion ***Green:*** the third of the countries with lowest dispersion	

Source: Commission services

A6.3. A SUMMARY OVERVIEW OF THRESHOLDS USED IN FISCAL SUSTAINABILITY ASSESSEMENT

In this section we provide a summary overview of thresholds used to identify fiscal sustainability challenges (with the only exception of thresholds used for DSA variables that have already been discussed and reported in the previous section – see Table A6.1).

For the indicators / variables discussed in this section, the thresholds themselves, as well as the methodologies used to derive them, have already been described in more detail in other sections of the report (Chapters 2 - 3, Annexes A1 - A2). Here the purpose is to provide a quick reference for the identification of fiscal sustainability challenges reported in the different heat maps presented in this report (see also Annex A9).

As explained in Chapter 3, the thresholds of risk for S0 and the two S0 sub-indexes (fiscal and financial-competitiveness) have been calculated using the signals' approach (see Annex A1 for details), and are reported in Table A6.2.

For all other variables used to identify short-term risks (see Chapters 3 - 4), the upper thresholds of risk (above which values are highlighted in red) have also been derived using the signals' approach (see Chapter 4 and Annex A7), while lower thresholds of risk (above which values are highlighted in yellow, till when they remain below the upper threshold of risk) have been set at around 80% of the original signals' approach thresholds, for prudential reasons (see Table A6.2). ([138])

For the S1-S2 indicators and respective ageing sub-components (used in the assessment of medium- and long-term sustainability challenges respectively), upper and lower thresholds are also reported in Table A6.2.

For S1 and S2 ageing sub-components (cost of ageing sub-component for S1; pensions, healthcare and long-term care sub-components for S2), thresholds (above which values are highlighted in red) correspond to the EU average (see Table A6.2). Finally, for the percentile rank of the required structural primary balance (RSPB) associated with S1 and S2 respectively, the same upper and lower thresholds are used as for the percentile rank of the average structural primary balance in DSA scenarios (see Table A6.1).

([138]) Variables common to the scoreboard used in the Macroeconomic Imbalances Procedure (MIP) have here different thresholds than under the MIP because the methodologies used to calculate these thresholds are different.

Table A6.2: **All thresholds used in fiscal sustainability assessment (except for DSA variables)**

	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 fiscal context			
Balance (% of GDP)	>	-9.61	-7.69
Primary balance (% of GDP)	>	0.23	0.28
Cyclically-adjusted balance (% of GDP)	>	-2.50	-2.00
Stabilising primary balance (% of GDP)	<	2.34	1.88
Gross debt (% of GDP)	<	68.44	54.75
Change in gross debt (% of GDP)	<	8.06	6.45
Short-term public debt (% of GDP)	<	13.20	10.56
Net debt (% of GDP)	<	59.51	47.61
Gross financing needs (% of GDP)	<	15.95	12.76
Interest-growth rate differential (%)	<	4.80	3.84
Change in governement expenditure (% of GDP)	<	1.90	1.52
Change in governement consumption (% of GDP)	<	0.61	0.49
Fiscal risks from macro-financial context			
Yield curve (%)	>	0.59	0.71
Real GDP growth (%)	>	-0.67	-0.53
GDP per capita in PPP (% US level)	>	72.70	87.23
Net international investment position (% of GDP)	>	-19.80	-15.84
Net savings households (% of GDP)	>	2.61	3.13
Private debt (% of GDP)	<	164.70	131.76
Private credit flow (% of GDP)	<	11.70	9.36
Short-term debt non-financial corporations (% of GDP)	<	15.40	12.32
Short-term debt households (% of GDP)	<	2.90	2.32
Construction (% of value added)	<	7.46	5.97
Current account balance (% of GDP)	>	-2.50	-2.00
Change in REER (%)	<	9.67	7.73
Change in nominal ULC (%)	<	7.00	5.60
Additional variables structure of public debt			
Share of short-term public debt (% of debt)	<	6.57	5.30
Share of public debt in foreign currency (% of debt)	<	31.58	25.00
Share of public debt held by non-residents (% of debt)	<	49.01	40.00
Additional variables contingent liabilites banking sector	<		
Bank loans-to-deposits ratio (%)	<	133.37	107.00
Share of non-performing loans (% of loans)	<	2.30	1.80
Change in share of non-performing loans (p.p.)	<	0.30	0.24
NPL coverage ratio (% loans)	>	66.00	33.00
Change in nominal house prix index (%)	<	13.21	11.00
Fiscal risks from financial market developments			
Sovereign yield spreads (bp) - 10 year	<	231.00	184.80
MEDIUM-TERM RISKS			
S1 indicator (baseline, historical SPB, AWG risk scenarios)	<	2.5	0.0
Cost of ageing sub-component	<	0.5	:
RSPB related to S1 - Percentile rank	>	15%	30%
DSA variables	see Table A6.1		
LONG-TERM RISKS			
S2 indicator (baseline, historical SPB, AWG risk scenarios)	<	6.0	2.0
Pensions sub-component	<	0.4	:
Health care sub-component	<	0.7	:
Long-term care sub-component	<	0.7	:
RSPB related to S2 - Percentile rank	>	15%	30%

Source: Commission services

ANNEX A7

Signals approach and analysis of public debt structure, sovereign yield spreads and banking sector vulnerabilities

Table A7.1: **Thresholds, signalling power, type I and type II errors obtained by applying the signals' approach**

Variables	safety	threshold	signaling power	type I error	type II error
Public debt structure variables					
Public debt by non-residents, share of total, %	<	49.01	0.30	0.36	0.33
Public debt in foreign currency, share of total, %	<	31.58	0.08	0.21	0.71
Short-term debt gen. gov., % of total debt	<	6.57	0.21	0.69	0.10
Government bond yield spread					
Govt bond yield spreads relative to Germany/US, 10-year benchmark, basis points	<	231.00	0.37	0.10	0.52
Variables of banking sector vulnerabilities					
Bank loan to deposit ratio	<	133.37	0.24	0.23	0.53
Non-performing loans to total gross loans, %	<	2.30	0.21	0.69	0.10
Change in non-performing loans to total gross loans, %	<	0.30	0.38	0.25	0.37
Change in nominal house price index, YoY growth	<	13.21	0.19	0.17	0.65

Source: Commission services

Table A7.1 reports results on optimal thresholds, signalling power, type I and type II errors obtained by applying the signals' approach (as explained in Annex A1) to individual variables describing the structure of public debt financing, sovereign yield spreads and variables capturing banking sector vulnerabilities. In all these cases, *optimal thresholds of fiscal stress* are determined (by relating the historical behaviour of the variables to the time series of fiscal stress events, as explained in Annex A1). These variables are used in the heat maps on public debt structure and government contingent liability risks (see Chapter 4 and Annex A9) and in the table with financial market information reported in the country statistical fiches (see Annex A10).

ANNEX A8

Estimating the potential impact of simulated bank losses on public finances based on the SYMBOL model

A8.1. DATA SAMPLE

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. ([139])

The main data source on banks' financial statements is Orbis Bank Focus, a commercial database of the private company Bureau van Dijk. ([140]) For the reference year is 2016 unconsolidated data for commercial, saving and cooperatives banks is included. The database as provided by Orbis Bank Focus 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 common equity, while risk weighted assets are approximated using the total regulatory capital ratio (at bank or country level). ([141]) While gross losses 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 EBA dashboard ([142]), while missing values for non-performing loans have been imputed by applying a robust regression with provisions as explanatory variable. Information on the sample is presented in Table A8.1. Note that the risk weighted assets and capital reported in the table have been adjusted by a correction coefficient to reflect the new definitions proposed in the CRDIV. ([143])

Table A8.2 reports statistics at aggregated level per each Member State. Recovery rates are available from World Bank in its 2017 Doing Business Report as country aggregates. ([144])

Similarly to past exercises the sample covers roughly 75% of all EU banking assets. Whenever the number of banks is extremely small (less than 10), simulation results are deemed to be highly uncertain, since a minor change to any bank's data or the addition of a new bank could have large effects on results. This is indicated by an asterisk near the country name.

A8.2. COMPUTATION OF AGGREGATE BANKING LOSSES AND ESTIMATED IMPACT ON PUBLIC FINANCES

Starting from the estimated average probability of default of each individual bank's obligors, 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. ([145])

In the short-term scenario, losses from SYMBOL are added on top of losses due to non-performing loans. ([146])

Individual bank losses are then transformed into excess losses and recapitalisation needs to be covered and finally aggregated at country and system level. Based on the bank-level balance sheet data and losses simulation, the model can then implement the loss allocation cascade (e.g, capital, bail-in, RF interventions…), distinguishing between excess losses and recapitalisation needs. Excess losses are losses in excess of available total

([139]) European Commission (2016) Section 5.2.2 and Annex A7 for more detail on the SYMBOL model.

([140]) European Commission (2016).

([141]) 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".

([142]) http://www.eba.europa.eu/documents/10180/1426941/EBA+Dashboard+-+Q4+2015.pdf/0abf94bc-619a-4f22-b2f8-a0c831980744

([143]) To properly estimate the effects of these CRDIV improved definitions, the results of the Basel III monitoring exercise (Quantitative Impact Study, QIS), run by the European Banking Authority are used. Since Basel III definitions of RWA and capital reflect better banks' true risk and capital quality, SYMBOL adjusts inputs to reflect these definitions even in scenarios where CRDIV is not yet implemented. These decrease capital and increase RWA.

([144]) www.doingbusiness.org/~/media/.../Doing%20Business/.../DB16-Full-Report.pdf

([145]) The correlation is assumed to be 0.5 for all banks in the current simulation. All EU banks are simulated together.

([146]) see box 4.1. European Commission (2017b).

Table A8.1: **Descriptive statistics of samples used for SYMBOL simulations**

	Sample ratio Sample TA / Population TA	Nr. of banks	Total Assets (TA)	Capital (Tier1+Tier2)	Risk-weighted assets (RWA)	RWA /TA	Capital /RWA
	%		eur bn	eur bn	eur bn	%	%
BE	74.8%	20	633.3	47.6	231.6	36.6%	20.5%
BG	76.3%	16	38.4	4.3	21.3	55.4%	20.3%
CY	49.5%	26	40.8	4.9	29.4	71.9%	16.6%
CZ	87.9%	14	178.5	14.0	79.4	44.5%	17.6%
DK	58.2%	55	596.2	46.0	209.9	35.2%	21.9%
DE	71.8%	1,306	5,315.0	357.8	2,132.6	40.1%	16.8%
EE*(†)	88.4%	3	16.2	2.3	6.3	38.6%	36.8%
IE*	28.0%	6	276.5	39.9	196.2	70.9%	20.3%
ES	82.5%	90	2,159.3	207.5	1,494.9	69.2%	13.9%
FR	83.8%	158	6,829.6	370.6	2,196.0	32.2%	16.9%
HR	80.7%	22	46.9	6.0	27.7	59.1%	21.5%
IT	68.5%	473	2,520.7	200.0	1,149.7	45.6%	17.4%
LV	96.3%	15	24.4	2.7	13.4	54.9%	20.4%
LT*	94.5%	6	21.4	1.8	9.9	46.3%	18.5%
LU	45.8%	36	395.7	34.7	141.8	35.8%	24.5%
HU*	37.2%	9	41.4	5.5	27.0	65.2%	20.3%
MT*	36.9%	4	17.1	1.2	6.3	36.8%	18.4%
NL	75.9%	15	1,786.3	114.9	541.7	30.3%	21.2%
AT	64.6%	515	535.9	43.8	263.4	49.2%	16.6%
PL	74.7%	24	297.3	29.5	181.4	61.0%	16.2%
PT	43.9%	101	179.3	12.1	102.1	56.9%	11.8%
RO	80.8%	20	68.7	6.7	37.3	54.3%	18.0%
SI	82.4%	11	31.9	3.7	18.9	59.1%	19.5%
SK	98.6%	14	61.6	5.4	31.7	51.4%	17.0%
FI (‡)	87.3%	12	441.7	24.5	107.4	24.3%	22.8%
SE	51.0%	72	604.5	42.2	161.9	26.8%	26.1%
UK	95.8%	91	5,522.7	386.1	1,942.6	35.2%	19.9%
EU-28	75.7%	3,138	28,878.6	2,039.3	11,502.1	39.8%	17.7%

(1) 2016 data, unconsolidated.
(2) (*) Asterisks denote countries with sample representativeness issues.
(3) (†): Two banks of Estonia are based on consolidated data (Swedbank AS and AS SEb Pank)
(4) (‡): One bank of Finland is included in the sample with consolidated statements (OP Financial Group)
Source: Commission services

capital of a bank, while recapitalisation needs are the funds necessary to restore the bank's minimum level of capitalisation given by the regulatory scenario under consideration. ([147])

Throughout the cascade of safety net intervention, it can then be traced how much of these two types of financing needs are picked up by the different tools. If a bank is failing or if it is left under-capitalised 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 assets. Where an RF is available, it is then assumed to intervene up to 5% of the total assets of each bank. Given that the sample coverage in terms of the number and total assets of banks in the sample is not complete, the RF is equipped with an ex-ante fund 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 sample and the population TA of all banks.

([147]) European Commission (2016) Annex A7.

Table A8.2: **Aggregated statistics at country level: Non Performing Loans (NPL)**

	Sample ratio Sample TA / Population TA %	**Gross Loans** eur bn	**NPL Ratio** Gross NPL /Gross loans %	**NPL Losses** eur bn	**Provisions** eur bn	**Recovery rate** %	**NPL /TA** Gross NPL /TA %	**NPL /Capital** Gross NPL /Capital %
BE	74.8%	316.7	8.1	0.3	4.5	89.9%	1.3%	17.0%
BG	76.3%	22.9	5.1	1.3	2.8	34.9%	13.2%	117.0%
CY	49.5%	30.1	11.1	1.1	5.9	72.8%	27.2%	228.3%
CZ	87.9%	97.7	3.3	0.7	2.3	66.5%	1.8%	23.3%
DK	58.2%	321.6	10.0	0.0	6.0	88.0%	1.7%	21.8%
DE	71.8%	2,490.7	57.7	14.7	26.3	84.4%	1.1%	16.1%
EE*(†)	88.4%	11.3	0.1	0.0	0.1	40.3%	0.9%	6.0%
IE*	28.0%	116.5	12.6	0.1	6.5	87.7%	4.6%	31.6%
ES	82.5%	1,242.6	102.6	5.8	56.1	78.3%	4.8%	49.4%
FR	83.8%	1,962.2	64.9	15.6	40.5	78.5%	1.0%	17.5%
HR	80.7%	31.9	4.7	1.3	3.1	33.7%	10.0%	78.6%
IT	68.5%	1,522.7	288.8	58.9	156.1	63.9%	11.5%	144.4%
LV	96.3%	11.6	1.1	0.4	0.5	49.1%	4.6%	41.3%
LT*	94.5%	14.5	0.5	0.1	0.3	45.0%	2.3%	27.0%
LU	45.8%	153.2	8.3	5.2	1.3	43.7%	2.1%	23.9%
HU*	37.2%	14.6	1.3	0.3	0.9	43.0%	3.2%	24.2%
MT*	36.9%	7.8	0.6	0.3	0.2	40.7%	3.6%	53.0%
NL	75.9%	886.6	13.3	0.1	7.8	89.3%	0.7%	11.6%
AT	64.6%	334.8	32.0	9.8	9.4	82.8%	6.0%	73.1%
PL	74.7%	205.5	14.0	0.7	8.3	60.6%	4.7%	47.3%
PT	43.9%	119.9	13.1	0.1	10.0	74.2%	7.3%	108.3%
RO	80.8%	40.4	5.3	1.1	3.2	34.4%	7.7%	78.7%
SI	82.4%	20.2	2.8	0.1	1.8	89.2%	8.6%	75.0%
SK	98.6%	45.0	2.5	0.3	1.5	55.6%	4.0%	45.9%
FI (‡)	87.3%	173.5	2.4	0.1	1.3	90.3%	0.5%	9.9%
SE	51.0%	277.2	2.4	0.2	1.1	77.9%	0.4%	5.6%
UK	95.8%	2,233.9	49.4	7.3	21.7	88.6%	0.9%	12.8%
EU-28	75.7%	12,866.6	792.6	142.4	419.5		2.7%	38.9%

(1) 2016 data, unconsolidated
(2) (*) Asterisks denote countries with sample representativeness issues.
(3) (†): Two banks of Estonia are based on consolidated data (Swedbank AS and AS SEb Pank)
(4) (‡): One bank of Finland is included in the sample with consolidated statements (OP Financial Group)
Source: Commission services

Banks are divided into two groups: those assumed to be systemic which in case of distress go into resolution and thus are recapitalised, and those assumed to be non-systemic which can be liquidated. ([148])

Results give an estimate of the implicit contingent liabilities - banking losses and recapitalisation needs - that would be faced in case of a financial crisis similar to the one started in 2008. ([149]) For the EU as a whole, a loss of similar magnitude would correspond to the 99.95th percentile of the distribution of aggregate losses including recapitalisation needs based on 2009 data and regulatory framework, so this exercise focuses on this percentile of the distribution. It is important to highlight that focussing on the 99.95th percentile does not mean that the event happens with a probability of at most 0.05 percent. SYMBOL probabilities are more appropriately seen as "theoretical probabilities" which cannot be taken literally as frequencies: their magnitudes, however,

([148]) European Commission (2016) Annex A7.
([149]) 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 (2014b) and Benczur et al. (2015).

inform on the relative risks among banks or countries. ([150])

A8.3. 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 the event is assessed.

The heat map illustrates the relative riskiness of countries in terms of public finances being hit by at least 3% of GDP. The colour coding reflects the relative magnitude of the theoretical probabilities of such an event. The allocation of the colours is based on a procedure that was fixed in 2014 (as reported in European Commission, (2014c)), based on simulations using 2012 bank balance sheet data. ([151])

([150]) According to Basel II an institution would suffer losses exceeding its capital once in a thousand years on average (99.9% confidence level). (See Basel Committee on Banking Supervision, (2005)). While Laeven and Valencia (2013) identify 17 systemic banking crisis episodes during 2008-2011 worldwide and 147 episodes since 1970, the Basel model seems to under-predict the actual frequency of bank failures, affecting also SYMBOL estimates.

([151]) European Commission (2016) Annex A7.

ANNEX A9
Statistical annex – cross-country tables

A9.1. SHORT-TERM FISCAL SUSTAINABILITY CHALLENGES

Table A9.1: **S0 and sub-indexes heat map**

	S0 overall index			Overall SHORT-TERM risk category
		S0 Fiscal sub-index	S0 Financial competitiveness sub-index	
BE	0.35	0.35	0.34	LOW
BG	0.25	0.00	0.39	LOW
CZ	0.19	0.00	0.28	LOW
DK	0.30	0.08	0.41	LOW
DE	0.08	0.00	0.12	LOW
EE	0.20	0.09	0.25	LOW
IE	0.28	0.19	0.32	LOW
ES	0.37	0.57	0.27	LOW
FR	0.24	0.43	0.13	LOW
HR	0.20	0.08	0.26	LOW
IT	0.36	0.47	0.31	LOW
CY	0.44	0.19	0.57	LOW
LV	0.24	0.08	0.33	LOW
LT	0.21	0.00	0.33	LOW
LU	0.12	0.00	0.18	LOW
HU	0.39	0.61	0.27	LOW
MT	0.05	0.00	0.08	LOW
NL	0.20	0.00	0.31	LOW
AT	0.07	0.07	0.07	LOW
PL	0.25	0.08	0.34	LOW
PT	0.36	0.31	0.39	LOW
RO	0.20	0.22	0.18	LOW
SI	0.13	0.07	0.16	LOW
SK	0.30	0.09	0.40	LOW
FI	0.10	0.08	0.11	LOW
SE	0.12	0.00	0.19	LOW
UK	0.42	0.45	0.40	LOW

(1) 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 the signals' approach (see chapter 3).
Source: Commission services

Table A9.2: **Fiscal variables used in the S0 indicator, 2017**

	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 need (%GDP)	Interest growth rate diff.	Change expend. gen. govt (%GDP)	Change consumpt. gen. govt (%GDP)
BE	-1.5	1.1	-1.4	-1.1	103.8	-1.9	8.3	91.9	16.9	-1.0	-0.8	-0.2
BG	0.0	1.0	0.0	-0.3	25.7	-3.3	0.1	12.4	2.8	-1.2	1.2	0.2
CZ	1.2	2.0	0.8	-1.2	34.6	-2.2	0.4	23.2	3.7	-3.5	-0.2	-0.2
DK	-1.0	0.2	-0.5	-0.3	36.1	-1.6	4.2	17.7	6.1	-0.7	-0.6	-0.3
DE	0.9	2.1	0.9	-1.2	64.8	-3.3	6.2	45.8	8.6	-1.8	0.0	0.1
EE	-0.2	-0.2	-1.1	-0.7	9.2	-0.2	0.2	-0.8	:	-8.2	-0.3	-0.5
IE	-0.4	1.6	-1.3	-1.6	69.9	-2.9	8.8	60.9	3.3	-2.4	-0.7	-0.1
ES	-3.1	-0.6	-3.1	-1.3	98.4	-0.6	8.6	86.6	19.2	-1.4	-1.1	-0.3
FR	-2.9	-1.1	-2.4	-0.6	96.9	0.4	9.7	88.5	16.8	-0.6	-0.4	-0.1
HR	-0.9	2.0	-1.1	-0.7	81.1	-2.7	5.3	:	15.7	-0.8	-0.9	0.0
IT	-2.1	1.7	-1.8	1.2	132.1	0.1	17.4	121.2	21.3	0.9	-0.3	-0.2
CY	1.1	3.5	0.4	-2.5	103.0	-4.1	2.4	89.8	2.2	-2.4	0.1	-0.1
LV	-0.9	0.0	-1.8	-1.5	39.0	-1.5	1.7	27.6	4.9	-4.0	0.9	0.4
LT	0.1	1.3	-0.9	-1.6	41.5	1.4	1.4	30.6	2.9	-4.3	0.2	-0.3
LU	0.5	0.8	0.6	-0.8	23.7	2.9	1.4	-11.4	-0.5	-4.2	0.7	0.1
HU	-2.1	0.7	-2.8	-1.8	72.6	-1.3	13.6	69.3	19.3	-2.6	0.9	0.5
MT	0.9	2.8	0.4	-2.2	54.9	-2.7	3.5	42.1	5.4	-4.2	0.1	0.3
NL	0.7	1.7	0.6	-1.6	57.7	-4.1	6.4	46.9	7.4	-2.7	-0.3	-0.4
AT	-1.0	0.9	-0.9	-1.7	78.6	-4.9	5.3	55.3	9.0	-2.1	-0.9	-0.3
PL	-1.7	-0.2	-2.1	-1.7	53.2	-0.9	0.4	49.5	5.7	-3.3	0.1	-0.4
PT	-1.4	2.5	-1.7	-1.1	126.4	-3.7	21.8	111.2	14.3	-0.9	-0.2	-0.4
RO	-3.0	-1.6	-3.3	-1.2	37.9	0.3	2.5	31.2	6.7	-3.5	-0.2	0.4
SI	-0.8	1.8	-1.7	-2.2	76.4	-2.1	3.8	53.0	9.0	-3.0	-1.6	-0.4
SK	-1.6	-0.3	-1.6	-1.3	50.6	-1.2	1.0	:	7.7	-2.7	-0.9	0.3
FI	-1.4	-0.4	-1.0	-1.3	62.7	-0.4	5.4	23.1	9.6	-2.2	-1.8	-0.8
SE	0.9	1.2	0.8	-1.8	39.0	-3.2	9.7	6.9	5.8	-4.6	-0.7	-0.4
UK	-2.1	0.5	-2.5	-0.5	86.6	-1.7	14.1	80.5	10.9	-0.6	-0.5	-0.3

(1) The upper thresholds used for each variable have been derived using the signals' approach (see chapter 3). The lower thresholds have been set at 80% of the original signals' approach thresholds, for prudential reasons.
Source: Commission services

Table A9.3: **Financial-competitiveness variables used in the S0 indicator, 2017**

	Yield curve	Real GDP growth	GDP per capita in PPP (%US level)	L.Net intern. Invest. position (%GDP)	L.Net savings households (%GDP)	L.Private debt (%GDP)	L.Private credit flow (%GDP)	L.Short-term debt nonfin. corp. (%GDP)	L.Short-term debt households (%GDP)	L.Construction (%value added)	L.Current account (%GDP)	L.Change real eff. exchange rate	L.Change nom. unit labour costs
BE	0.7	1.7	81.3	51.2	2.0	190.1	13.3	40.2	1.5	5.3	-0.3	-5.3	-0.6
BG	2.1	3.9	34.9	-47.0	-5.2	104.9	4.0	15.7	2.1	3.9	1.8	-1.8	9.5
CZ	0.1	4.3	62.8	-24.6	3.0	68.7	4.4	8.4	1.6	5.5	0.5	-2.3	2.9
DK	0.4	2.3	86.8	54.8	2.2	210.7	-10.4	25.4	4.2	4.9	8.4	-0.5	3.4
DE	0.3	2.2	85.3	54.4	5.7	99.3	3.8	10.4	1.8	4.8	8.1	1.4	5.2
EE	:	4.4	53.0	-37.1	4.1	115.4	5.9	11.1	0.9	6.0	1.4	2.5	13.4
IE	1.0	4.8	129.7	-176.2	0.5	278.1	-19.0	27.0	1.3	2.8	5.5	5.2	-20.5
ES	1.6	3.1	64.5	-83.9	1.0	146.7	-1.0	8.6	2.4	5.6	1.4	-0.7	0.4
FR	0.7	1.6	72.0	-15.7	4.9	146.9	6.2	24.2	1.5	5.5	-0.7	-0.9	1.4
HR	2.7	3.2	42.3	-70.1	:	106.1	-0.1	9.9	3.5	5.2	2.9	0.7	-6.2
IT	1.8	1.5	66.8	-9.8	2.0	113.6	0.6	19.4	3.2	4.8	2.1	-0.7	1.9
CY	4.0	3.5	58.3	-127.8	-7.7	344.6	10.2	32.6	11.2	3.9	-3.6	-0.6	-6.2
LV	0.8	4.2	46.7	-58.9	-3.7	88.3	0.3	12.6	1.8	5.3	-0.3	-1.2	16.5
LT	1.1	3.8	54.2	-43.2	-2.7	56.2	4.3	4.7	0.8	6.5	-0.3	-5.8	14.7
LU	0.5	3.4	179.2	34.7	5.3	343.6	1.5	7.1	2.6	5.7	5.0	7.5	2.5
HU	2.2	3.7	48.3	-65.0	1.8	77.0	-3.6	9.6	2.5	3.7	3.6	-3.3	3.3
MT	1.1	5.6	68.1	47.6	:	128.4	11.1	12.1	2.8	4.0	6.7	4.9	-0.1
NL	0.5	3.2	90.5	69.1	3.0	221.5	1.5	32.0	3.1	4.7	8.8	-5.5	-1.1
AT	0.6	2.6	88.6	5.6	4.5	124.0	3.2	11.7	3.0	6.4	2.2	-0.3	5.8
PL	1.4	4.2	49.4	-60.7	0.7	81.6	4.7	8.3	3.0	7.2	-1.0	-0.7	2.1
PT	3.6	2.6	54.2	-104.7	-1.5	171.4	-2.2	21.3	2.8	3.9	0.3	-3.5	0.9
RO	2.6	5.7	43.2	-49.9	:	55.8	0.6	12.3	0.9	6.7	-1.3	1.7	6.0
SI	1.4	4.7	60.0	-36.9	2.8	80.5	-0.8	9.9	2.4	5.2	5.1	0.0	0.7
SK	0.8	3.3	54.4	-62.4	2.1	94.7	9.2	19.7	2.0	7.9	-0.7	-4.4	3.5
FI	0.6	3.3	76.7	-2.3	-0.9	149.3	2.2	5.5	2.8	6.8	-1.2	-0.8	2.1
SE	1.0	3.2	86.3	11.2	8.3	188.5	7.6	38.7	14.2	6.0	4.6	-1.8	2.0
UK	0.6	1.5	74.6	-1.1	1.4	168.1	8.2	26.5	10.2	6.2	-5.5	1.0	3.1

(1) The upper thresholds used for each variable have been derived using the signals' approach (see chapter 3). The lower thresholds have been set at 80% of the original signals' approach thresholds, for prudential reasons.
Source: Commission services

Additional indicators

Table A9.4: **Risks related to the structure of public debt financing, by country (2016)**

	Short-term public debt (original maturity)	Public debt in foreign currency	Public debt held by non-residents
	Shares of total debt (%):		
BE	**7.9**	0.0	**54.1**
BG	0.3	**82.1**	48.7
CZ	0.9	**44.8**	42.2
DK	**11.3**	1.5	30.1
DE	**9.1**	4.4	47.5
EE	2.5	0.0	65.0
IE	6.3	4.8	**59.7**
ES	**8.7**	0.3	45.0
FR	**10.1**	2.8	**52.0**
HR	6.5	**76.5**	37.5
IT	**13.1**	0.2	32.7
CY	1.6	5.2	79.4
LV	3.4	15.9	**72.4**
LT	1.0	27.4	**69.3**
LU	**6.9**	0.0	35.7
HU	**18.5**	28.7	41.7
MT	6.1	0.0	10.5
NL	**10.4**	1.2	41.4
AT	4.9	1.1	**71.3**
PL	0.8	**35.1**	54.5
PT	**16.7**	8.6	58.2
RO	**6.9**	**52.4**	48.4
SI	4.8	0.1	**67.1**
SK	2.0	6.0	**52.8**
FI	**8.8**	1.7	**69.8**
SE	**21.6**	26.4	29.4
UK	**16.0**	0.0	n.a.

(1) The upper thresholds used for each variable have been derived using the signals' approach; the lower thresholds have been set at 80% of the original signals' approach thresholds, for prudential reasons (see Annex A7).
Source: Eurostat, ECB

Table A9.5: **Potential triggers for governments' contingent liability from the banking sector, by country (2016)**

	Private sector credit flow (% GDP)	Bank loan-to-deposit ratio (%)	NPL ratio (% of total gross loans)	NPL ratio change (pps 2016 v 2015)	NPL coverage ratio (%)	House price nominal index change (%)
BE	**13.3**	105.0	**3.2**	-0.7	44.1	2.6
BG	4.0	71.7	**12.5**	-1.2	57.8	7.0
CZ	4.4	83.1	**2.5**	-0.8	62.5	7.2
DK	3.9	**333.4**	**3.1**	-0.6	**30.0**	4.7
DE	3.8	**149.7**	**2.5**	-0.5	37.4	6.0
EE	5.9	105.8	1.3	-0.6	**31.7**	4.8
IE	-19.0	115.2	**13.6**	-4.9	35.5	7.5
ES	-3.6	117.6	**5.7**	-0.7	43.7	4.6
FR	-6.2	112.3	**3.7**	-0.4	51.8	1.0
HR	-0.1	75.5	**10.1**	-2.4	63.3	0.9
IT	0.6	126.9	**15.3**	-1.5	48.9	-0.8
CY	10.2	83.9	**44.8**	-4.2	39.7	0.3
LV	0.3	74.9	**3.2**	-0.8	**28.6**	8.5
LT	4.3	97.4	**3.8**	-1.3	**30.4**	5.4
LU	1.5	130.1	1.1	0.0	44.7	6.0
HU	-3.6	77.7	**11.5**	-2.4	63.9	**13.4**
MT	11.1	56.0	**4.4**	-3.0	35.9	5.6
NL	1.5	127.1	**2.5**	-0.2	35.2	5.3
AT	3.2	104.5	**5.3**	-1.6	55.1	8.5
PL	4.7	95.7	**6.1**	-0.6	58.8	1.9
PT	-2.2	93.2	**19.5**	**0.5**	43.6	7.1
RO	0.6	67.4	**10.1**	-4.5	65.8	6.0
SI	-0.8	68.4	**14.4**	-7.1	63.9	3.3
SK	9.2	104.6	**4.2**	0.1	55.0	6.7
FI	2.2	**148.0**	1.6	0.0	**29.5**	0.6
SE	7.6	**219.5**	1.0	-0.2	**28.8**	8.6
UK	8.2	91.0	1.9	-0.5	**30.5**	7.0

(1) The upper thresholds used for each variable have been derived using the signals' approach, except for the NPL coverage ratio; the lower thresholds have been set at 80% of the upper thresholds, for prudential reasons (see Annex A7 and chapter 4).
Source: Eurostat, EBA

Table A9.6: **Risk (theoretical probability) of public finances being hit by more than 3% of GDP in case of a systemic event involving banks excess losses and recapitalisation needs (based on SYMBOL)**

	Initial (2018 Q1) short term		Final (2028) long term	
	Excess loss and Recap Needs 8%	Excess loss and Recap Needs 10.5%	Excess loss and Recap Needs 8%	Excess loss and Recap Needs 10.5%
BE	0.00%	0.00%	0.00%	0.00%
BG	0.00%	0.01%	0.00%	0.00%
CY	0.11%	0.57%	0.01%	0.03%
CZ	0.00%	0.00%	0.00%	0.00%
DK	0.00%	0.01%	0.00%	0.01%
DE	0.00%	0.00%	0.00%	0.00%
EE*	0.00%	0.00%	0.00%	0.00%
IE*	0.01%	0.02%	0.00%	0.00%
ES	0.02%	0.08%	0.01%	0.02%
FR	0.00%	0.00%	0.00%	0.00%
HR	0.00%	0.00%	0.00%	0.00%
IT	0.00%	0.01%	0.00%	0.00%
LV	0.00%	0.00%	0.00%	0.00%
LT*	0.00%	0.00%	0.00%	0.00%
LU	0.02%	0.07%	0.01%	0.01%
HU*	0.00%	0.00%	0.00%	0.00%
MT*	0.01%	0.03%	0.00%	0.00%
NL	0.00%	0.00%	0.00%	0.00%
AT	0.00%	0.00%	0.00%	0.00%
PL	0.00%	0.00%	0.00%	0.00%
PT	0.01%	0.03%	0.00%	0.01%
RO	0.00%	0.00%	0.00%	0.00%
SI	0.00%	0.00%	0.00%	0.00%
SK	0.00%	0.00%	0.00%	0.00%
FI	0.00%	0.00%	0.00%	0.00%
SE	0.00%	0.00%	0.00%	0.00%
UK	0.00%	0.00%	0.00%	0.00%

(1) The upper threshold is set at 0.2%; the lower threshold is set at 0.05%. For thresholds' definitions, see Annex A8. Asterisks denote countries with sample representativeness issues.
Source: Commission services

Table A9.7: **Financial market information**

	Sovereign yield spreads (bp.) - 10 year
BE	32
BG	103
CZ	108
DK	16
DE	0
EE	:
IE	29
ES	124
FR	44
HR	229
IT	170
CY	147
LV	34
LT	-6
LU	20
HU	220
MT	87
NL	17
AT	24
PL	301
PT	195
RO	380
SI	60
SK	46
FI	23
SE	46
UK	-37

(1) The upper thresholds used for each variable have been derived using the signals' approach; the lower thresholds have been set at 80% of the original signals' approach thresholds, for prudential reasons (see Annex A7).
Source: ECB

A9.2. MEDIUM-TERM FISCAL SUSTAINABILITY CHALLENGES

Table A9.8: **S1 indicator, cost of ageing sub-component and required SPB related to S1, baseline and alternative scenarios, by country (pps. and % of GDP)**

	S1 indicator - Baseline scenario			S1 indicator - AWG risk scenario			S1 indicator - Historical SPB scenario		
		of wich			of wich			of wich	
		Cost of ageing	Required SPB related to S1 - Percentile rank		Cost of ageing	Required SPB related to S1 - Percentile rank		Cost of ageing	Required SPB related to S1 - Percentile rank
BE	3.4	0.6	11%	3.8	0.9	10%	4.1	0.7	4%
BG	-4.3	-0.1	92%	-3.9	0.2	89%	-6.6	-0.1	100%
CZ	-3.1	0.6	83%	-2.6	1.0	78%	-1.3	0.7	85%
DK	-3.4	-0.2	89%	-3.0	0.1	87%	-8.2	-0.1	100%
DE	-1.7	1.0	51%	-1.1	1.5	40%	-1.9	1.3	64%
EE	-3.1	0.0	96%	-2.7	0.3	94%	-6.2	0.0	100%
IE	-1.4	1.0	44%	-1.0	1.3	37%	3.5	1.2	23%
ES	3.2	-1.0	21%	3.6	-0.7	17%	5.2	-1.3	8%
FR	4.9	0.3	13%	5.3	0.6	10%	8.6	0.3	1%
HR	1.2	-0.3	28%	1.5	-0.1	25%	5.7	-0.4	10%
IT	6.7	0.1	0%	6.8	0.2	0%	10.1	0.2	0%
CY	0.0	-0.2	25%	0.2	-0.1	24%	2.5	-0.2	16%
LV	-2.0	-0.1	87%	-1.5	0.3	83%	-2.5	-0.1	93%
LT	0.6	1.9	45%	1.2	2.3	34%	3.0	2.5	26%
LU	-3.8	1.1	90%	-3.6	1.3	89%	-7.8	1.4	100%
HU	1.1	-0.7	55%	1.6	-0.3	45%	1.1	-0.9	47%
MT	-3.1	0.9	72%	-2.7	1.2	68%	-1.9	1.1	78%
NL	-1.9	-0.1	74%	-1.7	0.1	72%	-3.1	0.1	84%
AT	0.4	0.7	36%	0.7	1.0	31%	0.8	1.0	31%
PL	0.6	0.3	64%	1.0	0.6	57%	2.3	0.3	47%
PT	5.0	-0.1	1%	5.4	0.2	1%	12.7	-0.1	0%
RO	2.1	0.3	70%	2.4	0.5	66%	1.8	0.4	62%
SI	1.3	1.0	28%	1.6	1.3	25%	4.0	1.4	15%
SK	-2.6	0.2	81%	-2.0	0.7	74%	1.8	0.1	57%
FI	1.5	1.5	37%	1.8	1.7	33%	-1.6	1.9	50%
SE	-3.9	0.3	88%	-3.4	0.7	84%	-7.7	0.4	100%
UK	2.1	0.9	17%	2.3	1.1	15%	9.0	1.1	1%

(1) The upper and lower thresholds used for S1 are 0 and 2.5. The threshold used for the cost of ageing sub-component corresponds to the EU average. The upper and lower thresholds used for the required SPB are 15% and 30%.
Source: Commission services

Table A9.9: **DSA heat map, by country**

	Sovereign-debt sustainability risks in EU countries																											
	BE	BG	CZ	DK	DE	EE	IE	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK
Baseline no-policy change scenario	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	MEDIUM	HIGH	MEDIUM	LOW	LOW	LOW	MEDIUM	LOW	LOW	MEDIUM	LOW	HIGH	MEDIUM	MEDIUM	LOW	MEDIUM	LOW	MEDIUM
Debt level (2028)	94.8	13.8	25.9	24.1	40.6	19.4	48.3	95.1	105.7	74.9	129.9	68.2	33.8	48.8	16.4	69.9	29.3	38.6	61.7	60.0	114.5	64.9	64.9	35.1	67.9	20.4	80.4
Debt peak year	2017	2017	2017	2017	2017	2028	2017	2017	2028	2017	2017	2017	2017	2028	2017	2017	2017	2017	2017	2028	2017	2028	2017	2017	2028	2017	2017
Average Structural Primary Balance (2019-2028) Percentile rank	48%	43%	40%	53%	25%	75%	25%	68%	74%	48%	35%	25%	70%	56%	46%	71%	25%	45%	42%	71%	29%	88%	49%	45%	65%	39%	40%
Historical SPB scenario	MEDIUM	LOW	LOW	LOW	LOW	LOW	MEDIUM	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	LOW	LOW	MEDIUM	LOW	LOW	MEDIUM	MEDIUM	HIGH	LOW	MEDIUM	LOW	LOW	LOW	HIGH
Debt level (2028)	89.1	14.8	42.1	11.3	44.7	13.2	72.3	94.7	107.7	90.1	125.1	78.6	36.4	57.3	8.1	67.3	41.6	38.3	62.5	65.2	130.8	58.3	72.9	52.5	50.5	13.7	102.5
Debt peak year	2017	2017	2028	2017	2017	2028	2028	2017	2028	2028	2017	2017	2017	2028	2017	2017	2017	2017	2017	2028	2028	2028	2017	2028	2017	2017	2028
Average Structural Primary Balance (2019-2028) Percentile rank	37%	44%	66%	31%	28%	69%	62%	68%	75%	69%	28%	37%	72%	68%	32%	68%	41%	45%	44%	75%	55%	83%	64%	71%	36%	29%	74%
Stability and Growth Pact (SGP) institutional scenario	MEDIUM	LOW	LOW	LOW	LOW	LOW	LOW	MEDIUM	MEDIUM	MEDIUM	HIGH	MEDIUM	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	LOW	LOW	LOW	LOW	LOW	MEDIUM
Debt level (2028)	76.1	17.0	19.7	29.0	36.3	8.9	48.8	74.3	79.4	71.0	107.8	68.8	29.0	35.6	12.6	58.6	29.1	39.9	56.2	43.2	95.2	36.8	46.9	34.2	50.7	19.4	68.4
Debt peak year	2017	2017	2017	2017	2017	2017	2017	2017	2018	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017	2022	2017	2017	2017	2017	2017
Average Structural Primary Balance (2019-2028) Percentile rank	23%	47%	36%	49%	24%	64%	36%	22%	33%	39%	14%	22%	61%	54%	47%	41%	31%	42%	35%	47%	12%	60%	26%	46%	44%	36%	29%
Negative shock (-0.5p.p.) on nominal GDP growth	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	MEDIUM	HIGH	MEDIUM	LOW	LOW	LOW	HIGH	LOW	LOW	MEDIUM	MEDIUM	HIGH	MEDIUM	MEDIUM	LOW	HIGH	LOW	MEDIUM
Debt level (2028)	100.2	14.9	27.5	25.8	43.4	20.0	51.2	100.5	111.1	79.4	137.6	72.8	35.5	51.0	17.3	73.8	31.3	41.1	65.3	62.9	121.5	67.4	68.5	37.2	71.3	21.9	84.9
Debt peak year	2017	2017	2017	2017	2017	2028	2017	2028	2028	2017	2028	2017	2017	2028	2017	2028	2017	2017	2017	2028	2017	2028	2017	2017	2028	2017	2017
Positive shock (+1p.p.) to the short- and long-term interest rates on newly issued	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	LOW	LOW	HIGH	LOW	LOW	MEDIUM	MEDIUM	HIGH	MEDIUM	MEDIUM	LOW	HIGH	LOW	MEDIUM
Debt level (2028)	100.6	14.4	28.0	25.7	43.7	20.3	50.5	101.4	111.4	80.5	138.9	70.4	35.6	51.8	17.0	74.6	31.1	41.2	65.0	63.5	121.9	68.3	69.0	36.6	71.9	22.2	84.8
Debt peak year	2017	2017	2017	2017	2017	2028	2017	2028	2028	2028	2028	2017	2017	2028	2017	2028	2017	2017	2017	2028	2017	2028	2017	2017	2028	2017	2017
Negative shock on the PB equal to 50% of the forecasted cumulative change	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	LOW	LOW	MEDIUM	LOW	LOW	MEDIUM	MEDIUM	HIGH	HIGH	MEDIUM	LOW	MEDIUM	LOW	MEDIUM
Debt level (2028)	98.1	14.6	29.3	26.4	41.0	21.3	54.3	95.8	109.3	82.0	132.9	72.3	33.9	49.8	17.9	72.5	31.3	41.7	62.8	62.4	117.1	70.2	67.8	39.5	69.9	21.1	83.7
Debt peak year	2017	2017	2017	2017	2017	2028	2017	2017	2028	2028	2028	2017	2017	2028	2017	2017	2017	2017	2017	2028	2017	2028	2017	2017	2028	2017	2017
Stochastic projections	MEDIUM	MEDIUM	LOW	LOW	LOW	LOW	MEDIUM	HIGH	HIGH	MEDIUM	HIGH	MEDIUM	MEDIUM	MEDIUM	LOW	MEDIUM	LOW	LOW	LOW	LOW	HIGH	MEDIUM	LOW	LOW	LOW	LOW	LOW
Probability of debt in 2022 greater than in 2017 (%)	26%	28%	29%	15%	1%	100%	23.3%	33%	62%	37%	33%	14%	36%	44%	38%	40%	7%	3%	16%	50%	30%	76%	20%	25%	57%	3%	28%
Difference between the 10th and 90th percentile in 2022 (p.p. of GDP)	29.9	33.9	22.2	15.9	15.8	4.0	32.1	18.2	13.5	43.3	25.4	44.1	37.5	33.7	21.7	40.1	21.3	17.2	28.1	21.5	38.8	36.8	27.1	29.3	19.2	11.6	19.7
Debt sustainability analysis - overall risk assessment	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	LOW	LOW	HIGH	LOW	LOW	MEDIUM	MEDIUM	HIGH	HIGH	MEDIUM	LOW	HIGH	LOW	HIGH

(1) All thresholds used and decision trees to derive the DSA risk assessment are presented in the Annex A6.

Source: Commission services

A9.3. LONG-TERM FISCAL SUSTAINABILITY CHALLENGES

Table A9.10: **S2, cost of ageing sub-components and required SPB related to S2, baseline and alternative scenarios, by country (pps. and % of GDP)**

	S2 indicator - Baseline scenario					S2 indicator - AWG risk scenario					S2 indicator - Historical SPB scenario				
		of wich					of wich					of wich			
		Pensions	Health care	Long term care	Required SPB related to S2 - Percentile rank		Pensions	Health care	Long term care	Required SPB related to S2 - Percentile rank		Pensions	Health care	Long term care	Required SPB related to S2 - Percentile rank
BE	2.7	1.0	0.2	1.1	14%	3.9	1.2	0.5	1.8	9%	2.0	1.0	0.2	1.1	15%
BG	1.0	0.9	0.2	0.1	25%	3.0	1.0	0.7	1.5	12%	1.2	1.0	0.2	0.1	27%
CZ	1.7	0.6	0.7	0.5	14%	5.4	0.5	1.3	3.7	2%	4.0	0.6	0.8	0.5	18%
DK	0.9	-1.1	0.5	1.6	21%	1.9	-1.1	1.2	2.0	23%	-0.9	-1.1	0.5	1.6	37%
DE	1.2	1.6	0.3	0.0	14%	3.6	1.6	0.7	1.9	3%	1.9	1.7	0.3	0.0	14%
EE	1.6	-1.2	0.3	0.4	34%	3.7	-1.1	0.8	2.0	22%	0.8	-1.2	0.4	0.4	52%
IE	-0.5	0.7	0.9	0.7	58%	1.6	0.7	1.5	2.2	13%	2.9	0.7	0.9	0.7	29%
ES	1.2	-0.6	0.8	1.1	42%	3.0	-0.6	1.4	2.2	22%	1.2	-0.7	0.8	1.1	47%
FR	1.1	-1.7	0.6	0.6	49%	3.1	-1.7	1.1	2.0	27%	1.5	-1.8	0.6	0.6	58%
HR	-1.5	-2.6	0.6	0.0	32%	-0.2	-2.6	1.2	0.7	52%	0.6	-2.8	0.6	0.0	71%
IT	0.6	-0.8	0.5	0.6	17%	1.1	-0.8	0.9	0.8	22%	-0.1	-0.8	0.6	0.7	27%
CY	-1.8	0.3	0.2	0.2	26%	-0.3	0.3	0.5	1.4	28%	-0.3	0.3	0.2	0.2	54%
LV	1.1	-1.2	0.4	0.1	30%	3.5	-1.2	1.0	1.9	19%	1.5	-1.3	0.4	0.1	52%
LT	3.1	1.1	0.0	0.7	10%	5.5	1.2	0.5	2.6	3%	4.5	1.2	0.0	0.7	15%
LU	4.4	2.6	0.4	1.2	1%	5.9	2.6	0.7	2.5	1%	3.3	2.7	0.4	1.3	5%
HU	3.4	0.6	0.5	0.3	8%	6.3	0.6	1.0	2.6	4%	3.2	0.7	0.5	0.3	19%
MT	3.2	2.0	1.4	0.9	2%	4.7	1.9	2.0	1.8	1%	5.1	2.1	1.4	0.9	4%
NL	3.0	0.2	0.6	2.6	5%	3.7	0.2	1.0	2.9	9%	3.1	0.2	0.6	2.8	12%
AT	2.7	0.5	0.9	1.0	11%	4.2	0.5	1.4	2.0	5%	3.0	0.6	0.9	1.0	13%
PL	3.1	-0.1	0.8	0.6	19%	4.2	-0.1	1.4	1.2	15%	4.1	-0.1	0.9	0.6	22%
PT	1.0	-0.5	1.7	0.2	15%	2.6	-0.5	2.3	1.2	10%	3.5	-0.5	1.8	0.3	18%
RO	5.1	0.0	0.5	0.5	9%	7.0	0.0	1.0	2.0	10%	4.4	0.0	0.6	0.6	21%
SI	6.1	3.4	0.8	1.0	0%	7.5	3.4	1.3	1.9	0%	7.6	3.6	0.9	1.1	1%
SK	2.4	1.2	1.3	0.2	24%	5.5	1.1	2.1	2.5	2%	5.1	1.3	1.3	0.2	15%
FI	2.8	-0.8	0.5	1.5	14%	4.1	-0.8	0.9	2.4	13%	0.4	-0.8	0.5	1.6	21%
SE	0.5	-0.6	0.3	1.1	24%	2.8	-0.6	0.8	2.8	12%	-0.4	-0.6	0.3	1.1	30%
UK	2.1	0.9	0.9	0.3	33%	3.2	0.9	1.5	0.9	10%	5.4	0.9	1.0	0.3	15%

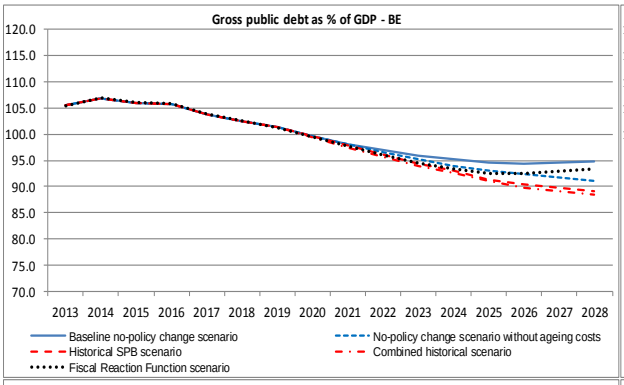
(1) The upper and lower thresholds used for S2 are 2 and 6. The thresholds used for the cost of ageing sub-components correspond to the EU average. The upper and lower thresholds used for the required SPB are 15% and 30%.
Source: Commission services

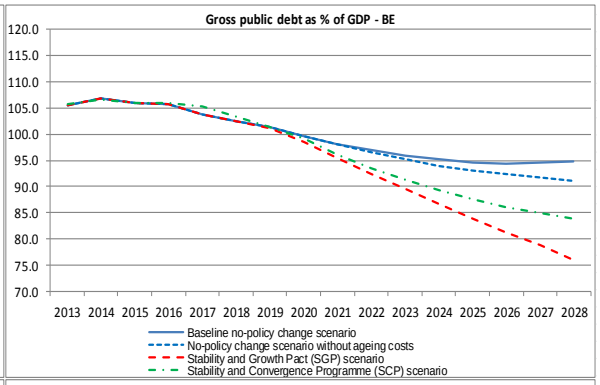
ANNEX A10
Statistical annex – country fiches

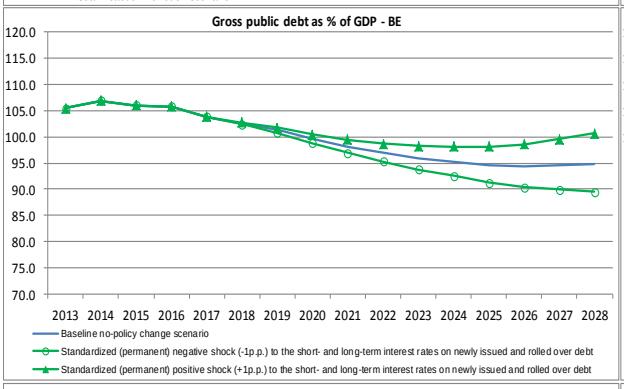
1. Belgium

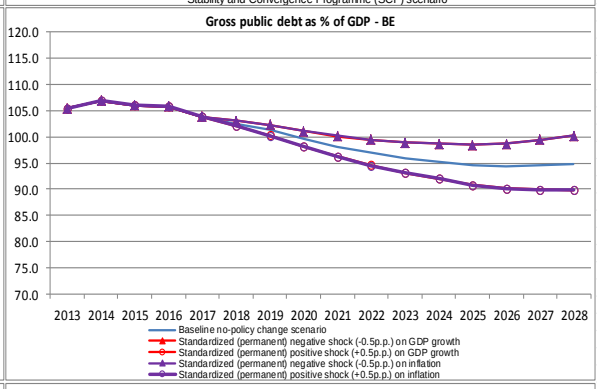
Public debt projections under baseline and alternative scenarios and sensitivity tests

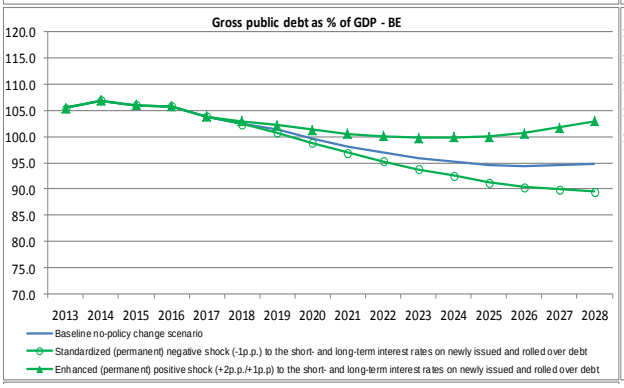
BE - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**106.0**	**105.7**	**103.8**	**102.5**	**101.2**	**99.6**	**98.2**	**97.0**	**95.9**	**95.3**	**94.5**	**94.3**	**94.6**	**94.8**
Changes in the ratio (-1+2+3)	*-0.8*	*-0.2*	*-1.9*	*-1.3*	*-1.3*	*-1.7*	*-1.4*	*-1.2*	*-1.0*	*-0.7*	*-0.7*	*-0.2*	*0.2*	*0.3*
of which														
(1) Primary balance (1.1+1.2+1.3)	**0.6**	**0.4**	**1.1**	**0.9**	**0.7**	**0.6**	**0.5**	**0.3**	**0.2**	**0.0**	**0.3**	**0.1**	**-0.1**	**-0.3**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***0.8***	***0.7***	***1.1***	***0.8***	***0.5***	***0.5***	***0.4***	***0.3***	***0.2***	***0.0***	***0.3***	***0.1***	***-0.1***	***-0.3***
(1.1.1) Structural Primary Balance (bef. CoA)	*0.8*	*0.7*	*1.1*	*0.8*	*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*	*0.2*	*0.3*	*0.4*	*0.6*	*0.3*	*0.6*	*0.8*	*1.0*
(1.1.3) Others (taxes and property incomes)						*0.0*	*0.1*	*0.1*	*0.1*	*0.2*	*0.1*	*0.2*	*0.2*	*0.2*
(1.2) Cyclical component	***-0.3***	***-0.3***	***-0.2***	***0.1***	***0.2***	***0.1***	***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***	***0.0***	***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)	**0.4**	**-0.3**	**-1.1**	**-1.1**	**-1.3**	**-1.0**	**-1.0**	**-0.9**	**-0.8**	**-0.6**	**-0.4**	**-0.1**	**0.1**	**0.0**
(2.1) Interest expenditure	*3.0*	*2.9*	*2.6*	*2.4*	*2.2*	*2.2*	*2.2*	*2.2*	*2.3*	*2.5*	*2.6*	*2.8*	*3.1*	*3.3*
(2.2) Growth effect	*-1.5*	*-1.5*	*-1.8*	*-1.8*	*-1.7*	*-1.4*	*-1.3*	*-1.2*	*-1.3*	*-1.2*	*-1.2*	*-1.1*	*-1.1*	*-1.4*
(2.3) Inflation effect	*-1.2*	*-1.7*	*-1.9*	*-1.6*	*-1.7*	*-1.8*	*-1.9*	*-1.9*	*-1.9*	*-1.9*	*-1.9*	*-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	**-0.7**	**0.4**	**0.2**	**0.7**	**0.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*-0.7*	*0.4*	*0.2*	*0.7*	*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*
Per memo														
Structural balance	-2.2	-2.1	-1.5	-1.5	-1.7	-1.7	-1.8	-1.9	-2.1	-2.4	-2.3	-2.7	-3.2	-3.6

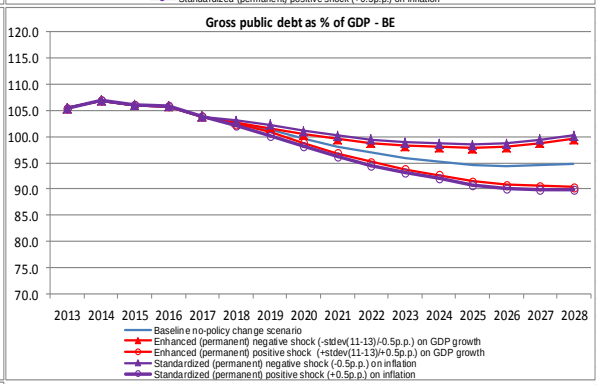


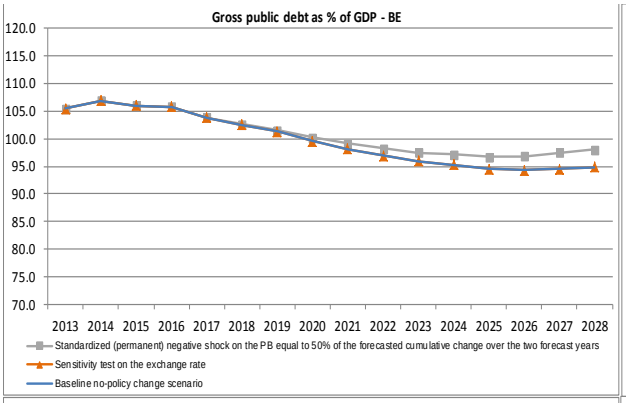


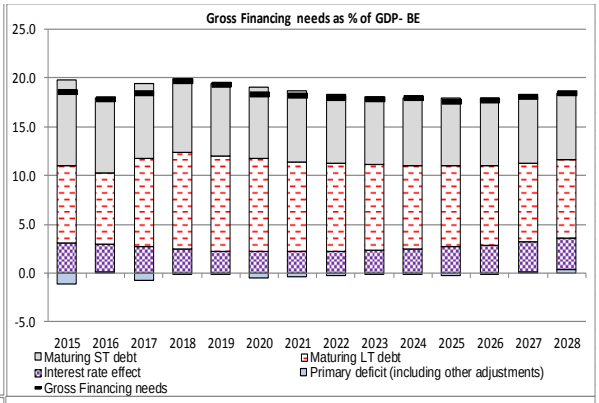


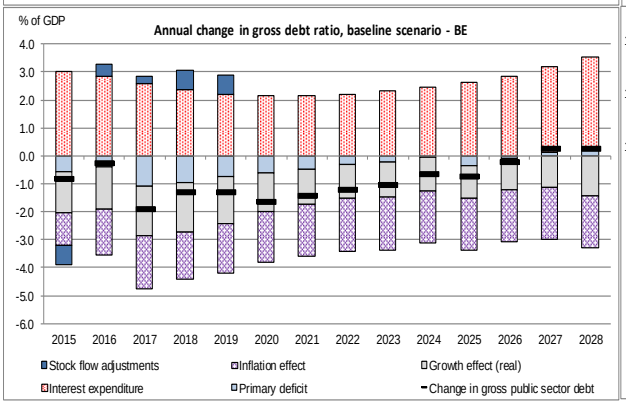


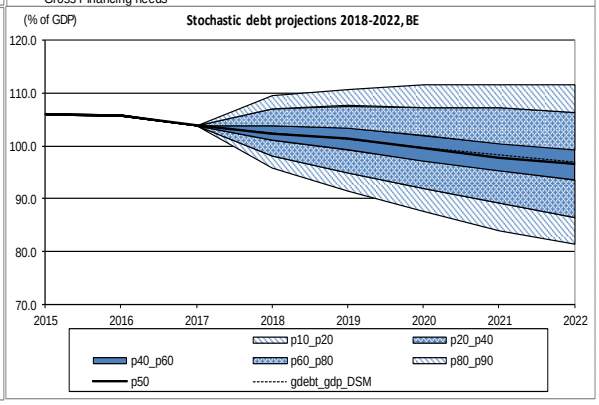












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	27.5	27.7	27.7	27.6	27.6	27.5	27.5	27.5	27.8	28.2
Revenues from pensions taxation	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.6
Property incomes	1.3	1.0	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.48**	**0.35**	**0.46**
Fiscal sub-index	0.88	0.35	0.36
Financial competitiveness sub-index	0.27	0.34	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**3.4**	**4.1**	**3.8**	**2.4**	**4.3**
of which *Initial Budgetary position*	*-0.9*	*-1.4*	*-0.9*	*-2.2*	*-0.4*
*Cost of delaying adjustment***	*0.5*	*0.9*	*0.6*	*0.4*	*0.7*
*Debt requirement****	*3.2*	*3.9*	*3.2*	*3.6*	*3.6*
Ageing costs	*0.6*	*0.7*	*0.9*	*0.6*	*0.4*
Required structural primary balance related to S1	**3.9**	**5.4**	**4.2**	**4.3**	**4.4**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**2.7**	**2.0**	**3.9**	**1.3**	**3.1**
of which Initial Budgetary position	0.5	-0.3	0.5	-0.9	1.0
Long term component	2.2	2.3	3.5	2.2	2.2
of which Pensions	*1.0*	*1.0*	*1.2*	*1.0*	*1.0*
Health care	*0.2*	*0.2*	*0.5*	*0.2*	*0.2*
Long-term care	*1.1*	*1.1*	*1.8*	*1.1*	*1.1*
Others	*-0.1*	*-0.1*	*-0.1*	*0.0*	*-0.1*
Required structural primary balance related to S2	**3.2**	**3.3**	**4.4**	**3.2**	**3.2**

Risks related to the structure of public debt financing

Public debt structure - BE (2016)	Share of short-term public debt (p.p.): 7.9	Share of public debt in foreign currency (%): 0.0	Share of public debt by non-residents (%): 54.1

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		BE	EU
State guarantees (% GDP) (2015)		9.9	8.5
of which One-off guarantees		*9.3*	*8.1*
Standardised guarantees		*0.6*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	8.68	0.92
	Securities issued under liquidity schemes	0.00	0.00
	Special purpose entity	0.00	0.21
	Total	8.68	1.13

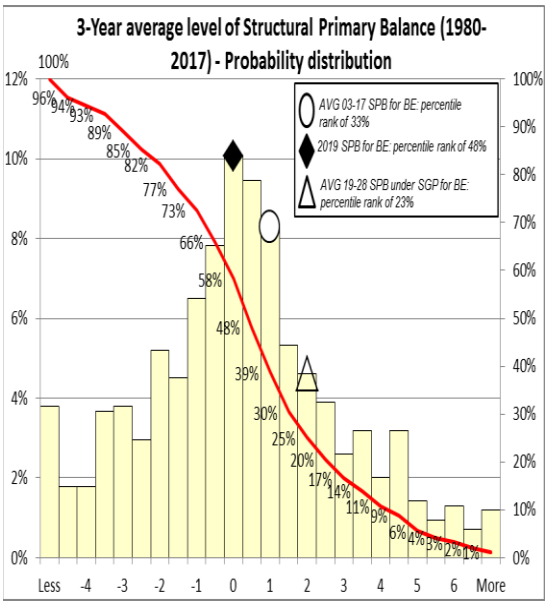
Government's contingent liability risks from banking sector - BE (2016)	Private sector credit flow (% GDP): 13.3	Change in nominal house price index: 2.6	Bank loans-to-deposits ratio (p.p.): 105.0	Share of non-performing loans (%): 3.2	Change in share of non-performing loans (p.p): -0.7	NPL coverage ratio 44.1	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8% 0.00%	bank recap. at 10.5% 0.00%

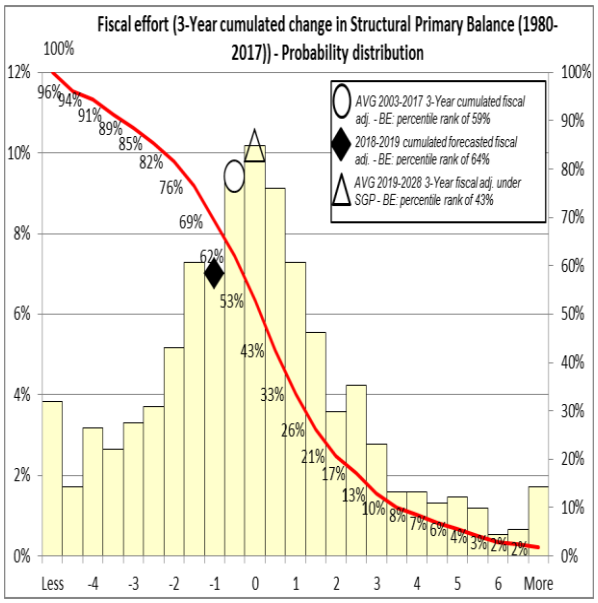
Financial market information

Sovereign Ratings as of Nov 2017, BE	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	Aa3	P-1	Aa3	
S&P	AAu	A-1+u	AAu	A-1+u
Fitch	AA-		AA-	F1+

Financial market information as of October 2017, BE		
Sovereign yield spreads(bp)*	10-year	32.0
CDS (bp)	5-year	16.5

Realism of baseline assumptions





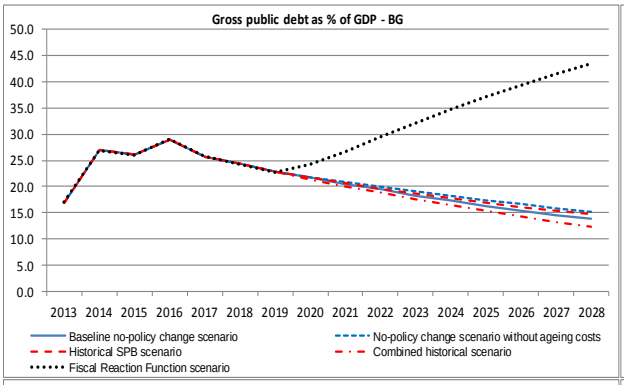
Underlying macro-fiscal assumptions

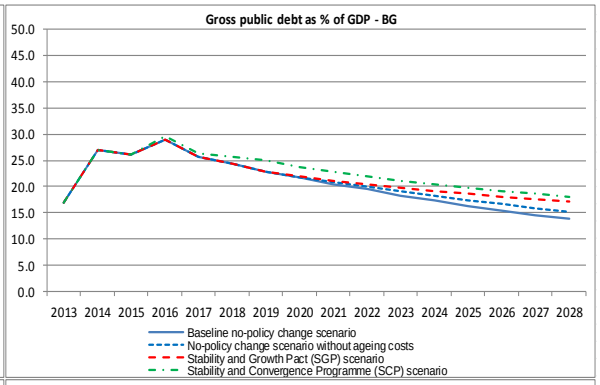
Macro-fiscal assumptions, Belgium	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.8	102.5	101.2	95.3	94.3	94.8	102.5	96.0	97.6
Primary balance	1.1	0.9	0.7	0.0	0.1	-0.3	0.9	0.2	0.4
Structural primary balance (before CoA)	1.1	0.8	0.5	0.5	0.5	0.5	0.8	0.5	0.6
Real GDP growth	1.7	1.8	1.7	1.3	1.2	1.6	1.8	1.3	1.4
Potential GDP growth	1.5	1.5	1.5	1.3	1.2	1.6	1.5	1.4	1.4
Inflation rate	1.8	1.6	1.7	2.0	2.0	2.0	1.7	2.0	1.9
Implicit interest rate (nominal)	2.6	2.4	2.2	2.7	3.1	3.6	2.4	2.8	2.7
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.8	102.5	101.2	93.4	92.4	93.4	102.5	94.7	96.6
Primary balance	1.1	0.9	0.7	0.4	-0.1	-0.6	0.9	0.3	0.5
Structural primary balance (before CoA)	1.1	0.8	0.5	0.9	0.3	0.2	0.8	0.6	0.7
Real GDP growth	1.7	1.8	1.7	1.4	1.2	1.6	1.8	1.3	1.4
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.8	102.5	101.0	86.6	81.3	76.1	102.5	87.0	90.8
Primary balance	1.1	0.9	1.5	2.3	2.4	2.6	1.2	2.3	2.0
Structural primary balance (before CoA)	1.1	0.8	1.3	2.3	2.4	2.6	1.1	2.3	2.0
Real GDP growth	1.7	1.8	1.1	1.3	1.1	1.5	1.6	1.2	1.3
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	105.2	103.4	101.3	89.4	86.1	83.8	103.3	90.2	93.5
Primary balance	1.0	1.5	1.9	1.4	1.5	1.1	1.5	1.6	1.6
Structural primary balance (before CoA)	1.3	1.6	1.9	1.9	1.9	1.9	1.6	1.9	1.8
Real GDP growth	1.4	1.5	1.5	1.3	1.2	1.5	1.5	1.3	1.4
Potential GDP growth	1.3	1.3	1.2	1.3	1.2	1.5	1.3	1.3	1.3
Inflation rate	1.7	1.6	1.5	2.0	2.0	2.0	1.6	1.9	1.8
Implicit interest rate (nominal)	2.4	2.2	2.2	2.8	3.3	3.7	2.3	2.8	2.7
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.8	102.5	101.2	93.0	90.3	89.1	102.5	93.5	95.7
Primary balance	1.1	0.9	0.7	0.9	0.9	0.5	0.9	0.9	0.9
Structural primary balance (before CoA)	1.1	0.8	0.5	1.3	1.3	1.3	0.8	1.2	1.1
Real GDP growth	1.7	1.8	1.7	1.3	1.2	1.6	1.8	1.3	1.4
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.8	102.5	101.2	92.6	89.9	88.4	102.5	93.0	95.4
Primary balance	1.1	0.9	0.7	0.9	0.9	0.5	0.9	0.9	0.9
Structural primary balance (before CoA)	1.1	0.8	0.5	1.3	1.3	1.3	0.8	1.2	1.1
Real GDP growth	1.7	1.8	1.7	1.5	1.5	1.5	1.8	1.4	1.5
Implicit interest rate (nominal)	2.6	2.4	2.2	2.9	3.2	3.5	2.4	2.9	2.7
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.8	102.7	101.7	98.2	98.6	100.6	102.7	99.1	100.0
Implicit interest rate (nominal)	2.6	2.5	2.5	3.3	3.8	4.4	2.5	3.4	3.2
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.8	102.3	100.8	92.5	90.3	89.5	102.3	93.1	95.4
Implicit interest rate (nominal)	2.6	2.2	1.9	2.0	2.4	2.8	2.2	2.2	2.2
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.8	102.9	102.2	99.9	100.6	102.9	103.0	100.7	101.3
Implicit interest rate (nominal)	2.6	2.7	2.8	3.5	4.0	4.5	2.7	3.6	3.4
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.8	102.0	100.2	92.0	90.2	89.8	102.0	92.8	95.1
Real GDP growth	1.7	2.3	2.2	1.8	1.7	2.1	2.1	1.8	1.9
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.8	103.0	102.2	98.7	98.7	100.2	103.0	99.4	100.3
Real GDP growth	1.7	1.3	1.2	0.8	0.7	1.1	1.4	0.8	1.0
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.8	102.3	100.9	92.6	90.8	90.4	102.3	93.4	95.6
Real GDP growth	1.7	2.0	1.9	1.8	1.7	2.1	1.9	1.8	1.8
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.8	102.7	101.6	98.0	98.0	99.5	102.7	98.8	99.8
Real GDP growth	1.7	1.6	1.5	0.8	0.7	1.1	1.6	0.8	1.0
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.8	102.6	101.5	97.1	96.9	98.1	102.6	97.9	99.1
Primary balance	1.1	0.7	0.4	-0.3	-0.2	-0.6	0.7	-0.1	0.1
Structural primary balance (before CoA)	1.1	0.6	0.1	0.1	0.1	0.1	0.6	0.1	0.3
Real GDP growth	1.7	1.9	1.8	1.3	1.2	1.6	1.8	1.3	1.5
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.8	102.5	101.2	95.3	94.3	94.8	102.5	96.0	97.6
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

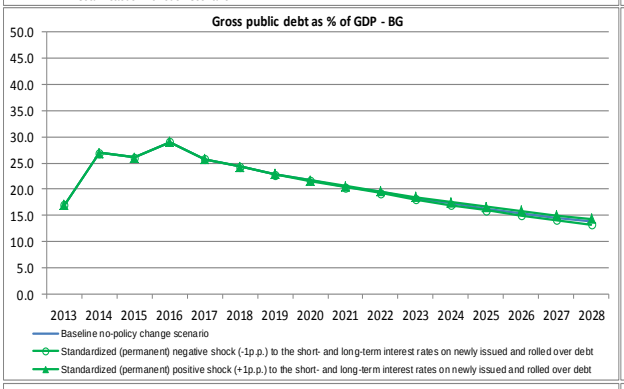
2. Bulgaria

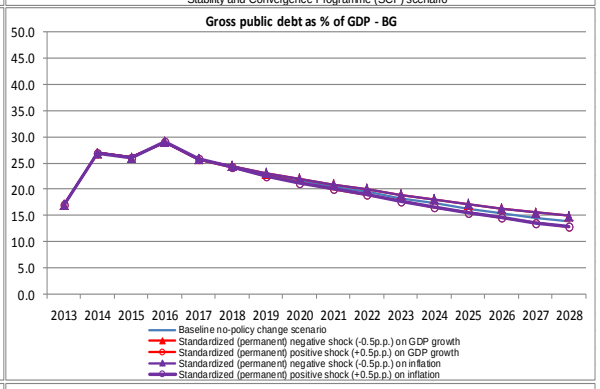
Public debt projections under baseline and alternative scenarios and sensitivity tests

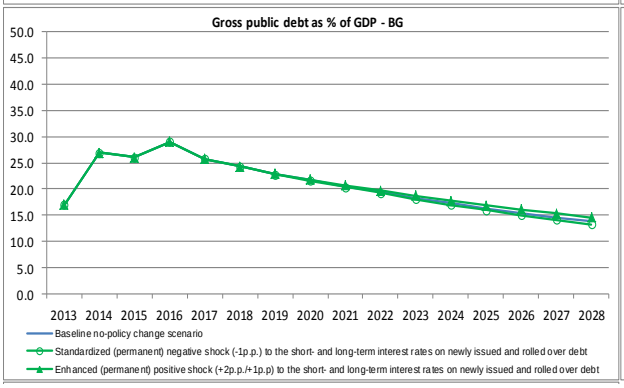
BG - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**26.0**	**29.0**	**25.7**	**24.3**	**22.8**	**21.6**	**20.5**	**19.4**	**18.3**	**17.3**	**16.3**	**15.4**	**14.6**	**13.8**
Changes in the ratio (-1+2+3)	*-1.0*	*3.0*	*-3.3*	*-1.4*	*-1.5*	*-1.2*	*-1.1*	*-1.1*	*-1.1*	*-1.0*	*-1.0*	*-0.9*	*-0.8*	*-0.8*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-0.7**	**0.9**	**1.0**	**0.8**	**1.0**	**1.0**	**1.0**	**0.9**	**1.0**	**0.9**	**0.9**	**0.9**	**0.8**	**0.8**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***-0.2***	***1.0***	***0.9***	***0.7***	***0.7***	***0.8***	***0.9***	***0.9***	***1.0***	***0.9***	***0.9***	***0.9***	***0.8***	***0.8***
(1.1.1) Structural Primary Balance (bef. CoA)	*-0.2*	*1.0*	*0.9*	*0.7*	*0.7*	*0.7*	*0.7*	*0.7*	*0.7*	*0.7*	*0.7*	*0.7*	*0.7*	*0.7*
(1.1.2) Cost of ageing						*-0.1*	*-0.2*	*-0.2*	*-0.2*	*-0.2*	*-0.2*	*-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*
(1.2) Cyclical component	***-0.4***	***-0.2***	***0.0***	***0.2***	***0.2***	***0.1***	***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***	***0.0***	***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**	**-0.6**	**-0.3**	**-0.6**	**-0.5**	**-0.2**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**0.0**	**0.0**	**0.0**
(2.1) Interest expenditure	*0.9*	*0.9*	*0.9*	*0.8*	*0.8*	*0.8*	*0.7*	*0.7*	*0.7*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*
(2.2) Growth effect	*-0.9*	*-1.0*	*-1.1*	*-0.9*	*-0.8*	*-0.5*	*-0.4*	*-0.4*	*-0.4*	*-0.4*	*-0.3*	*-0.3*	*-0.3*	*-0.2*
(2.3) Inflation effect	*-0.6*	*-0.6*	*-0.2*	*-0.5*	*-0.5*	*-0.5*	*-0.4*	*-0.4*	*-0.4*	*-0.4*	*-0.3*	*-0.3*	*-0.3*	*-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	**-1.1**	**4.5**	**-2.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*-1.1*	*4.5*	*-2.0*	*0.0*	*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*
Per memo														
Structural balance	-1.1	0.1	0.0	-0.2	-0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2

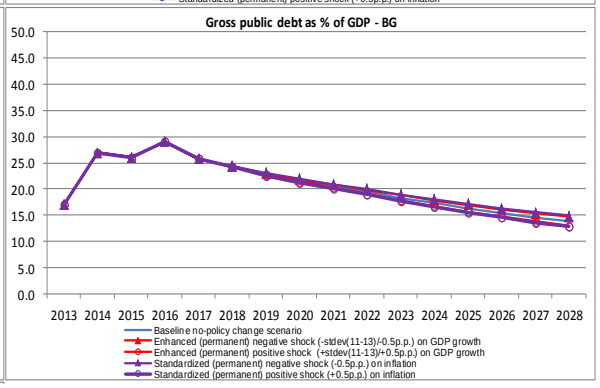


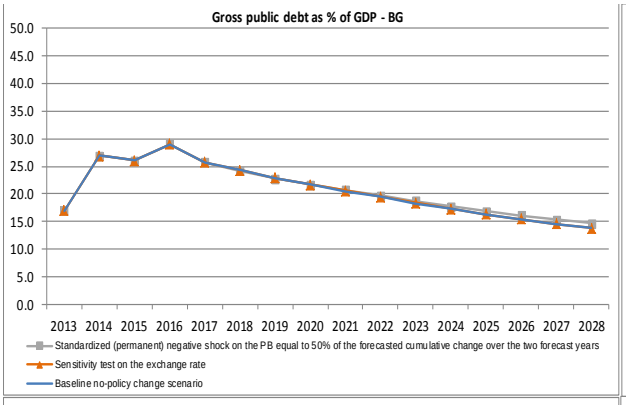


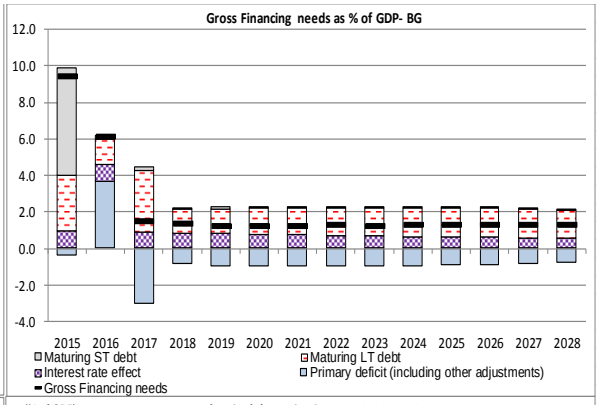


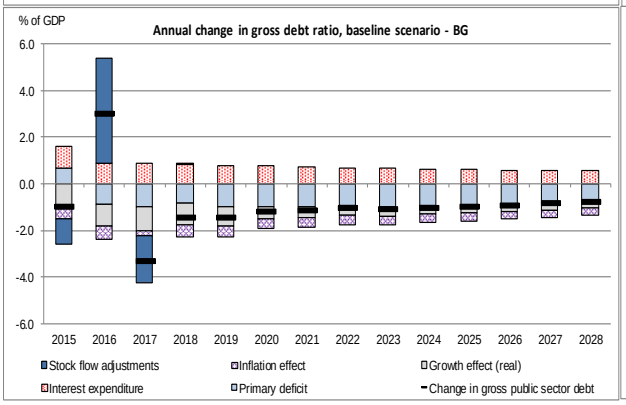


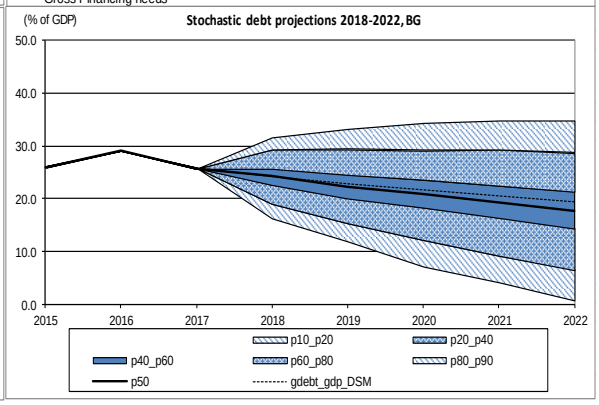












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	17.8	17.8	17.6	17.2	17.0	16.8	16.6	16.5	16.4	16.6
Revenues from pensions taxation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Property incomes	1.0	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.65**	**0.25**	**0.46**
Fiscal sub-index	0.33	0.00	0.36
Financial competitiveness sub-index	0.82	0.39	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**-4.3**	**-6.6**	**-3.9**	**-4.7**	**-3.5**
of which *Initial Budgetary position*	*-0.8*	*-0.6*	*-0.7*	*-0.6*	*-0.1*
*Cost of delaying adjustment***	*-0.7*	*-1.5*	*-0.6*	*-0.8*	*-0.5*
*Debt requirement****	*-2.8*	*-4.5*	*-2.8*	*-3.2*	*-2.5*
Ageing costs	*-0.1*	*-0.1*	*0.2*	*-0.1*	*-0.3*
Required structural primary balance related to S1	**-3.6**	**-6.0**	**-3.2**	**-4.1**	**-3.3**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**1.0**	**1.2**	**3.0**	**1.3**	**1.4**
of which Initial Budgetary position	-0.3	-0.2	-0.3	-0.1	0.3
Long term component	1.3	1.4	3.2	1.4	1.1
of which Pensions	*0.9*	*1.0*	*1.0*	*1.0*	*0.7*
Health care	*0.2*	*0.2*	*0.7*	*0.2*	*0.3*
Long-term care	*0.1*	*0.1*	*1.5*	*0.1*	*0.1*
Others	*0.1*	*0.1*	*0.1*	*0.1*	*0.0*
Required structural primary balance related to S2	**1.7**	**1.8**	**3.7**	**1.9**	**1.5**

Risks related to the structure of public debt financing

Public debt structure - BG (2016)	Share of short-term public debt (p.p.): 0.3	**Share of public debt in foreign currency (%): 82.1**	Share of public debt by non-residents (%): 48.7

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		BG	EU
State guarantees (% GDP) (2015)		0.5	8.5
of which One-off guarantees		*0.4*	*8.1*
Standardised guarantees		*0.1*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	0.00	0.92
	Securities issued under liquidity schemes	0.00	0.00
	Special purpose entity	0.00	0.21
	Total	0.00	1.13

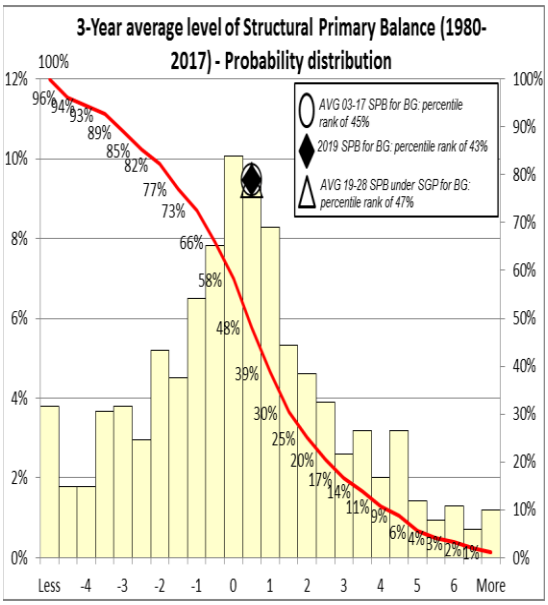
Government's contingent liability risks from banking sector - BG (2016)	Private sector credit flow (% GDP): 4.0	Change in nominal house price index: 7.0	Bank loans-to-deposits ratio (p.p.): 71.7	**Share of non-performing loans (%): 12.5**	Change in share of non-performing loans (p.p): -1.2	NPL coverage ratio 57.8	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8% 0.00%	bank recap. at 10.5% 0.01%

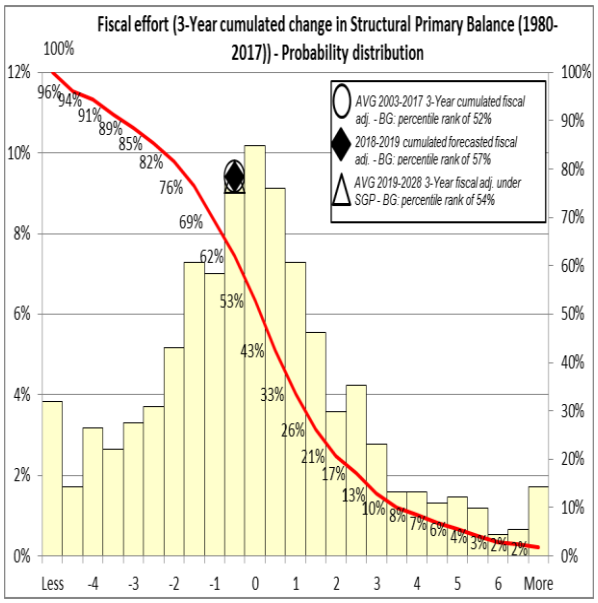
Financial market information

Sovereign Ratings as of Nov 2017, BG	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	Baa2		Baa2	
S&P	BB+	B	BB+	B
Fitch	BBB-		BBB-	F3

Financial market information as of October 2017, BG		
Sovereign yield spreads(bp)*	10-year	103.0
CDS (bp)	5-year	142.9

Realism of baseline assumptions





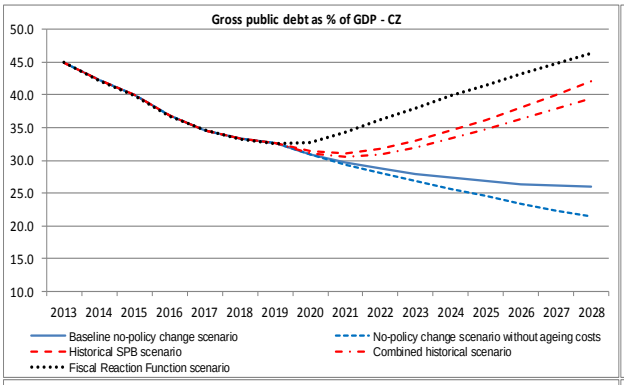
Underlying macro-fiscal assumptions

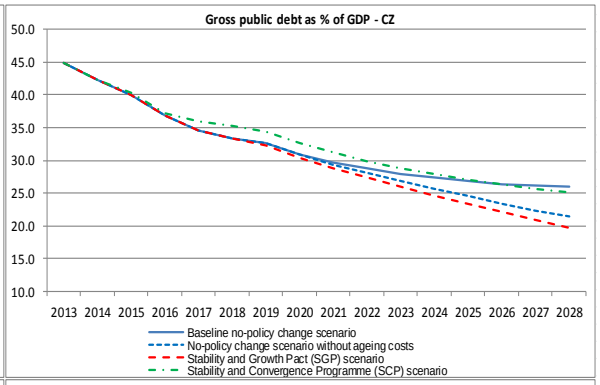
Macro-fiscal assumptions, Bulgaria	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	25.7	24.3	22.8	17.3	15.4	13.8	24.3	17.5	19.2
Primary balance	1.0	0.8	1.0	0.9	0.9	0.8	0.9	0.9	0.9
Structural primary balance (before CoA)	0.9	0.7	0.7	0.7	0.7	0.7	0.8	0.7	0.8
Real GDP growth	3.9	3.8	3.6	2.1	1.9	1.7	3.7	2.0	2.5
Potential GDP growth	3.2	3.3	3.3	2.1	1.9	1.7	3.3	2.1	2.4
Inflation rate	0.6	2.1	2.1	2.0	2.0	2.0	1.6	2.0	1.9
Implicit interest rate (nominal)	3.3	3.5	3.5	3.6	3.7	4.0	3.4	3.6	3.6
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	25.7	24.3	22.8	34.7	39.4	43.5	24.3	34.3	31.8
Primary balance	1.0	0.8	1.0	-2.6	-2.1	-1.7	0.9	-2.4	-1.6
Structural primary balance (before CoA)	0.9	0.7	0.7	-2.8	-2.3	-1.8	0.8	-2.6	-1.7
Real GDP growth	3.9	3.8	3.6	1.9	1.7	1.6	3.7	2.2	2.6
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	25.7	24.3	22.9	19.2	18.0	17.0	24.3	19.3	20.6
Primary balance	1.0	0.8	0.9	0.5	0.5	0.5	0.9	0.6	0.6
Structural primary balance (before CoA)	0.9	0.7	0.6	0.5	0.5	0.5	0.8	0.5	0.6
Real GDP growth	3.9	3.8	3.6	2.1	1.9	1.7	3.8	2.0	2.5
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	26.4	25.6	25.1	20.4	19.1	18.1	25.7	20.6	21.9
Primary balance	0.2	0.2	0.8	0.7	0.6	0.6	0.4	0.7	0.6
Structural primary balance (before CoA)	0.3	0.3	0.8	0.6	0.6	0.6	0.5	0.6	0.6
Real GDP growth	3.0	3.1	3.2	1.8	1.7	1.5	3.1	1.9	2.2
Potential GDP growth	3.0	3.0	3.1	1.8	1.7	1.5	3.0	1.9	2.2
Inflation rate	1.8	1.8	2.0	2.0	2.0	2.0	1.9	2.0	2.0
Implicit interest rate (nominal)	2.7	2.8	2.9	3.6	4.0	4.2	2.8	3.6	3.4
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	25.7	24.3	22.8	17.8	16.2	14.8	24.3	18.0	19.5
Primary balance	1.0	0.8	1.0	0.8	0.7	0.7	0.9	0.8	0.8
Structural primary balance (before CoA)	0.9	0.7	0.7	0.6	0.6	0.6	0.8	0.6	0.7
Real GDP growth	3.9	3.8	3.6	2.1	1.9	1.7	3.7	2.0	2.5
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	25.7	24.3	22.8	16.4	14.3	12.4	24.3	16.6	18.5
Primary balance	1.0	0.8	1.0	0.8	0.7	0.7	0.9	0.8	0.8
Structural primary balance (before CoA)	0.9	0.7	0.7	0.6	0.6	0.6	0.8	0.6	0.7
Real GDP growth	3.9	3.8	3.6	3.4	3.4	3.4	3.7	3.5	3.5
Implicit interest rate (nominal)	3.3	3.5	3.5	3.4	3.4	3.3	3.4	3.4	3.4
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	25.7	24.3	22.8	17.6	15.8	14.4	24.3	17.8	19.4
Implicit interest rate (nominal)	3.3	3.5	3.6	3.9	4.2	4.5	3.5	4.0	3.9
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	25.7	24.3	22.8	17.0	15.0	13.3	24.2	17.2	19.0
Implicit interest rate (nominal)	3.3	3.4	3.4	3.3	3.3	3.4	3.4	3.3	3.3
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	25.7	24.3	22.9	17.8	16.1	14.6	24.3	18.0	19.5
Implicit interest rate (nominal)	3.3	3.6	3.7	4.1	4.3	4.6	3.5	4.1	4.0
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	25.7	24.2	22.6	16.6	14.6	12.8	24.1	16.8	18.6
Real GDP growth	3.9	4.3	4.1	2.6	2.4	2.2	4.1	2.5	2.9
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	25.7	24.4	23.0	18.0	16.3	14.9	24.4	18.2	19.7
Real GDP growth	3.9	3.3	3.1	1.6	1.4	1.2	3.4	1.5	2.0
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	25.7	24.2	22.7	16.7	14.7	12.9	24.2	16.9	18.8
Real GDP growth	3.9	3.9	3.7	2.6	2.4	2.2	3.8	2.5	2.9
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	25.7	24.3	22.9	17.9	16.2	14.7	24.3	18.0	19.6
Real GDP growth	3.9	3.6	3.4	1.6	1.4	1.2	3.6	1.5	2.1
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	25.7	24.2	22.8	17.7	16.1	14.6	24.2	17.9	19.5
Primary balance	1.0	1.0	0.9	0.8	0.8	0.7	0.9	0.8	0.8
Structural primary balance (before CoA)	0.9	0.8	0.6	0.6	0.6	0.6	0.8	0.6	0.7
Real GDP growth	3.9	3.7	3.7	2.1	1.9	1.7	3.8	2.0	2.5
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	25.7	24.3	22.8	17.3	15.5	13.8	24.3	17.5	19.2
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

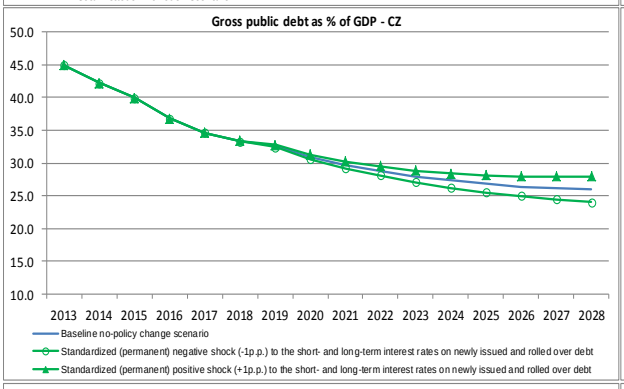
3. Czech Republic

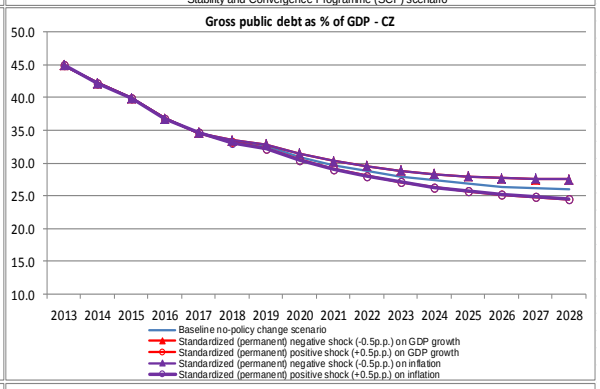
Public debt projections under baseline and alternative scenarios and sensitivity tests

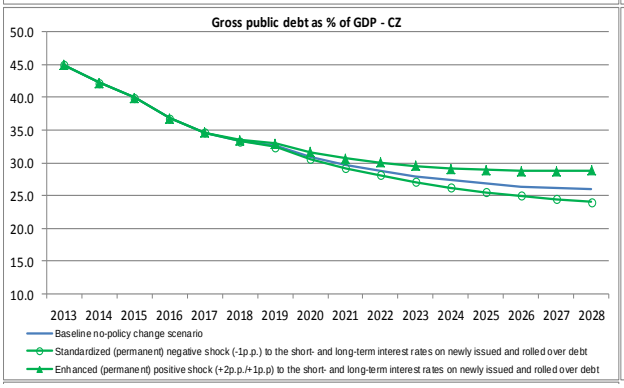
CZ - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**40.0**	**36.8**	**34.6**	**33.3**	**32.5**	**30.9**	**29.7**	**28.8**	**28.0**	**27.3**	**26.8**	**26.4**	**26.1**	**25.9**
Changes in the ratio (-1+2+3)	*-2.2*	*-3.2*	*-2.2*	*-1.3*	*-0.8*	*-1.6*	*-1.2*	*-0.9*	*-0.8*	*-0.7*	*-0.5*	*-0.4*	*-0.3*	*-0.2*
of which														
(1) Primary balance (1.1+1.2+1.3)	**0.4**	**1.7**	**2.0**	**1.6**	**1.3**	**1.1**	**0.8**	**0.6**	**0.5**	**0.4**	**0.3**	**0.3**	**0.2**	**0.2**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***0.5***	***1.8***	***1.6***	***1.1***	***0.9***	***0.8***	***0.7***	***0.6***	***0.5***	***0.4***	***0.3***	***0.3***	***0.2***	***0.2***
(1.1.1) Structural Primary Balance (bef. CoA)	*0.5*	*1.8*	*1.6*	*1.1*	*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						*0.1*	*0.2*	*0.3*	*0.4*	*0.6*	*0.6*	*0.7*	*0.7*	*0.8*
(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*
(1.2) Cyclical component	***-0.1***	***-0.1***	***0.4***	***0.4***	***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***	***0.0***	***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)	**-1.5**	**-0.6**	**-1.2**	**-1.0**	**-0.8**	**-0.5**	**-0.4**	**-0.3**	**-0.3**	**-0.3**	**-0.2**	**-0.1**	**-0.1**	**0.0**
(2.1) Interest expenditure	*1.1*	*0.9*	*0.8*	*0.8*	*0.7*	*0.7*	*0.7*	*0.7*	*0.7*	*0.8*	*0.8*	*0.9*	*0.9*	*1.0*
(2.2) Growth effect	*-2.1*	*-1.0*	*-1.5*	*-1.0*	*-0.9*	*-0.7*	*-0.5*	*-0.4*	*-0.5*	*-0.5*	*-0.5*	*-0.5*	*-0.5*	*-0.5*
(2.3) Inflation effect	*-0.5*	*-0.5*	*-0.5*	*-0.8*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.5*	*-0.5*	*-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	**-0.3**	**-1.0**	**1.0**	**1.3**	**1.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*-0.1*	*-0.8*	*1.4*	*1.6*	*1.3*	*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	*-0.1*	*-0.2*	*-0.4*	*-0.3*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Per memo														
Structural balance	-0.7	0.7	0.8	0.4	0.1	0.1	0.0	-0.1	-0.2	-0.4	-0.5	-0.6	-0.7	-0.8

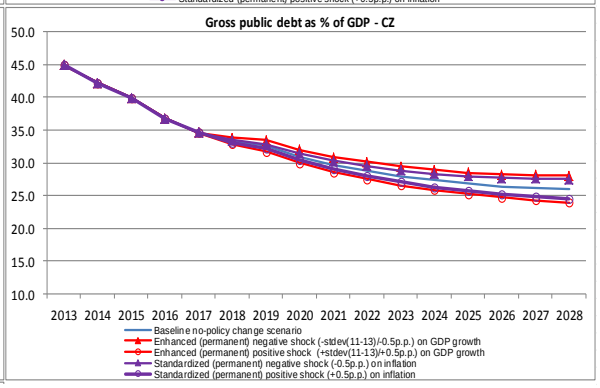


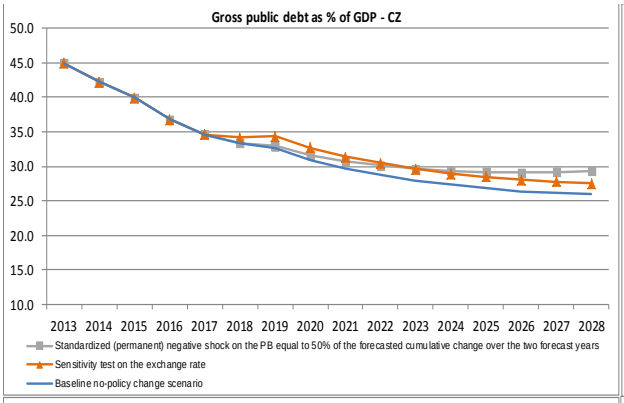


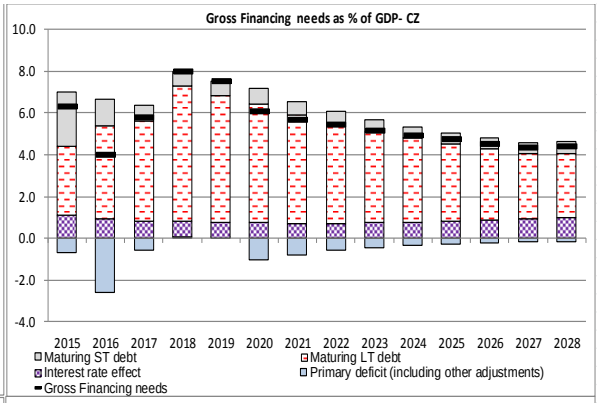


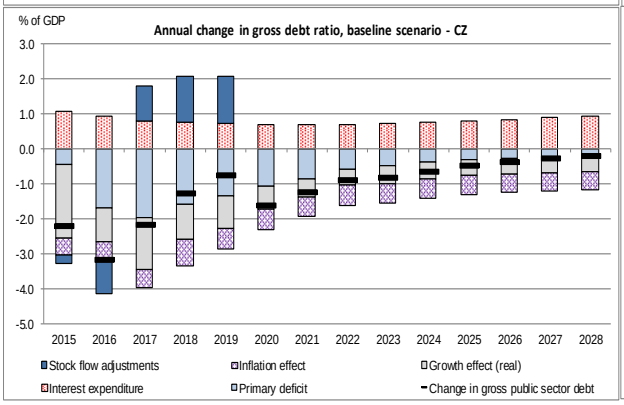


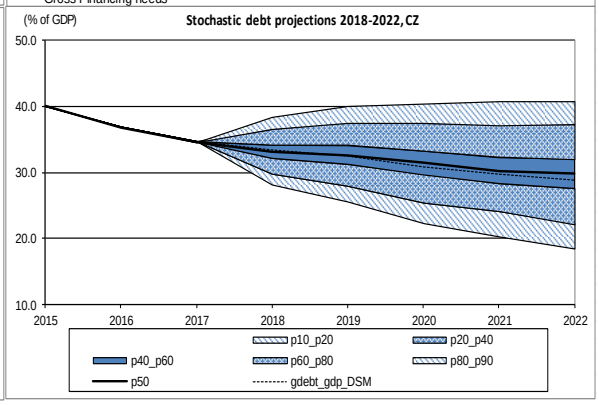












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	19.1	19.1	19.1	19.1	19.2	19.3	19.5	19.6	20.1	20.3
Revenues from pensions taxation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Property incomes	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.34**	**0.19**	**0.46**
Fiscal sub-index	0.42	0.00	0.36
Financial competitiveness sub-index	0.31	0.28	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**-3.1**	**-1.3**	**-2.6**	**-4.0**	**-1.2**
of which *Initial Budgetary position*	*-1.1*	*1.3*	*-1.1*	*-1.3*	*0.0*
*Cost of delaying adjustment***	*-0.5*	*-0.3*	*-0.4*	*-0.7*	*-0.2*
*Debt requirement****	*-2.1*	*-3.0*	*-2.1*	*-2.5*	*-1.7*
Ageing costs	*0.6*	*0.7*	*1.0*	*0.5*	*0.7*
Required structural primary balance related to S1	**-2.2**	**-2.6**	**-1.7**	**-2.8**	**-1.3**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**1.7**	**4.0**	**5.4**	**1.3**	**2.9**
of which Initial Budgetary position	-0.5	1.7	-0.5	-0.8	0.6
Long term component	2.2	2.3	5.9	2.1	2.3
of which Pensions	*0.6*	*0.6*	*0.5*	*0.5*	*0.6*
Health care	*0.7*	*0.8*	*1.3*	*0.7*	*0.8*
Long-term care	*0.5*	*0.5*	*3.7*	*0.5*	*0.5*
Others	*0.4*	*0.4*	*0.4*	*0.4*	*0.4*
Required structural primary balance related to S2	**2.6**	**2.7**	**6.3**	**2.5**	**2.8**

Risks related to the structure of public debt financing

Public debt structure - CZ (2016)	Share of short-term public debt (p.p.): 0.9	**Share of public debt in foreign currency (%): 44.8**	Share of public debt by non-residents (%): 42.2

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		CZ	EU
State guarantees (% GDP) (2015)		0.3	8.5
of which One-off guarantees		*0.3*	*8.1*
Standardised guarantees		*0.0*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	0.00	0.92
	Securities issued under liquidity schemes	0.00	0.00
	Special purpose entity	0.00	0.21
	Total	0.00	1.13

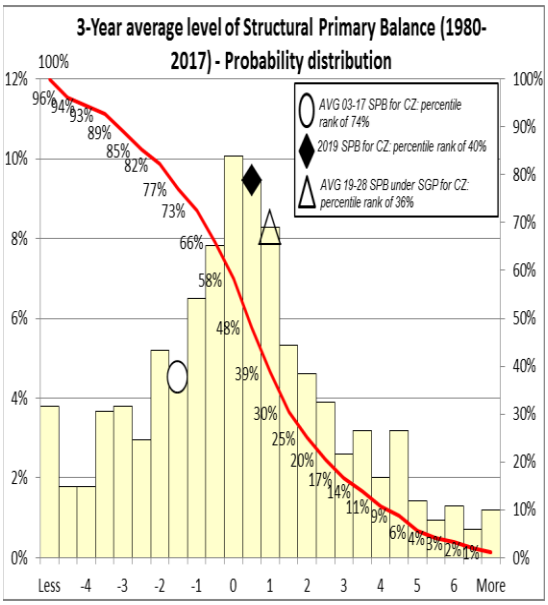
Government's contingent liability risks from banking sector - CZ (2016)	Private sector credit flow (% GDP):	Change in nominal house price index:	Bank loans-to-deposits ratio (p.p.):	**Share of non-performing loans (%):**	Change in share of non-performing loans (p.p):	NPL coverage ratio	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8%	bank recap. at 10.5%
	4.4	7.2	83.1	**2.5**	-0.8	62.5	0.00%	0.00%

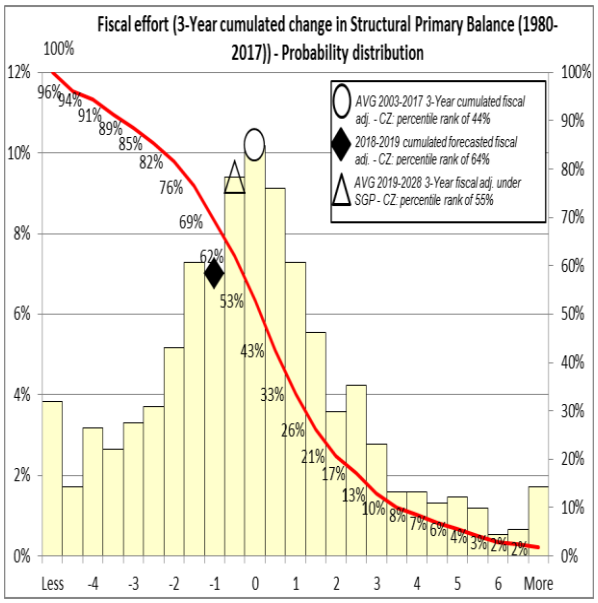
Financial market information

Sovereign Ratings as of Nov 2017, CZ	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	A1		A1	P-1
S&P	AA	A-1+	AA-	A-1+
Fitch	A+		A+	F1+

Financial market information as of October 2017, CZ		
Sovereign yield spreads(bp)*	10-year	108.0
CDS (bp)	5-year	43.3

Realism of baseline assumptions





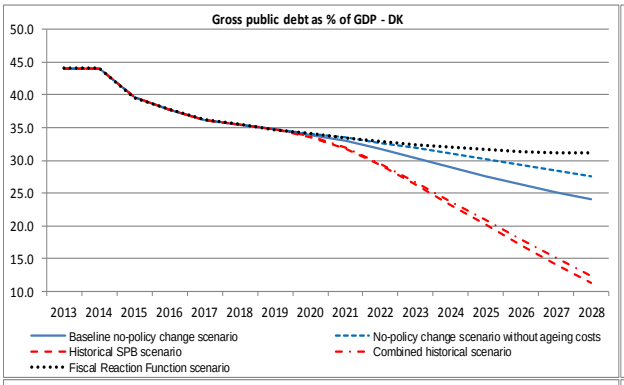
Underlying macro-fiscal assumptions

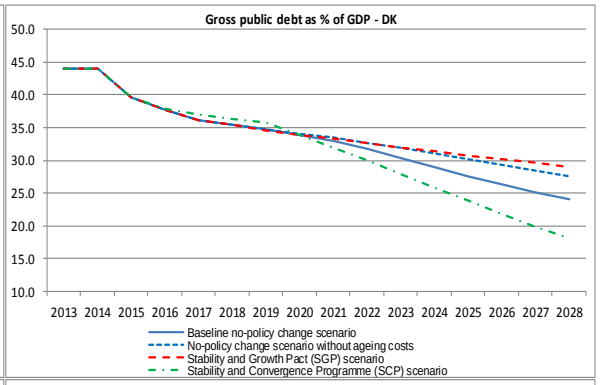
Macro-fiscal assumptions, Czech Republic	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	34.6	33.3	32.5	27.3	26.4	25.9	33.5	27.8	29.2
Primary balance	2.0	1.6	1.3	0.4	0.3	0.2	1.6	0.5	0.8
Structural primary balance (before CoA)	1.6	1.1	0.9	0.9	0.9	0.9	1.2	0.9	1.0
Real GDP growth	4.3	3.0	2.9	1.8	1.8	1.9	3.4	1.8	2.2
Potential GDP growth	3.1	2.9	2.8	1.8	1.8	1.9	3.0	1.9	2.2
Inflation rate	1.4	2.3	1.8	2.0	2.0	2.0	1.8	2.0	1.9
Implicit interest rate (nominal)	2.3	2.3	2.3	2.8	3.3	3.8	2.3	2.9	2.8
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	34.6	33.3	32.5	39.8	43.2	46.3	33.5	39.6	38.1
Primary balance	2.0	1.6	1.3	-2.0	-1.7	-1.4	1.6	-1.8	-1.0
Structural primary balance (before CoA)	1.6	1.1	0.9	-1.5	-1.1	-0.7	1.2	-1.4	-0.8
Real GDP growth	4.3	3.0	2.9	1.6	1.6	1.7	3.4	1.9	2.3
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	34.6	33.3	32.4	24.6	22.1	19.7	33.4	24.8	27.0
Primary balance	2.0	1.6	1.6	1.1	1.1	1.1	1.7	1.1	1.3
Structural primary balance (before CoA)	1.6	1.1	1.1	1.1	1.1	1.1	1.3	1.1	1.1
Real GDP growth	4.3	3.0	2.7	1.8	1.8	1.9	3.3	1.8	2.2
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	36.0	35.3	34.3	27.8	26.3	25.1	35.2	28.3	30.0
Primary balance	1.2	1.0	1.2	0.8	0.7	0.6	1.2	0.9	0.9
Structural primary balance (before CoA)	1.1	0.9	1.1	1.2	1.2	1.2	1.0	1.2	1.2
Real GDP growth	2.5	2.5	2.4	1.5	1.6	1.8	2.5	1.7	1.9
Potential GDP growth	2.3	2.4	2.4	1.5	1.6	1.8	2.4	1.7	1.9
Inflation rate	1.1	1.8	1.9	2.0	2.0	2.0	1.6	2.0	1.9
Implicit interest rate (nominal)	2.4	2.2	2.2	3.1	3.6	3.9	2.3	3.1	2.9
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	34.6	33.3	32.5	34.5	38.0	42.1	33.5	35.3	34.9
Primary balance	2.0	1.6	1.3	-1.8	-1.9	-2.0	1.6	-1.4	-0.6
Structural primary balance (before CoA)	1.6	1.1	0.9	-1.3	-1.3	-1.3	1.2	-1.0	-0.4
Real GDP growth	4.3	3.0	2.9	1.8	1.8	1.9	3.4	2.0	2.3
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	34.6	33.3	32.5	33.3	36.3	39.5	33.5	34.0	33.9
Primary balance	2.0	1.6	1.3	-1.8	-1.9	-2.0	1.6	-1.4	-0.6
Structural primary balance (before CoA)	1.6	1.1	0.9	-1.3	-1.3	-1.3	1.2	-1.0	-0.4
Real GDP growth	4.3	3.0	2.9	2.8	2.8	2.8	3.4	3.0	3.1
Implicit interest rate (nominal)	2.3	2.3	2.3	3.2	3.6	3.8	2.3	3.1	2.9
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	34.6	33.4	32.7	28.4	28.0	28.0	33.6	28.9	30.1
Implicit interest rate (nominal)	2.3	2.5	2.7	3.6	4.2	4.7	2.5	3.7	3.4
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	34.6	33.2	32.4	26.2	24.9	24.0	33.4	26.7	28.4
Implicit interest rate (nominal)	2.3	2.1	2.0	2.0	2.4	2.9	2.1	2.2	2.1
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	34.6	33.4	32.9	29.1	28.8	28.8	33.6	29.6	30.6
Implicit interest rate (nominal)	2.3	2.7	3.1	3.8	4.3	4.8	2.7	3.9	3.6
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	34.6	33.1	32.2	26.3	25.2	24.5	33.3	26.8	28.4
Real GDP growth	4.3	3.5	3.4	2.3	2.3	2.4	3.7	2.3	2.7
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	34.6	33.5	32.9	28.3	27.7	27.5	33.6	28.8	30.0
Real GDP growth	4.3	2.5	2.4	1.3	1.3	1.4	3.1	1.3	1.7
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	34.6	32.9	31.7	25.8	24.7	24.0	33.0	26.3	28.0
Real GDP growth	4.3	4.4	4.3	2.3	2.3	2.4	4.3	2.3	2.8
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	34.6	33.8	33.4	28.9	28.3	28.0	33.9	29.3	30.5
Real GDP growth	4.3	1.7	1.5	1.3	1.3	1.4	2.5	1.3	1.6
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	34.6	33.4	32.9	29.3	29.1	29.3	33.6	29.8	30.8
Primary balance	2.0	1.5	1.0	0.0	-0.1	-0.2	1.5	0.1	0.5
Structural primary balance (before CoA)	1.6	1.1	0.5	0.5	0.5	0.5	1.1	0.5	0.7
Real GDP growth	4.3	3.1	3.1	1.8	1.8	1.9	3.5	1.8	2.2
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	34.6	34.2	34.3	29.0	28.0	27.5	34.4	29.4	30.7
Exchange rate depreciation	0.0%	6.0%	6.0%	0.0%	0.0%	0.0%	4.0%	0.0%	1.0%

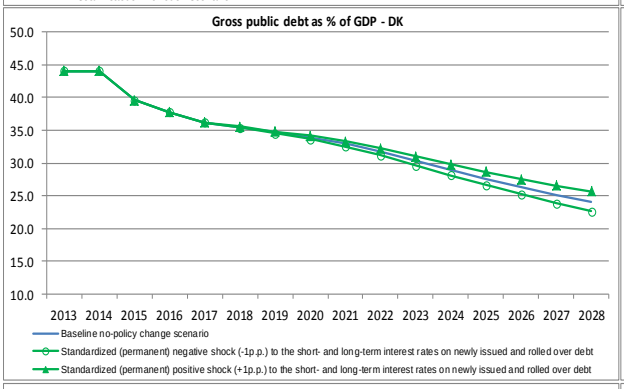
4. Denmark

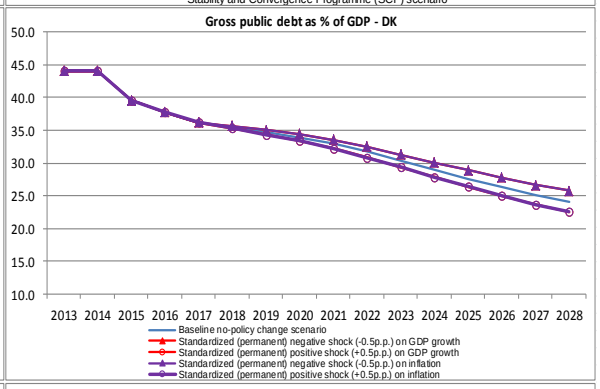
Public debt projections under baseline and alternative scenarios and sensitivity tests

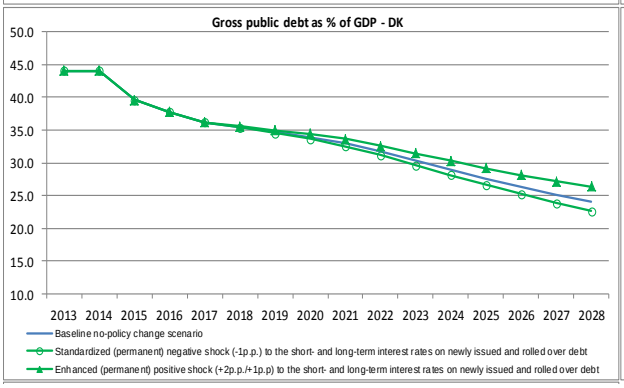
DK - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**39.5**	**37.7**	**36.1**	**35.5**	**34.6**	**33.9**	**32.9**	**31.7**	**30.3**	**28.9**	**27.6**	**26.3**	**25.1**	**24.1**
Changes in the ratio (-1+2+3)	*-4.4*	*-1.8*	*-1.6*	*-0.7*	*-0.8*	*-0.7*	*-1.0*	*-1.2*	*-1.4*	*-1.4*	*-1.3*	*-1.3*	*-1.2*	*-1.0*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-0.2**	**0.7**	**0.2**	**0.1**	**0.0**	**0.3**	**0.7**	**0.9**	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**	**1.0**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***-0.5***	***1.6***	***0.7***	***0.4***	***0.2***	***0.5***	***0.7***	***0.9***	***1.1***	***1.1***	***1.1***	***1.1***	***1.1***	***1.0***
(1.1.1) Structural Primary Balance (bef. CoA)	*-0.5*	*1.6*	*0.7*	*0.4*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*
(1.1.2) Cost of ageing						*-0.2*	*-0.4*	*-0.5*	*-0.6*	*-0.5*	*-0.5*	*-0.4*	*-0.3*	*-0.2*
(1.1.3) Others (taxes and property incomes)						*0.1*	*0.1*	*0.2*	*0.3*	*0.4*	*0.4*	*0.5*	*0.6*	*0.5*
(1.2) Cyclical component	***-1.1***	***-0.9***	***-0.5***	***-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	***1.4***	***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)	**0.5**	**0.6**	**-0.3**	**-0.3**	**-0.5**	**-0.4**	**-0.4**	**-0.3**	**-0.3**	**-0.2**	**-0.2**	**-0.1**	**-0.1**	**0.0**
(2.1) Interest expenditure	*1.6*	*1.4*	*1.2*	*1.0*	*0.9*	*0.9*	*0.8*	*0.8*	*0.8*	*0.8*	*0.8*	*0.9*	*0.9*	*0.9*
(2.2) Growth effect	*-0.7*	*-0.7*	*-0.8*	*-0.7*	*-0.6*	*-0.6*	*-0.5*	*-0.5*	*-0.5*	*-0.5*	*-0.5*	*-0.5*	*-0.4*	*-0.4*
(2.3) Inflation effect	*-0.4*	*-0.1*	*-0.6*	*-0.6*	*-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	**-5.1**	**-1.7**	**-1.1**	**-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	*-5.5*	*-1.7*	*-1.1*	*-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	*0.3*	*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*
Per memo														
Structural balance	-1.7	0.2	-0.5	-0.6	-0.7	-0.4	-0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.1

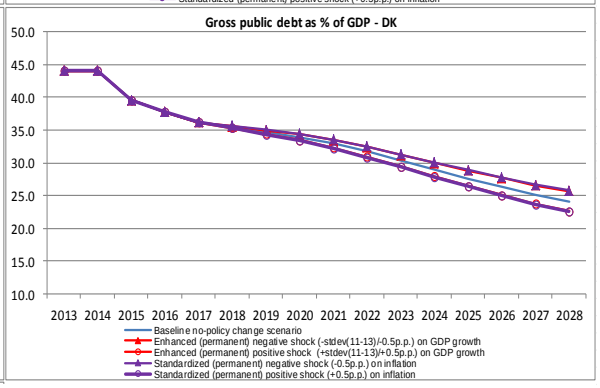


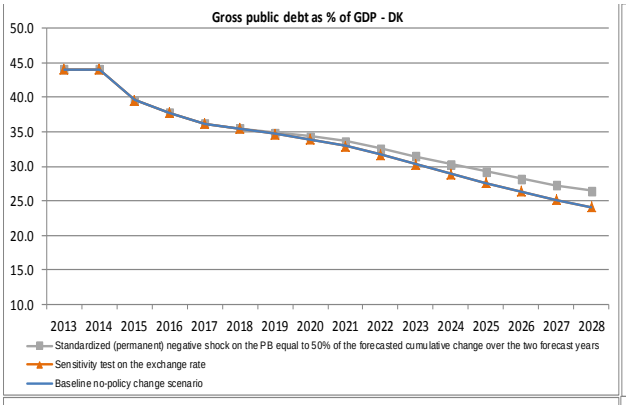


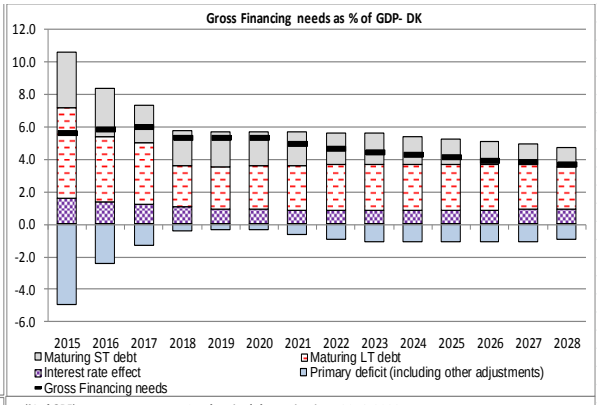


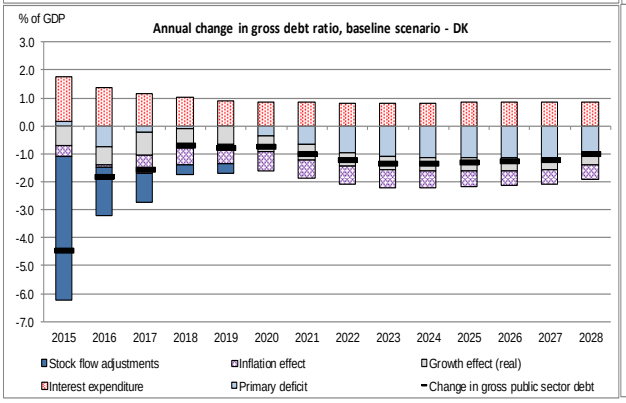


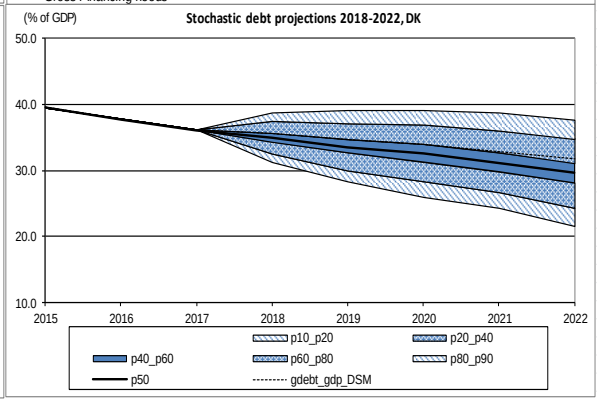












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	29.8	29.6	29.5	29.1	28.8	28.4	28.2	28.1	27.8	28.2
Revenues from pensions taxation	4.8	4.8	4.6	4.7	4.7	4.6	4.7	4.7	4.6	4.4
Property incomes	2.0	1.5	1.0	1.0	1.1	1.2	1.3	1.3	1.7	1.7

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.42**	**0.30**	**0.46**
Fiscal sub-index	0.28	0.08	0.36
Financial competitiveness sub-index	0.50	0.41	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**-3.4**	**-8.2**	**-3.0**	**-5.0**	**-2.9**
of which *Initial Budgetary position*	*-0.7*	*-2.6*	*-0.7*	*-1.7*	*-0.4*
*Cost of delaying adjustment***	*-0.5*	*-1.8*	*-0.5*	*-0.9*	*-0.5*
*Debt requirement****	*-1.9*	*-3.7*	*-1.9*	*-2.3*	*-1.6*
Ageing costs	*-0.2*	*-0.1*	*0.1*	*-0.1*	*-0.4*
Required structural primary balance related to S1	**-3.1**	**-6.2**	**-2.8**	**-3.7**	**-2.5**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**0.9**	**-0.9**	**1.9**	**0.1**	**0.9**
of which Initial Budgetary position	0.4	-1.4	0.4	-0.6	0.7
Long term component	0.5	0.5	1.6	0.7	0.3
of which Pensions	*-1.1*	*-1.1*	*-1.1*	*-1.0*	*-1.3*
Health care	*0.5*	*0.5*	*1.2*	*0.5*	*0.5*
Long-term care	*1.6*	*1.6*	*2.0*	*1.5*	*1.5*
Others	*-0.5*	*-0.5*	*-0.5*	*-0.4*	*-0.6*
Required structural primary balance related to S2	**1.1**	**1.1**	**2.2**	**1.4**	**1.4**

Risks related to the structure of public debt financing

Public debt structure - DK (2016)	Share of short-term public debt (p.p.): 11.3	Share of public debt in foreign currency (%): 1.5	Share of public debt by non-residents (%): 30.1

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		DK	EU
State guarantees (% GDP) (2015)		9.6	8.5
of which One-off guarantees		*9.5*	*8.1*
Standardised guarantees		*0.1*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	0.00	0.92
	Securities issued under liquidity schemes	0.00	0.00
	Special purpose entity	0.00	0.21
	Total	0.00	1.13

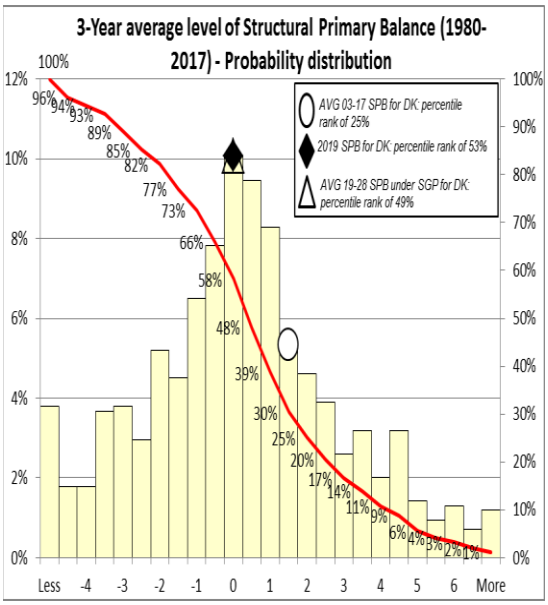
Government's contingent liability risks from banking sector - DK (2016)	Private sector credit flow (% GDP):	Change in nominal house price index:	Bank loans-to-deposits ratio (p.p.):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8%	bank recap. at 10.5%
	3.9	4.7	333.4	3.1	-0.6	30.0	0.00%	0.01%

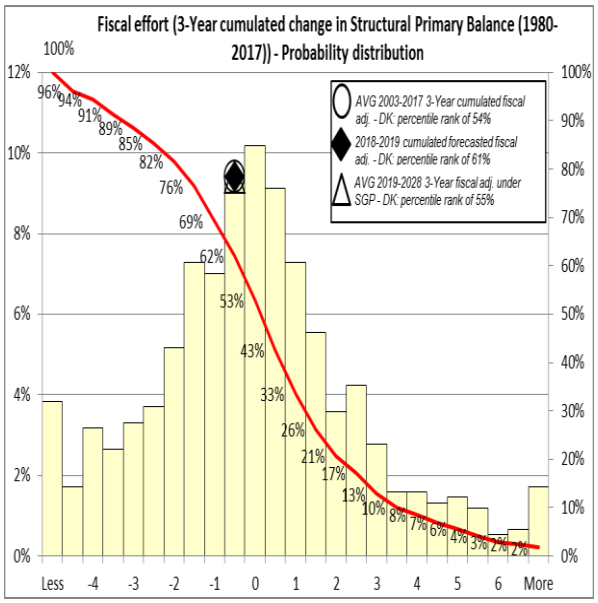
Financial market information

Sovereign Ratings as of Nov 2017, DK	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	Aaa		Aaa	
S&P	AAA	A-1+	AAA	A-1+
Fitch	AAA		AAA	F1+

Financial market information as of October 2017, DK		
Sovereign yield spreads(bp)*	10-year	16.0
CDS (bp)	5-year	15.3

Realism of baseline assumptions





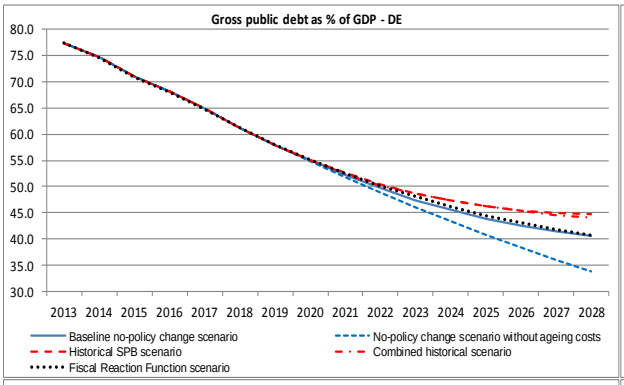
Underlying macro-fiscal assumptions

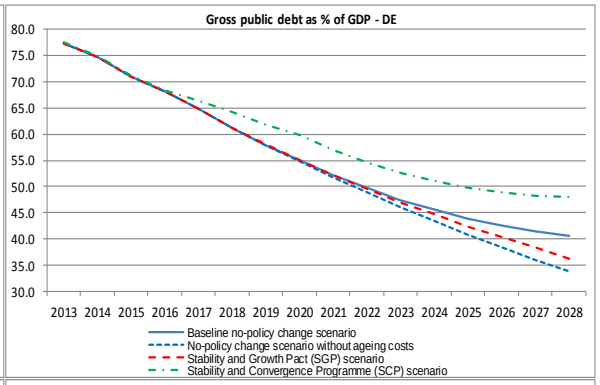
Macro-fiscal assumptions, Denmark	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	36.1	35.5	34.6	28.9	26.3	24.1	35.4	29.0	30.6
Primary balance	0.2	0.1	0.0	1.1	1.1	1.0	0.1	0.9	0.7
Structural primary balance (before CoA)	0.7	0.4	0.2	0.2	0.2	0.2	0.5	0.2	0.3
Real GDP growth	2.3	2.0	1.9	1.6	1.7	1.7	2.1	1.6	1.7
Potential GDP growth	1.6	1.7	1.7	1.6	1.7	1.7	1.7	1.6	1.6
Inflation rate	1.6	1.7	2.1	2.0	2.0	2.0	1.8	2.0	2.0
Implicit interest rate (nominal)	3.3	3.0	2.7	2.8	3.2	3.6	3.0	3.0	3.0
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	36.1	35.5	34.6	32.0	31.3	31.1	35.4	32.2	33.0
Primary balance	0.2	0.1	0.0	0.2	0.1	0.1	0.1	0.2	0.1
Structural primary balance (before CoA)	0.7	0.4	0.2	-0.7	-0.8	-0.7	0.5	-0.6	-0.3
Real GDP growth	2.3	2.0	1.9	1.7	1.7	1.6	2.1	1.7	1.8
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	36.1	35.5	34.5	31.4	30.2	29.0	35.4	31.4	32.4
Primary balance	0.2	0.1	0.2	0.4	0.5	0.6	0.2	0.4	0.3
Structural primary balance (before CoA)	0.7	0.4	0.4	0.4	0.5	0.6	0.5	0.4	0.4
Real GDP growth	2.3	2.0	1.8	1.6	1.7	1.7	2.0	1.6	1.7
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	37.0	36.3	35.8	25.9	21.8	18.1	36.4	25.9	28.5
Primary balance	0.3	0.7	1.1	2.0	1.9	1.8	0.7	1.8	1.5
Structural primary balance (before CoA)	1.1	1.3	1.6	1.3	1.3	1.3	1.3	1.3	1.3
Real GDP growth	1.5	1.7	1.7	1.7	1.8	1.7	1.6	1.8	1.7
Potential GDP growth	1.2	1.2	1.7	1.7	1.8	1.7	1.4	1.7	1.6
Inflation rate	1.6	1.9	1.2	2.0	2.0	2.0	1.6	2.0	1.9
Implicit interest rate (nominal)	2.9	2.6	3.0	3.2	3.6	3.8	2.8	3.3	3.2
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	36.1	35.5	34.6	23.3	17.2	11.3	35.4	23.0	26.1
Primary balance	0.2	0.1	0.0	2.9	2.9	2.7	0.1	2.4	1.8
Structural primary balance (before CoA)	0.7	0.4	0.2	2.0	2.0	2.0	0.5	1.7	1.4
Real GDP growth	2.3	2.0	1.9	1.6	1.7	1.7	2.1	1.5	1.6
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	36.1	35.5	34.6	23.8	18.0	12.4	35.4	23.6	26.5
Primary balance	0.2	0.1	0.0	2.9	2.9	2.7	0.1	2.4	1.8
Structural primary balance (before CoA)	0.7	0.4	0.2	2.0	2.0	2.0	0.5	1.7	1.4
Real GDP growth	2.3	2.0	1.9	1.2	1.2	1.2	2.1	1.2	1.4
Implicit interest rate (nominal)	3.3	3.0	2.7	3.2	3.3	3.3	3.0	3.1	3.0
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	36.1	35.5	34.8	29.8	27.6	25.7	35.5	29.9	31.3
Implicit interest rate (nominal)	3.3	3.2	2.9	3.4	3.9	4.4	3.1	3.5	3.4
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	36.1	35.4	34.5	28.1	25.2	22.7	35.3	28.2	30.0
Implicit interest rate (nominal)	3.3	2.8	2.4	2.3	2.6	2.9	2.8	2.4	2.5
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	36.1	35.6	35.0	30.3	28.2	26.4	35.6	30.4	31.7
Implicit interest rate (nominal)	3.3	3.4	3.2	3.6	4.0	4.5	3.3	3.7	3.6
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	36.1	35.3	34.3	27.9	25.0	22.5	35.2	27.9	29.8
Real GDP growth	2.3	2.5	2.4	2.1	2.2	2.2	2.4	2.1	2.2
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	36.1	35.6	35.0	30.1	27.8	25.8	35.6	30.1	31.5
Real GDP growth	2.3	1.5	1.4	1.1	1.2	1.2	1.7	1.1	1.3
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	36.1	35.3	34.4	27.9	25.1	22.6	35.3	28.0	29.8
Real GDP growth	2.3	2.4	2.3	2.1	2.2	2.2	2.3	2.1	2.2
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	36.1	35.6	34.9	30.0	27.7	25.7	35.5	30.0	31.4
Real GDP growth	2.3	1.6	1.5	1.1	1.2	1.2	1.8	1.1	1.3
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	36.1	35.5	34.9	30.3	28.2	26.4	35.5	30.4	31.7
Primary balance	0.2	0.0	-0.2	0.9	0.9	0.7	0.0	0.7	0.5
Structural primary balance (before CoA)	0.7	0.4	0.0	0.0	0.0	0.0	0.4	0.0	0.1
Real GDP growth	2.3	2.0	2.0	1.6	1.7	1.7	2.1	1.6	1.8
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	36.1	35.5	34.6	28.9	26.3	24.1	35.4	29.0	30.6
Exchange rate depreciation	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%

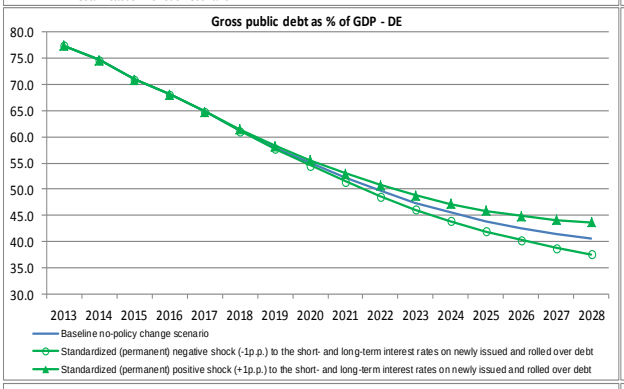
5. Germany

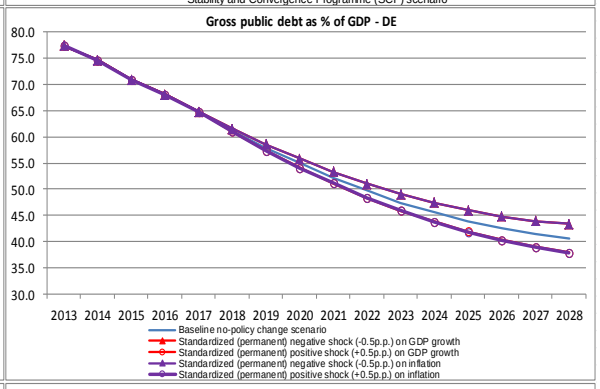
Public debt projections under baseline and alternative scenarios and sensitivity tests

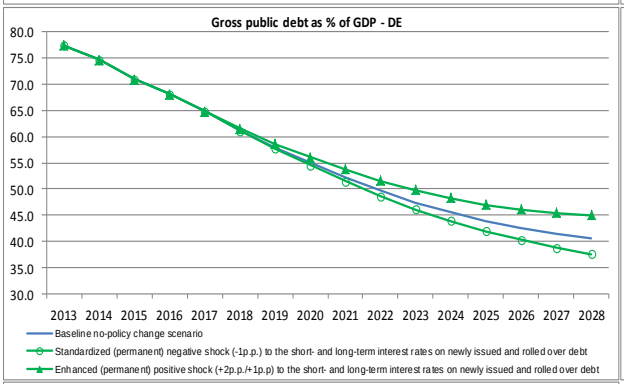
DE - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**70.9**	**68.1**	**64.8**	**61.2**	**57.9**	**55.0**	**52.2**	**49.7**	**47.5**	**45.6**	**43.9**	**42.5**	**41.4**	**40.6**
Changes in the ratio (-1+2+3)	*-3.7*	*-2.8*	*-3.3*	*-3.5*	*-3.3*	*-3.0*	*-2.8*	*-2.5*	*-2.2*	*-1.9*	*-1.7*	*-1.4*	*-1.1*	*-0.8*
of which														
(1) Primary balance (1.1+1.2+1.3)	**2.2**	**2.1**	**2.1**	**2.2**	**2.2**	**2.1**	**2.0**	**1.8**	**1.7**	**1.6**	**1.5**	**1.4**	**1.3**	**1.1**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***2.3***	***2.2***	***2.1***	***2.1***	***2.0***	***2.0***	***1.9***	***1.8***	***1.7***	***1.6***	***1.5***	***1.4***	***1.3***	***1.1***
(1.1.1) Structural Primary Balance (bef. CoA)	*2.3*	*2.2*	*2.1*	*2.1*	*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						*0.1*	*0.3*	*0.5*	*0.7*	*0.8*	*1.0*	*1.2*	*1.4*	*1.5*
(1.1.3) Others (taxes and property incomes)						*0.1*	*0.1*	*0.2*	*0.3*	*0.4*	*0.5*	*0.6*	*0.6*	*0.6*
(1.2) Cyclical component	***-0.1***	***-0.1***	***0.0***	***0.1***	***0.2***	***0.1***	***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)	**-1.2**	**-0.9**	**-1.2**	**-1.4**	**-1.1**	**-0.9**	**-0.8**	**-0.7**	**-0.6**	**-0.3**	**-0.1**	**0.1**	**0.2**	**0.3**
(2.1) Interest expenditure	*1.5*	*1.3*	*1.2*	*1.1*	*1.1*	*1.0*	*1.0*	*1.0*	*1.1*	*1.1*	*1.2*	*1.3*	*1.4*	*1.4*
(2.2) Growth effect	*-1.3*	*-1.3*	*-1.4*	*-1.3*	*-1.2*	*-0.9*	*-0.8*	*-0.7*	*-0.6*	*-0.5*	*-0.4*	*-0.4*	*-0.4*	*-0.3*
(2.3) Inflation effect	*-1.5*	*-0.9*	*-1.0*	*-1.2*	*-1.0*	*-1.0*	*-1.0*	*-1.0*	*-1.0*	*-0.9*	*-0.9*	*-0.9*	*-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	**-0.4**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*-0.8*	*0.3*	*0.1*	*0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.4*	*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*
Per memo														
Structural balance	1.2	0.9	0.9	0.9	1.0	0.9	0.9	0.8	0.6	0.4	0.3	0.1	-0.1	-0.3

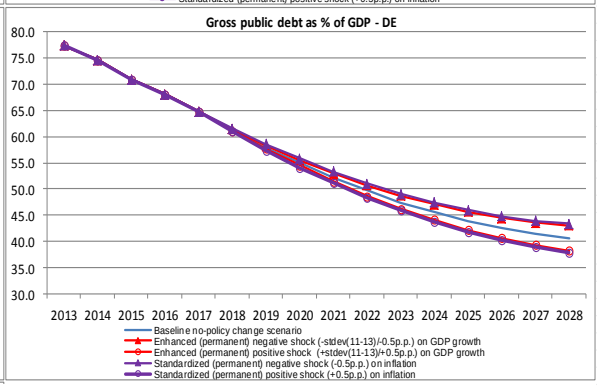


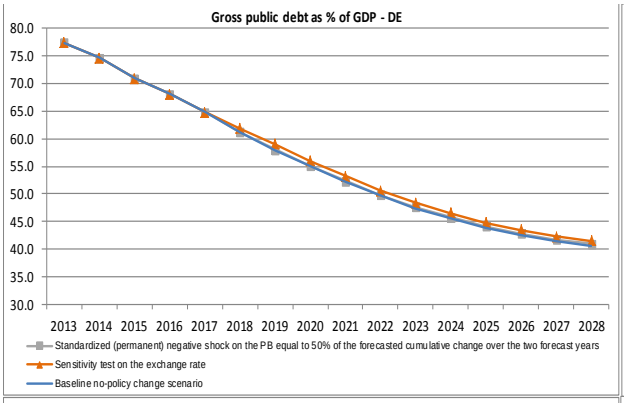


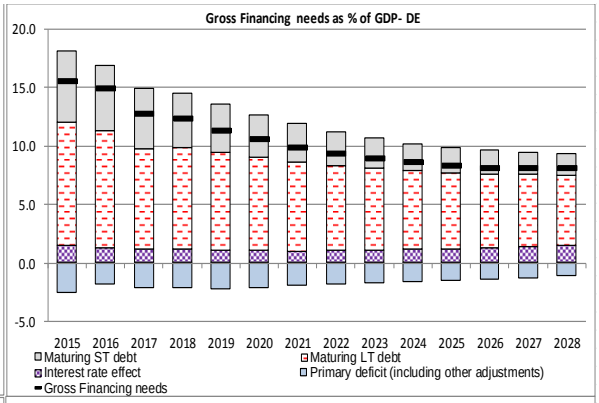


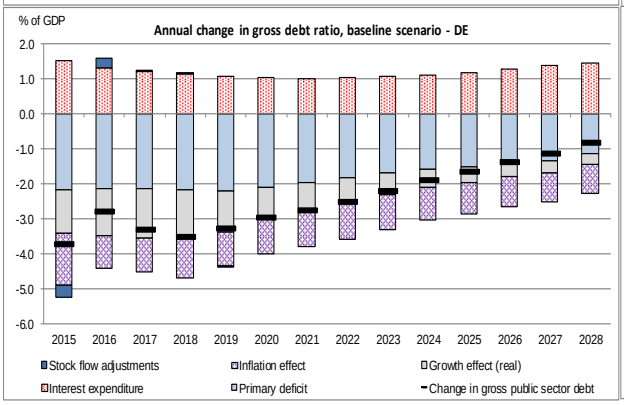


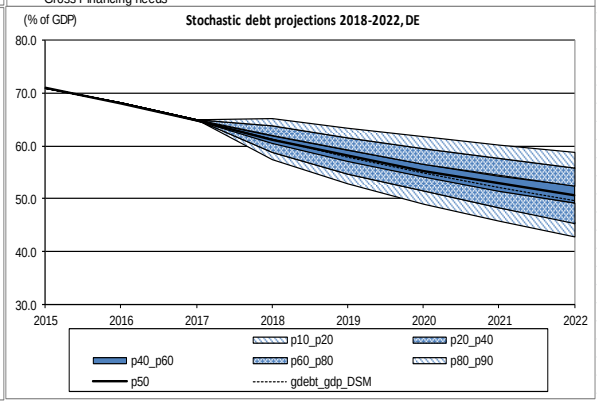












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	23.9	23.8	24.0	23.9	24.0	24.0	24.1	24.3	25.2	26.1
Revenues from pensions taxation	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.1
Property incomes	0.7	0.8	0.7	0.8	0.8	0.9	0.9	1.0	1.3	1.3

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.19**	**0.08**	**0.46**
Fiscal sub-index	0.35	0.00	0.36
Financial competitiveness sub-index	0.10	0.12	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**-1.7**	**-1.9**	**-1.1**	**-1.4**	**-0.4**
of which *Initial Budgetary position*	*-2.4*	*-1.6*	*-2.3*	*-1.7*	*-1.5*
*Cost of delaying adjustment***	*-0.3*	*-0.4*	*-0.2*	*-0.3*	*-0.1*
*Debt requirement****	*-0.2*	*-1.2*	*-0.2*	*-0.3*	*0.2*
Ageing costs	*1.0*	*1.3*	*1.5*	*0.9*	*1.0*
Required structural primary balance related to S1	**0.3**	**-0.4**	**0.9**	**0.2**	**1.2**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**1.2**	**1.9**	**3.6**	**1.7**	**2.0**
of which Initial Budgetary position	-1.2	-0.6	-1.2	-0.6	-0.5
Long term component	2.4	2.6	4.8	2.2	2.5
of which Pensions	*1.6*	*1.7*	*1.6*	*1.5*	*1.6*
Health care	*0.3*	*0.3*	*0.7*	*0.3*	*0.3*
Long-term care	*0.0*	*0.0*	*1.9*	*0.0*	*0.0*
Others	*0.6*	*0.6*	*0.6*	*0.5*	*0.6*
Required structural primary balance related to S2	**3.3**	**3.4**	**5.6**	**3.3**	**3.6**

Risks related to the structure of public debt financing

Public debt structure - DE (2016)	Share of short-term public debt (p.p.):	Share of public debt in foreign currency (%):	Share of public debt by non-residents (%):
	9.1	4.4	47.5

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		DE	EU
State guarantees (% GDP) (2015)		15.4	8.5
of which One-off guarantees		*15.4*	*8.1*
Standardised guarantees		*0.0*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	0.25	0.92
	Securities issued under liquidity schemes	0.00	0.00
	Special purpose entity	0.00	0.21
	Total	0.25	1.13

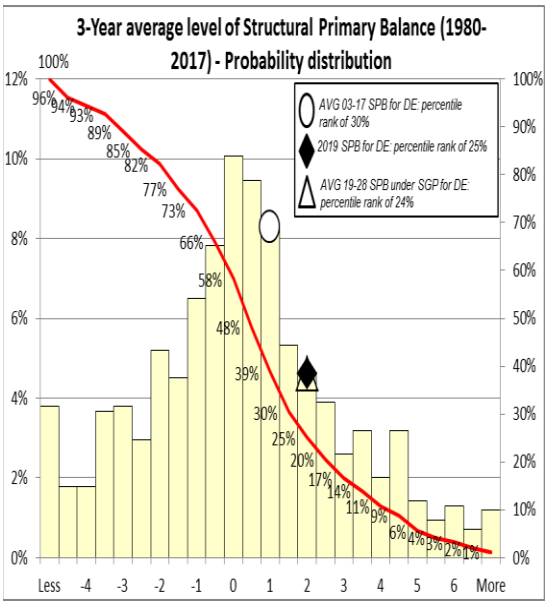
Government's contingent liability risks from banking sector - DE (2016)	Private sector credit flow (% GDP):	Change in nominal house price index:	Bank loans-to-deposits ratio (p.p.):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8%	bank recap. at 10.5%
	3.8	6.0	149.7	2.5	-0.5	37.4	0.00%	0.00%

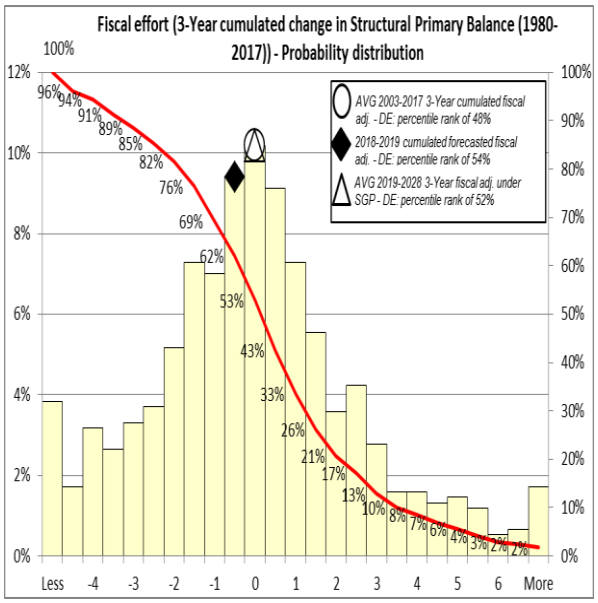
Financial market information

Sovereign Ratings as of Nov 2017, DE	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	Aaa		Aaa	
S&P	AAAu	A-1+u	AAAu	A-1+u
Fitch	AAA		AAA	F1+

Financial market information as of October 2017, DE		
Sovereign yield spreads(bp)*	10-year	0.0
CDS (bp)	5-year	9.8

Realism of baseline assumptions





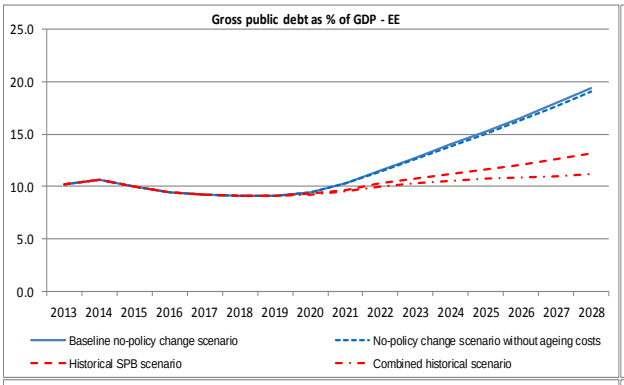
Underlying macro-fiscal assumptions

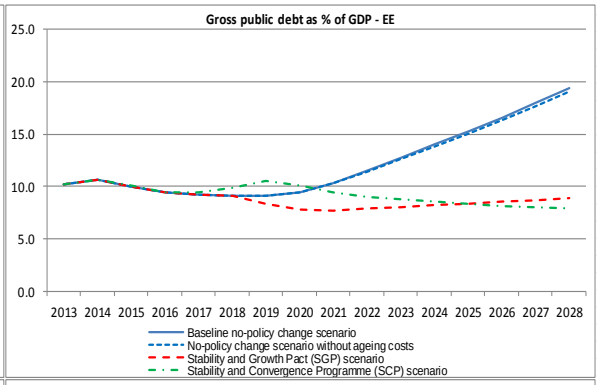
Macro-fiscal assumptions, Germany	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	64.8	61.2	57.9	45.6	42.5	40.6	61.3	46.5	50.2
Primary balance	2.1	2.2	2.2	1.6	1.4	1.1	2.2	1.6	1.7
Structural primary balance (before CoA)	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.0	2.1
Real GDP growth	2.2	2.1	2.0	1.2	0.9	0.8	2.1	1.2	1.4
Potential GDP growth	1.9	1.9	1.9	1.2	0.9	0.8	1.9	1.2	1.4
Inflation rate	1.5	1.9	1.6	2.0	2.0	2.0	1.7	2.0	1.9
Implicit interest rate (nominal)	1.9	1.8	1.8	2.5	3.0	3.6	1.8	2.6	2.4
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	64.8	61.2	57.9	46.2	43.1	40.8	61.3	46.9	50.5
Primary balance	2.1	2.2	2.2	1.6	1.5	1.4	2.2	1.6	1.7
Structural primary balance (before CoA)	2.1	2.1	2.0	2.0	2.1	2.4	2.1	2.0	2.0
Real GDP growth	2.2	2.1	2.0	1.1	0.8	0.7	2.1	1.2	1.4
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	64.8	61.2	58.0	44.6	40.3	36.3	61.3	45.1	49.1
Primary balance	2.1	2.2	2.2	2.0	2.1	2.2	2.2	2.1	2.1
Structural primary balance (before CoA)	2.1	2.1	2.0	2.0	2.1	2.2	2.1	2.1	2.1
Real GDP growth	2.2	2.1	2.0	1.1	0.8	0.8	2.1	1.2	1.4
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	66.3	64.1	61.8	51.0	48.9	48.0	64.1	52.2	55.2
Primary balance	1.7	1.3	1.4	1.3	1.1	0.8	1.5	1.3	1.3
Structural primary balance (before CoA)	1.8	1.4	1.4	1.6	1.6	1.6	1.5	1.6	1.6
Real GDP growth	1.4	1.6	1.5	1.0	0.8	0.8	1.5	1.1	1.2
Potential GDP growth	1.6	1.5	1.4	1.0	0.8	0.8	1.5	1.1	1.2
Inflation rate	1.4	1.6	1.7	2.0	2.0	2.0	1.6	1.9	1.8
Implicit interest rate (nominal)	1.9	1.9	1.9	2.4	3.3	3.8	1.9	2.6	2.4
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	64.8	61.2	57.9	47.3	45.4	44.7	61.3	48.4	51.6
Primary balance	2.1	2.2	2.2	1.0	0.9	0.6	2.2	1.1	1.4
Structural primary balance (before CoA)	2.1	2.1	2.0	1.5	1.5	1.5	2.1	1.6	1.7
Real GDP growth	2.2	2.1	2.0	1.2	0.9	0.8	2.1	1.2	1.4
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	64.8	61.2	57.9	47.4	45.4	44.1	61.3	48.2	51.5
Primary balance	2.1	2.2	2.2	1.0	0.9	0.6	2.2	1.1	1.4
Structural primary balance (before CoA)	2.1	2.1	2.0	1.5	1.5	1.5	2.1	1.6	1.7
Real GDP growth	2.2	2.1	2.0	1.3	1.3	1.3	2.1	1.5	1.6
Implicit interest rate (nominal)	1.9	1.8	1.8	2.8	3.2	3.5	1.8	2.7	2.5
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	64.8	61.3	58.3	47.2	44.9	43.7	61.5	48.2	51.5
Implicit interest rate (nominal)	1.9	2.0	2.1	3.2	3.8	4.5	2.0	3.3	2.9
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	64.8	61.1	57.6	43.9	40.3	37.6	61.2	44.8	48.9
Implicit interest rate (nominal)	1.9	1.6	1.5	1.8	2.2	2.7	1.7	1.9	1.9
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	64.8	61.5	58.6	48.3	46.1	45.1	61.6	49.2	52.3
Implicit interest rate (nominal)	1.9	2.2	2.5	3.3	4.0	4.6	2.2	3.5	3.1
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	64.8	60.9	57.3	43.8	40.3	37.9	61.0	44.7	48.8
Real GDP growth	2.2	2.6	2.5	1.7	1.4	1.3	2.4	1.7	1.9
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	64.8	61.5	58.5	47.4	44.8	43.4	61.6	48.3	51.6
Real GDP growth	2.2	1.6	1.5	0.7	0.4	0.3	1.7	0.7	1.0
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	64.8	61.1	57.7	44.1	40.6	38.3	61.2	45.0	49.1
Real GDP growth	2.2	2.3	2.2	1.7	1.4	1.3	2.2	1.7	1.8
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	64.8	61.3	58.2	47.1	44.5	43.0	61.4	48.0	51.3
Real GDP growth	2.2	1.9	1.8	0.7	0.4	0.3	1.9	0.7	1.0
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	64.8	61.2	58.0	45.8	42.8	41.0	61.3	46.7	50.3
Primary balance	2.1	2.2	2.2	1.5	1.4	1.1	2.2	1.6	1.7
Structural primary balance (before CoA)	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.0	2.0
Real GDP growth	2.2	2.1	2.0	1.2	0.9	0.8	2.1	1.2	1.4
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	64.8	61.8	58.9	46.5	43.5	41.5	61.8	47.4	51.0
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

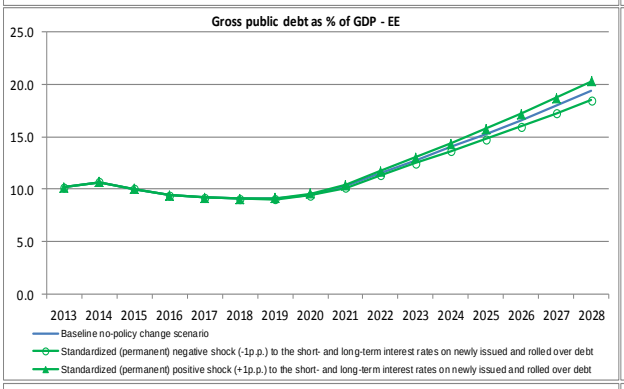
6. Estonia

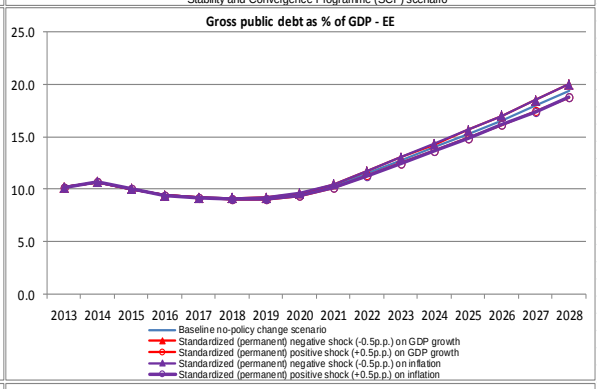
Public debt projections under baseline and alternative scenarios and sensitivity tests

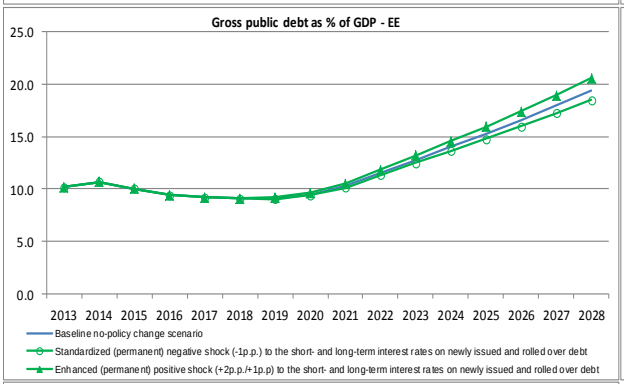
EE - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**10.0**	**9.4**	**9.2**	**9.1**	**9.1**	**9.5**	**10.3**	**11.5**	**12.7**	**14.0**	**15.3**	**16.6**	**17.9**	**19.4**
Changes in the ratio (-1+2+3)	*-0.7*	*-0.6*	*-0.2*	*-0.1*	*0.0*	*0.4*	*0.8*	*1.2*	*1.2*	*1.2*	*1.3*	*1.3*	*1.4*	*1.4*
of which														
(1) Primary balance (1.1+1.2+1.3)	**0.2**	**-0.2**	**-0.2**	**-0.4**	**-0.4**	**-0.7**	**-1.1**	**-1.5**	**-1.5**	**-1.5**	**-1.4**	**-1.4**	**-1.4**	**-1.4**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***0.0***	***-0.4***	***-1.0***	***-1.4***	***-1.4***	***-1.4***	***-1.4***	***-1.5***	***-1.5***	***-1.5***	***-1.4***	***-1.4***	***-1.4***	***-1.4***
(1.1.1) Structural Primary Balance (bef. CoA)	*0.0*	*-0.4*	*-1.0*	*-1.4*	*-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*	*0.0*	*0.1*	*0.1*	*0.1*	*0.0*	*0.0*	*0.0*	*0.0*
(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*
(1.2) Cyclical component	***0.4***	***0.2***	***0.8***	***1.0***	***1.0***	***0.7***	***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***	***-0.1***	***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)	**-0.2**	**-0.3**	**-0.7**	**-0.5**	**-0.4**	**-0.3**	**-0.3**	**-0.2**	**-0.3**	**-0.2**	**-0.2**	**-0.1**	**-0.1**	**0.0**
(2.1) Interest expenditure	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	*0.2*	*0.3*	*0.4*	*0.5*	*0.6*	*0.7*
(2.2) Growth effect	*-0.2*	*-0.2*	*-0.4*	*-0.3*	*-0.2*	*-0.2*	*-0.2*	*-0.2*	*-0.3*	*-0.3*	*-0.3*	*-0.3*	*-0.3*	*-0.3*
(2.3) Inflation effect	*-0.1*	*-0.2*	*-0.4*	*-0.3*	*-0.3*	*-0.2*	*-0.2*	*-0.2*	*-0.2*	*-0.2*	*-0.3*	*-0.3*	*-0.3*	*-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	**-0.3**	**-0.5**	**0.3**	**0.0**	**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*	*-0.5*	*0.3*	*0.0*	*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*
Per memo														
Structural balance	-0.1	-0.4	-1.1	-1.4	-1.5	-1.5	-1.5	-1.6	-1.7	-1.8	-1.8	-1.9	-2.0	-2.1

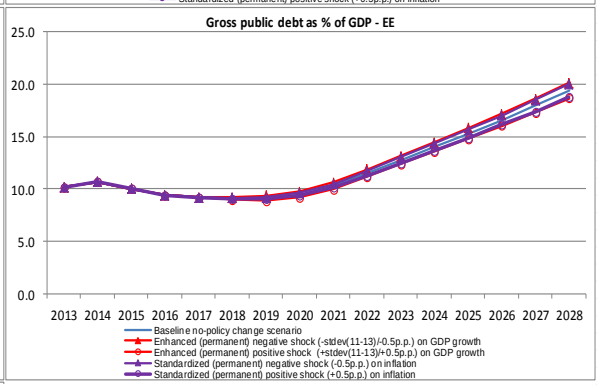


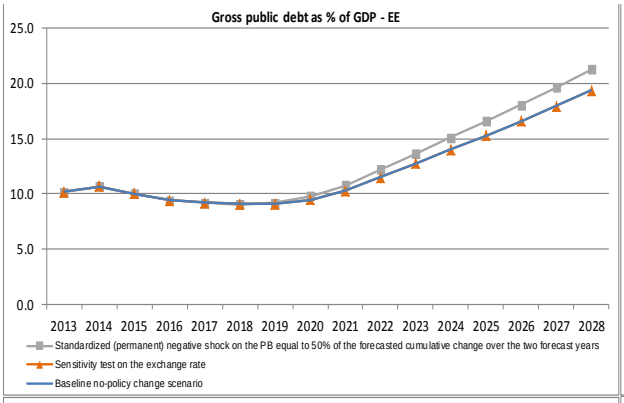


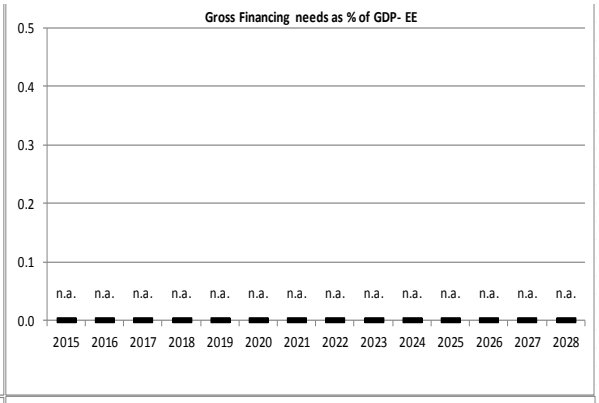


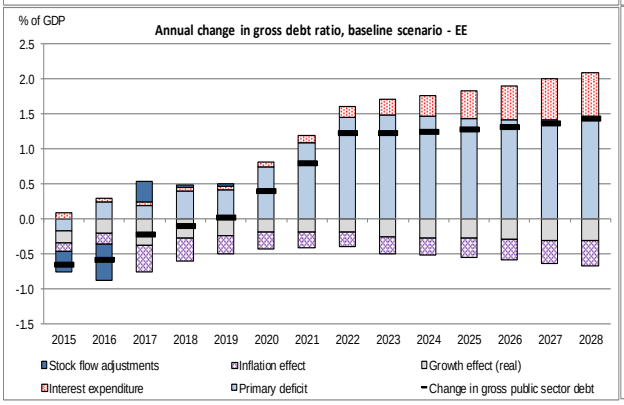


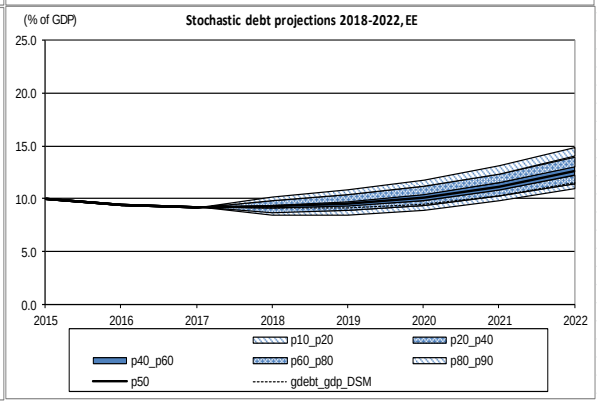












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	17.1	17.2	17.1	17.3	17.5	17.6	17.7	17.7	17.7	17.6
Revenues from pensions taxation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Property incomes	1.1	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.48**	**0.20**	**0.46**
Fiscal sub-index	0.27	0.09	0.36
Financial competitiveness sub-index	0.57	0.25	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**-3.1**	**-6.2**	**-2.7**	**-6.4**	**-4.5**
of which *Initial Budgetary position*	*1.3*	*0.5*	*1.3*	*-0.2*	*0.0*
*Cost of delaying adjustment***	*-0.4*	*-1.4*	*-0.4*	*-1.2*	*-0.7*
*Debt requirement****	*-3.9*	*-5.4*	*-3.9*	*-5.0*	*-3.8*
Ageing costs	*0.0*	*0.0*	*0.3*	*0.0*	*0.0*
Required structural primary balance related to S1	**-4.5**	**-6.8**	**-4.1**	**-6.3**	**-4.4**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**1.6**	**0.8**	**3.7**	**0.1**	**0.2**
of which Initial Budgetary position	1.6	0.8	1.6	0.1	0.2
Long term component	0.0	0.0	2.1	0.0	0.1
of which Pensions	*-1.2*	*-1.2*	*-1.1*	*-1.0*	*-1.2*
Health care	*0.3*	*0.4*	*0.8*	*0.3*	*0.4*
Long-term care	*0.4*	*0.4*	*2.0*	*0.4*	*0.4*
Others	*0.4*	*0.4*	*0.4*	*0.3*	*0.5*
Required structural primary balance related to S2	**0.2**	**0.3**	**2.3**	**0.2**	**0.3**

Risks related to the structure of public debt financing

Public debt structure - EE (2016)	Share of short-term public debt (p.p.): 2.5	Share of public debt in foreign currency (%): 0.0	**Share of public debt by non-residents (%): 65.0**

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		EE	EU
State guarantees (% GDP) (2015)		1.5	8.5
of which One-off guarantees		*0.0*	*8.1*
Standardised guarantees		*1.5*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	:	0.92
	Securities issued under liquidity schemes	:	0.00
	Special purpose entity	:	0.21
	Total	0.00	1.13

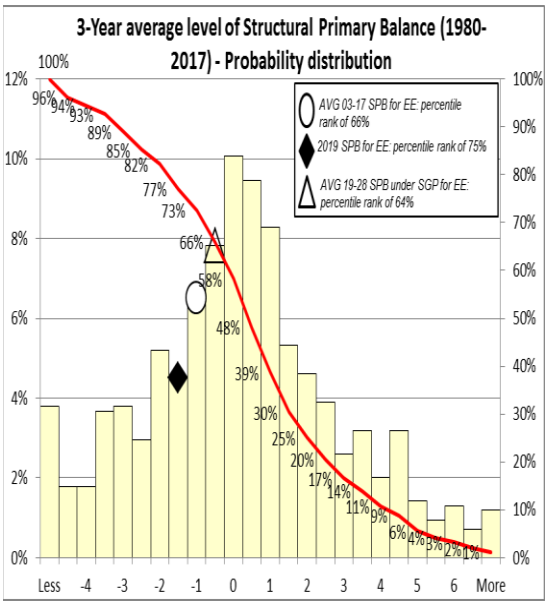
Government's contingent liability risks from banking sector - EE (2016)	Private sector credit flow (% GDP):	Change in nominal house price index:	Bank loans-to-deposits ratio (p.p.):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	**NPL coverage ratio**	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8%	bank recap. at 10.5%
	5.9	4.8	105.8	1.3	-0.6	**31.7**	0.00%	0.00%

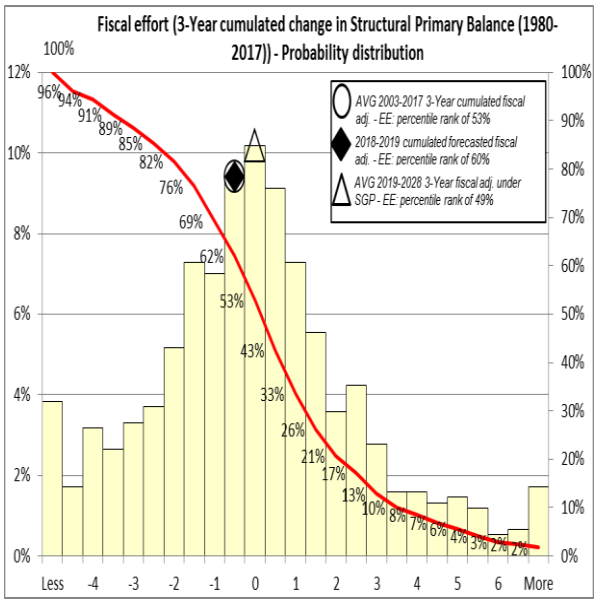
Financial market information

Sovereign Ratings as of Nov 2017, EE	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's			WR	
S&P	AA-	A-1+	AA-	A-1+
Fitch	A+		A+	F1+

Financial market information as of October 2017, EE		
Sovereign yield spreads(bp)*	10-year	n.a.
CDS (bp)	5-year	68.0

Realism of baseline assumptions





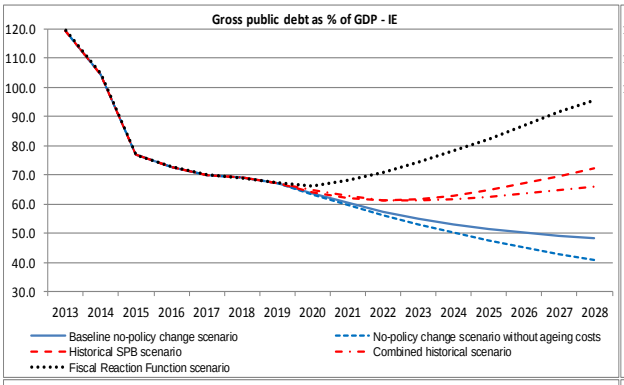
Underlying macro-fiscal assumptions

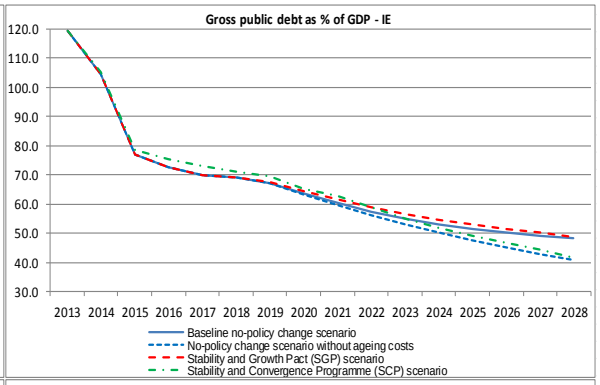
Macro-fiscal assumptions, Estonia	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	9.2	9.1	9.1	14.0	16.6	19.4	9.1	14.1	12.9
Primary balance	-0.2	-0.4	-0.4	-1.5	-1.4	-1.4	-0.3	-1.3	-1.1
Structural primary balance (before CoA)	-1.0	-1.4	-1.4	-1.4	-1.4	-1.4	-1.3	-1.4	-1.4
Real GDP growth	4.4	3.2	2.8	2.2	2.0	1.8	3.5	2.1	2.4
Potential GDP growth	3.1	2.9	2.7	2.2	2.0	1.8	2.9	2.3	2.5
Inflation rate	4.3	3.6	2.9	2.0	2.0	2.0	3.6	2.1	2.5
Implicit interest rate (nominal)	0.6	0.6	0.6	2.5	3.3	3.9	0.6	2.4	2.0
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	9.2	9.1	8.4	8.2	8.6	8.9	8.9	8.2	8.4
Primary balance	-0.2	-0.4	0.4	-0.3	-0.3	-0.2	-0.1	-0.2	-0.2
Structural primary balance (before CoA)	-1.0	-1.4	-0.6	-0.3	-0.3	-0.2	-1.0	-0.3	-0.5
Real GDP growth	4.4	3.2	2.2	2.2	2.0	1.8	3.3	2.0	2.4
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	9.4	9.9	10.5	8.6	8.2	7.9	9.9	8.7	9.0
Primary balance	0.0	-0.6	-0.5	0.0	0.1	0.1	-0.4	0.0	-0.1
Structural primary balance (before CoA)	0.0	-0.8	-0.7	0.1	0.1	0.1	-0.5	0.0	-0.1
Real GDP growth	2.4	3.1	2.8	1.8	1.8	1.6	2.8	2.0	2.2
Potential GDP growth	2.8	2.7	2.5	1.8	1.8	1.6	2.7	2.0	2.1
Inflation rate	3.2	3.2	2.8	2.0	2.0	2.0	3.1	2.2	2.4
Implicit interest rate (nominal)	0.8	0.7	0.6	1.8	2.5	3.0	0.7	1.8	1.5
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	9.2	9.1	9.1	11.2	12.1	13.2	9.1	11.2	10.7
Primary balance	-0.2	-0.4	-0.4	-0.6	-0.6	-0.6	-0.3	-0.6	-0.6
Structural primary balance (before CoA)	-1.0	-1.4	-1.4	-0.6	-0.6	-0.6	-1.3	-0.7	-0.8
Real GDP growth	4.4	3.2	2.8	2.2	2.0	1.8	3.5	2.0	2.4
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	9.2	9.1	9.1	10.5	10.9	11.1	9.1	10.4	10.1
Primary balance	-0.2	-0.4	-0.4	-0.6	-0.6	-0.6	-0.3	-0.6	-0.6
Structural primary balance (before CoA)	-1.0	-1.4	-1.4	-0.6	-0.6	-0.6	-1.3	-0.7	-0.8
Real GDP growth	4.4	3.2	2.8	3.0	3.0	3.0	3.5	2.9	3.0
Implicit interest rate (nominal)	0.6	0.6	0.6	0.9	0.8	0.7	0.6	0.9	0.8
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	9.2	9.1	9.1	14.4	17.2	20.3	9.1	14.6	13.2
Implicit interest rate (nominal)	0.6	0.8	0.9	3.3	4.2	4.9	0.8	3.2	2.6
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	9.2	9.1	9.1	13.6	16.0	18.5	9.1	13.7	12.6
Implicit interest rate (nominal)	0.6	0.4	0.3	1.7	2.4	3.0	0.4	1.7	1.4
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	9.2	9.1	9.2	14.5	17.4	20.5	9.2	14.7	13.3
Implicit interest rate (nominal)	0.6	1.0	1.2	3.5	4.3	4.9	0.9	3.4	2.8
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	9.2	9.0	9.0	13.7	16.1	18.8	9.1	13.8	12.6
Real GDP growth	4.4	3.7	3.3	2.7	2.5	2.3	3.8	2.6	2.9
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	9.2	9.1	9.2	14.3	17.0	20.0	9.2	14.5	13.1
Real GDP growth	4.4	2.7	2.3	1.7	1.5	1.3	3.1	1.6	2.0
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	9.2	9.0	8.9	13.5	16.0	18.6	9.0	13.7	12.5
Real GDP growth	4.4	4.7	4.2	2.7	2.5	2.3	4.4	2.6	3.0
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	9.2	9.2	9.3	14.4	17.2	20.1	9.2	14.6	13.3
Real GDP growth	4.4	1.8	1.3	1.7	1.5	1.3	2.5	1.6	1.8
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	9.2	9.0	9.2	15.1	18.1	21.3	9.2	15.2	13.7
Primary balance	-0.2	-0.3	-0.6	-1.7	-1.6	-1.6	-0.4	-1.5	-1.2
Structural primary balance (before CoA)	-1.0	-1.3	-1.6	-1.6	-1.6	-1.6	-1.3	-1.6	-1.5
Real GDP growth	4.4	3.2	2.9	2.2	2.0	1.8	3.5	2.1	2.4
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	9.2	9.1	9.1	14.0	16.6	19.4	9.1	14.1	12.9
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

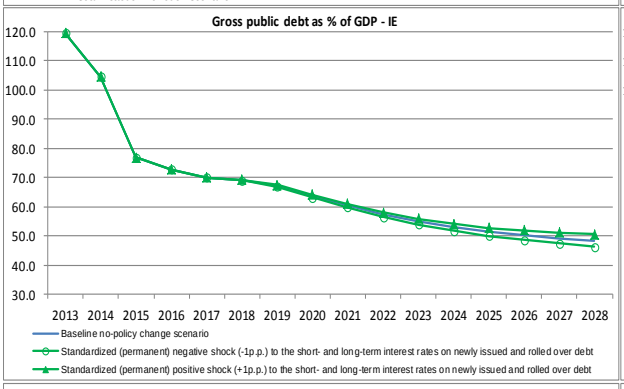
7. Ireland

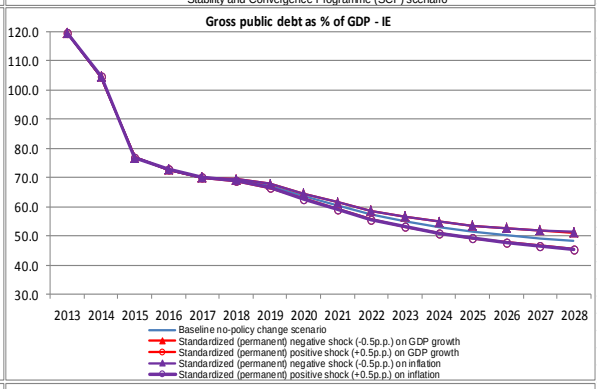
Public debt projections under baseline and alternative scenarios and sensitivity tests

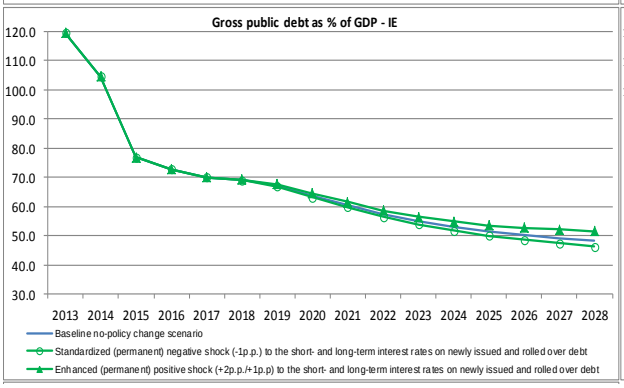
IE - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**76.9**	**72.8**	**69.9**	**69.1**	**67.2**	**63.6**	**60.3**	**57.2**	**54.8**	**52.8**	**51.3**	**50.2**	**49.2**	**48.3**
Changes in the ratio (-1+2+3)	*-27.6*	*-4.1*	*-2.9*	*-0.9*	*-1.9*	*-3.6*	*-3.3*	*-3.2*	*-2.4*	*-2.0*	*-1.6*	*-1.1*	*-0.9*	*-1.0*
of which														
(1) Primary balance (1.1+1.2+1.3)	**0.7**	**1.6**	**1.6**	**1.7**	**1.6**	**1.5**	**1.5**	**1.5**	**1.2**	**1.1**	**0.9**	**0.8**	**0.7**	**0.8**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***0.6***	***0.4***	***0.8***	***1.3***	***2.0***	***1.8***	***1.7***	***1.5***	***1.2***	***1.1***	***0.9***	***0.8***	***0.7***	***0.8***
(1.1.1) Structural Primary Balance (bef. CoA)	*0.6*	*0.4*	*0.8*	*1.3*	*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						*0.2*	*0.3*	*0.5*	*0.8*	*0.9*	*1.1*	*1.2*	*1.3*	*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*	*-0.1*
(1.2) Cyclical component	***1.0***	***1.0***	***0.9***	***0.3***	***-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	***-0.8***	***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)	**-24.3**	**-1.5**	**-1.6**	**-1.5**	**-1.2**	**-2.1**	**-1.8**	**-1.7**	**-1.2**	**-0.9**	**-0.6**	**-0.3**	**-0.2**	**-0.2**
(2.1) Interest expenditure	*2.6*	*2.2*	*2.0*	*1.8*	*1.7*	*1.7*	*1.6*	*1.5*	*1.5*	*1.5*	*1.5*	*1.6*	*1.6*	*1.6*
(2.2) Growth effect	*-19.8*	*-3.8*	*-3.3*	*-2.6*	*-2.0*	*-2.8*	*-2.3*	*-2.0*	*-1.6*	*-1.3*	*-1.1*	*-0.9*	*-0.9*	*-0.9*
(2.3) Inflation effect	*-7.1*	*0.0*	*-0.3*	*-0.8*	*-0.9*	*-1.0*	*-1.1*	*-1.2*	*-1.1*	*-1.1*	*-1.0*	*-1.0*	*-1.0*	*-1.0*
(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	**-2.6**	**-1.1**	**0.4**	**2.3**	**0.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*-3.0*	*-1.1*	*0.4*	*2.4*	*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	*0.4*	*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*
Per memo														
Structural balance	-1.7	-1.8	-1.3	-0.5	0.3	0.1	0.1	-0.1	-0.3	-0.4	-0.6	-0.8	-0.9	-0.8

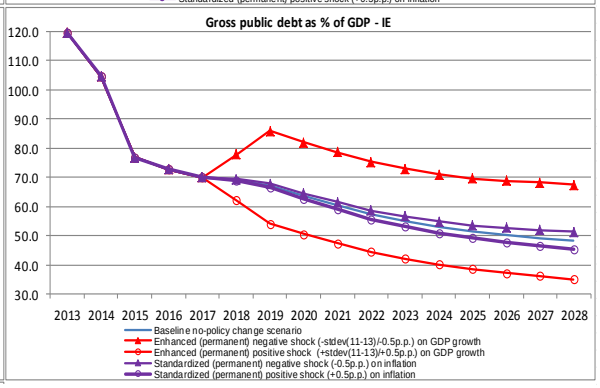


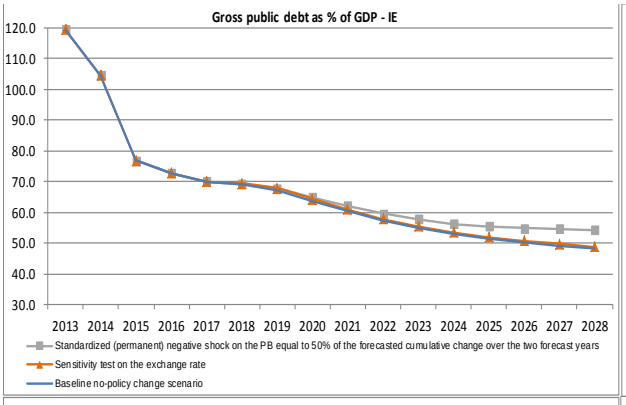


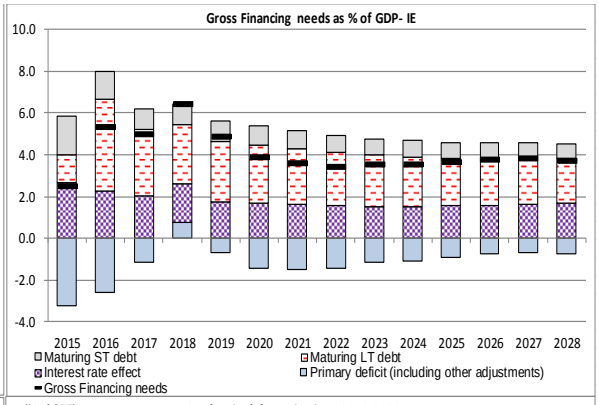


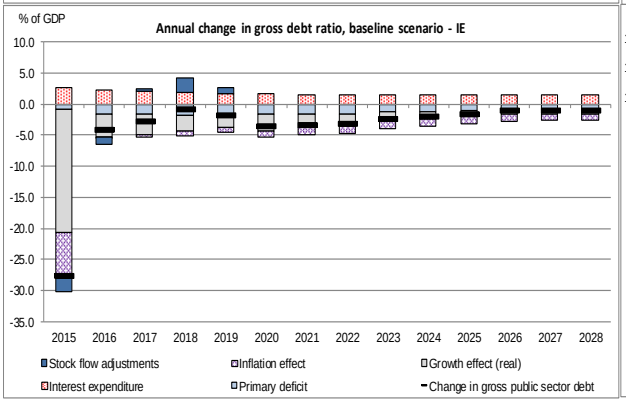


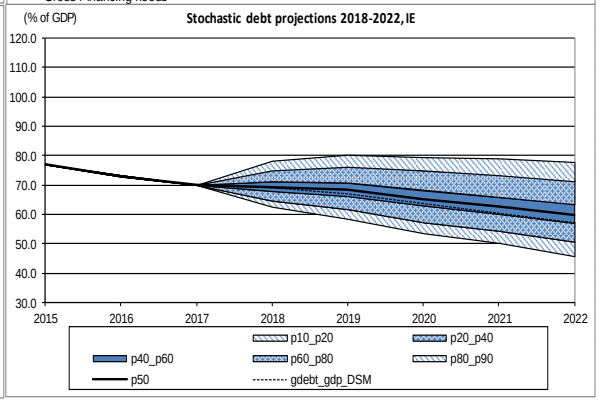












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	22.1	21.6	21.6	21.7	22.1	22.4	22.6	22.9	23.7	23.9
Revenues from pensions taxation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Property incomes	1.8	1.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.74**	**0.28**	**0.46**
Fiscal sub-index	0.81	0.19	0.36
Financial competitiveness sub-index	0.70	0.32	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**-1.4**	**3.5**	**-1.0**	**-3.2**	**0.4**
of which *Initial Budgetary position*	*-2.7*	*1.4*	*-2.7*	*-3.6*	*-1.7*
*Cost of delaying adjustment***	*-0.2*	*0.8*	*-0.1*	*-0.6*	*0.1*
*Debt requirement****	*0.6*	*0.2*	*0.6*	*0.3*	*0.9*
Ageing costs	*1.0*	*1.2*	*1.3*	*0.7*	*1.1*
Required structural primary balance related to S1	**0.7**	**2.2**	**1.1**	**0.0**	**1.9**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**-0.5**	**2.9**	**1.6**	**-2.0**	**0.5**
of which Initial Budgetary position	-1.8	1.6	-1.8	-3.0	-1.1
Long term component	1.3	1.3	3.4	1.0	1.6
of which Pensions	*0.7*	*0.7*	*0.7*	*0.4*	*0.8*
Health care	*0.9*	*0.9*	*1.5*	*0.8*	*1.0*
Long-term care	*0.7*	*0.7*	*2.2*	*0.7*	*0.7*
Others	*-0.9*	*-0.9*	*-0.9*	*-0.9*	*-0.9*
Required structural primary balance related to S2	**1.6**	**1.6**	**3.6**	**1.2**	**2.0**

Risks related to the structure of public debt financing

Public debt structure - IE (2016)	Share of short-term public debt (p.p.): 6.3	Share of public debt in foreign currency (%): 4.8	**Share of public debt by non-residents (%): 59.7**

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		IE	EU
State guarantees (% GDP) (2015)		4.9	8.5
of which One-off guarantees		*4.9*	*8.1*
Standardised guarantees		*0.0*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	0.50	0.92
	Securities issued under liquidity schemes	0.00	0.00
	Special purpose entity	0.94	0.21
	Total	1.44	1.13

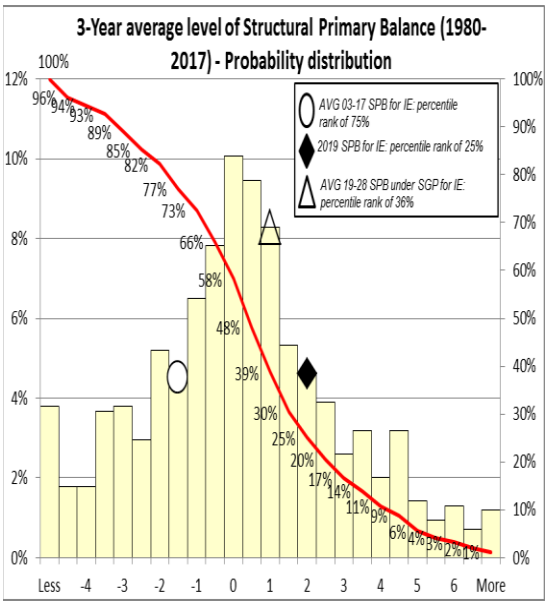
Government's contingent liability risks from banking sector - IE (2016)	Private sector credit flow (% GDP): -19.0	Change in nominal house price index: 7.5	Bank loans-to-deposits ratio (p.p.): 115.2	**Share of non-performing loans (%): 13.6**	Change in share of non-performing loans (p.p): -4.9	NPL coverage ratio 35.5	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8% 0.01%	bank recap. at 10.5% 0.02%

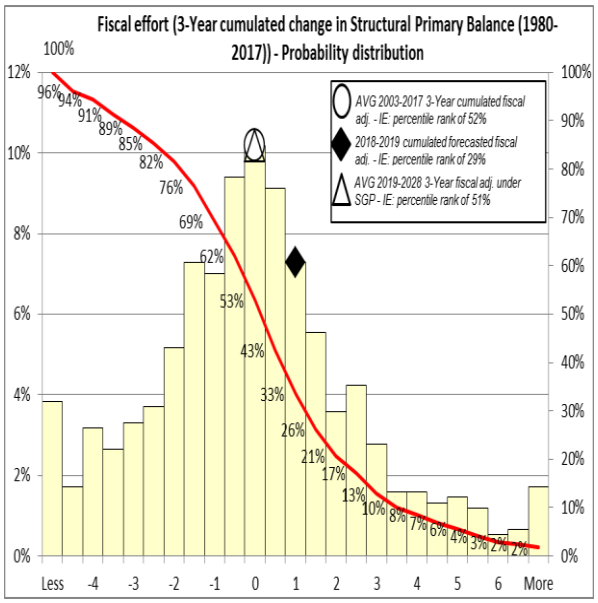
Financial market information

Sovereign Ratings as of Nov 2017, IE	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	A2		A2	P-1
S&P	A+	A-1	A+	A-1
Fitch	A		A	F1

Financial market information as of October 2017, IE		
Sovereign yield spreads(bp)*	10-year	29.0
CDS (bp)	5-year	30.8

Realism of baseline assumptions





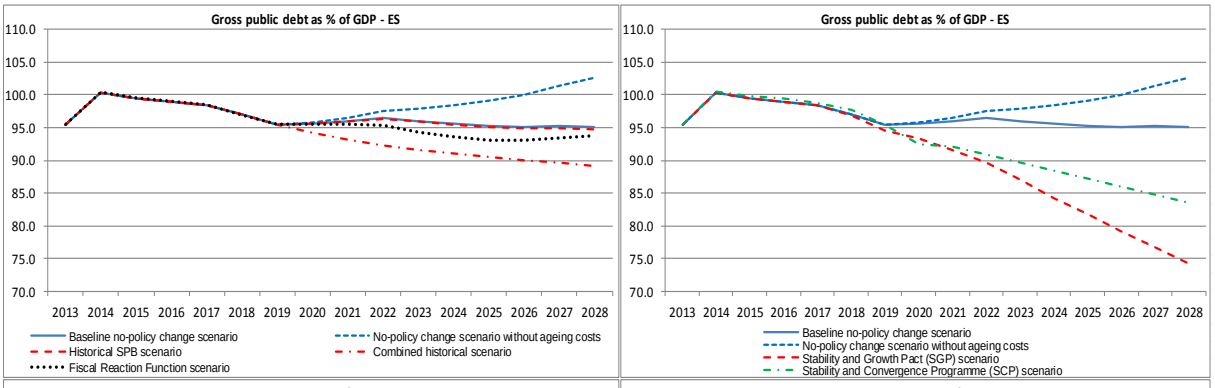
Underlying macro-fiscal assumptions

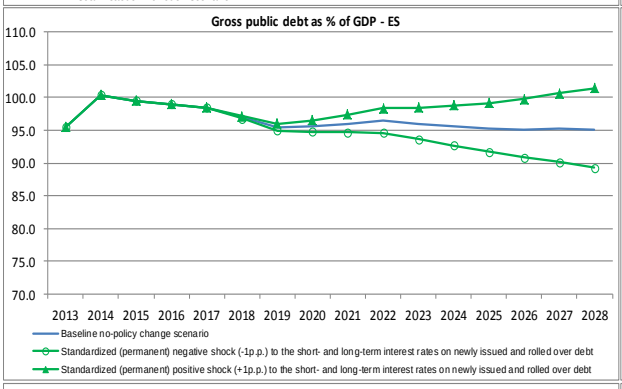
Macro-fiscal assumptions, Ireland	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	69.9	69.1	67.2	52.8	50.2	48.3	68.7	54.2	57.8
Primary balance	1.6	1.7	1.6	1.1	0.8	0.8	1.6	1.1	1.2
Structural primary balance (before CoA)	0.8	1.3	2.0	2.0	2.0	2.0	1.4	2.0	1.9
Real GDP growth	4.8	3.9	3.1	2.5	1.7	1.8	3.9	2.7	3.0
Potential GDP growth	5.1	4.9	4.7	2.5	1.7	1.8	4.9	2.6	3.2
Inflation rate	0.5	1.1	1.3	2.0	2.0	2.0	0.9	1.9	1.7
Implicit interest rate (nominal)	2.9	2.8	2.6	2.9	3.2	3.4	2.8	3.0	2.9
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	69.9	69.1	67.2	78.2	87.1	95.8	68.7	79.4	76.7
Primary balance	1.6	1.7	1.6	-5.0	-4.7	-4.1	1.6	-4.5	-2.9
Structural primary balance (before CoA)	0.8	1.3	2.0	-4.1	-3.4	-2.9	1.4	-3.5	-2.3
Real GDP growth	4.8	3.9	3.1	2.5	1.5	1.6	3.9	3.1	3.3
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	69.9	69.1	67.6	54.7	51.6	48.8	68.9	55.6	58.9
Primary balance	1.6	1.7	0.8	1.1	1.1	1.2	1.4	1.1	1.1
Structural primary balance (before CoA)	0.8	1.3	1.2	1.1	1.1	1.2	1.1	1.1	1.1
Real GDP growth	4.8	3.9	3.7	2.5	1.7	1.8	4.1	2.7	3.1
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	72.9	71.2	69.5	51.9	46.7	41.8	71.2	52.9	57.5
Primary balance	1.6	1.9	2.1	2.6	2.3	2.3	1.9	2.5	2.3
Structural primary balance (before CoA)	1.0	1.5	2.0	3.2	3.2	3.2	1.5	3.1	2.7
Real GDP growth	4.3	3.7	3.1	2.0	1.5	1.7	3.7	2.1	2.5
Potential GDP growth	4.2	4.3	3.5	2.0	1.5	1.7	4.0	2.1	2.6
Inflation rate	1.2	1.3	1.5	2.0	2.0	2.0	1.3	1.9	1.8
Implicit interest rate (nominal)	3.0	2.9	2.8	3.0	3.2	3.4	2.9	3.0	2.9
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	69.9	69.1	67.2	63.0	67.1	72.3	68.7	65.1	66.0
Primary balance	1.6	1.7	1.6	-2.3	-2.6	-2.6	1.6	-1.7	-0.9
Structural primary balance (before CoA)	0.8	1.3	2.0	-1.4	-1.4	-1.4	1.4	-0.8	-0.3
Real GDP growth	4.8	3.9	3.1	2.5	1.7	1.8	3.9	3.0	3.2
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	69.9	69.1	67.2	61.7	63.5	65.9	68.7	63.1	64.5
Primary balance	1.6	1.7	1.6	-2.3	-2.6	-2.6	1.6	-1.7	-0.9
Structural primary balance (before CoA)	0.8	1.3	2.0	-1.4	-1.4	-1.4	1.4	-0.8	-0.3
Real GDP growth	4.8	3.9	3.1	4.5	4.5	4.5	3.9	4.6	4.4
Implicit interest rate (nominal)	2.9	2.8	2.6	3.5	3.9	4.2	2.8	3.4	3.3
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	69.9	69.2	67.5	54.0	51.9	50.5	68.9	55.5	58.8
Implicit interest rate (nominal)	2.9	2.9	2.9	3.3	3.7	4.1	2.9	3.4	3.3
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	69.9	69.0	66.9	51.6	48.6	46.2	68.6	53.0	56.9
Implicit interest rate (nominal)	2.9	2.6	2.4	2.5	2.7	2.9	2.6	2.5	2.6
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	69.9	69.3	67.7	54.8	52.8	51.6	69.0	56.2	59.4
Implicit interest rate (nominal)	2.9	3.1	3.1	3.5	3.8	4.2	3.0	3.6	3.4
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	69.9	68.7	66.6	50.9	47.8	45.5	68.4	52.3	56.3
Real GDP growth	4.8	4.4	3.6	3.0	2.2	2.3	4.3	3.2	3.5
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	69.9	69.4	67.9	54.8	52.6	51.2	69.1	56.2	59.4
Real GDP growth	4.8	3.4	2.6	2.0	1.2	1.3	3.6	2.2	2.6
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	69.9	62.1	54.0	40.1	37.3	35.1	62.0	41.3	46.5
Real GDP growth	4.8	15.8	15.0	3.0	2.2	2.3	11.9	3.2	5.4
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	69.9	77.9	85.8	71.1	68.8	67.5	77.9	72.7	74.0
Real GDP growth	4.8	-8.0	-8.8	2.0	1.2	1.3	-4.0	2.2	0.7
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	69.9	69.2	67.8	56.3	54.9	54.3	69.0	57.8	60.6
Primary balance	1.6	1.4	0.9	0.5	0.2	0.2	1.3	0.5	0.7
Structural primary balance (before CoA)	0.8	1.1	1.4	1.4	1.4	1.4	1.1	1.4	1.3
Real GDP growth	4.8	4.1	3.4	2.5	1.7	1.8	4.1	2.7	3.1
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	69.9	69.5	67.9	53.5	50.8	48.9	69.1	54.8	58.4
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

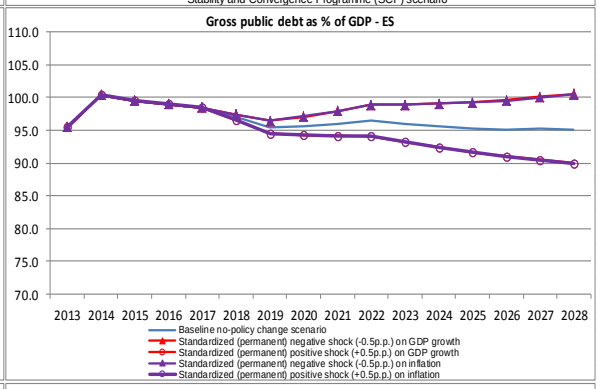
8. Spain

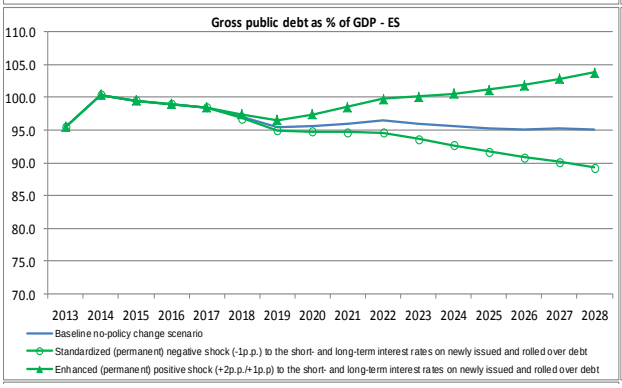
Public debt projections under baseline and alternative scenarios and sensitivity tests

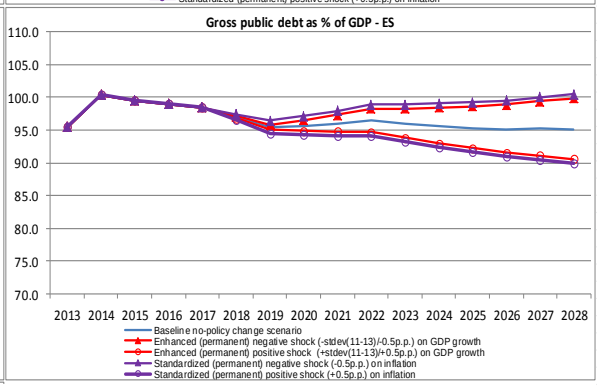
ES - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**99.4**	**99.0**	**98.4**	**96.9**	**95.5**	**95.6**	**96.0**	**96.4**	**96.0**	**95.6**	**95.3**	**95.1**	**95.2**	**95.1**
Changes in the ratio (-1+2+3)	*-0.9*	*-0.5*	*-0.6*	*-1.5*	*-1.5*	*0.2*	*0.4*	*0.4*	*-0.4*	*-0.4*	*-0.3*	*-0.2*	*0.0*	*-0.1*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-2.2**	**-1.7**	**-0.6**	**-0.1**	**0.5**	**0.2**	**0.0**	**-0.2**	**0.1**	**0.2**	**0.2**	**0.3**	**0.5**	**0.6**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***0.6***	***-0.5***	***-0.6***	***-0.8***	***-0.7***	***-0.6***	***-0.4***	***-0.2***	***0.1***	***0.2***	***0.2***	***0.3***	***0.5***	***0.6***
(1.1.1) Structural Primary Balance (bef. CoA)	*0.6*	*-0.5*	*-0.6*	*-0.8*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.7*
(1.1.2) Cost of ageing						*-0.1*	*-0.3*	*-0.6*	*-0.8*	*-0.9*	*-1.0*	*-1.1*	*-1.2*	*-1.3*
(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*
(1.2) Cyclical component	***-2.5***	***-1.2***	***-0.1***	***0.7***	***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	***-0.3***	***-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)	**-0.8**	**-0.6**	**-1.3**	**-1.6**	**-1.1**	**0.4**	**0.4**	**0.2**	**-0.4**	**-0.2**	**-0.1**	**0.2**	**0.5**	**0.5**
(2.1) Interest expenditure	*3.1*	*2.8*	*2.5*	*2.3*	*2.2*	*2.3*	*2.3*	*2.5*	*2.6*	*2.8*	*3.0*	*3.2*	*3.4*	*3.6*
(2.2) Growth effect	*-3.3*	*-3.1*	*-2.9*	*-2.4*	*-2.0*	*-0.4*	*-0.3*	*-0.3*	*-1.1*	*-1.1*	*-1.1*	*-1.1*	*-1.1*	*-1.3*
(2.3) Inflation effect	*-0.6*	*-0.3*	*-0.9*	*-1.5*	*-1.3*	*-1.5*	*-1.7*	*-1.9*	*-1.9*	*-1.9*	*-1.9*	*-1.9*	*-1.9*	*-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	**-2.3**	**-1.5**	**0.1**	**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	*-2.3*	*-1.5*	*0.1*	*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	*0.1*	*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*
Per memo														
Structural balance	-2.4	-3.3	-3.1	-3.1	-3.0	-2.8	-2.7	-2.6	-2.5	-2.6	-2.7	-2.8	-3.0	-3.1

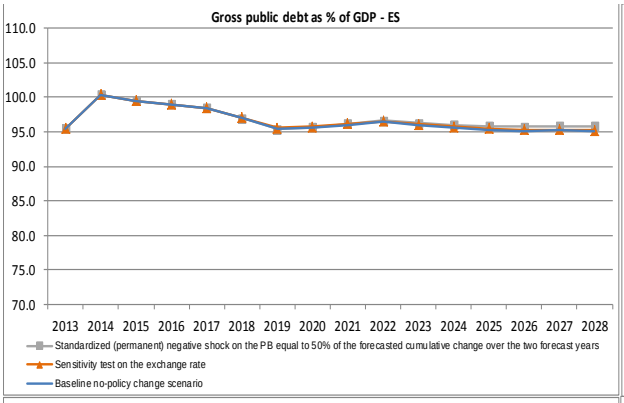


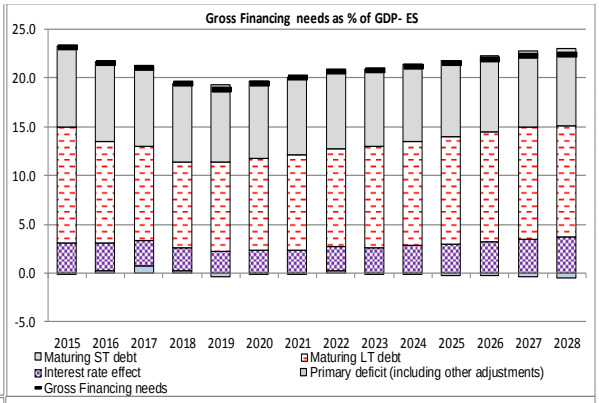


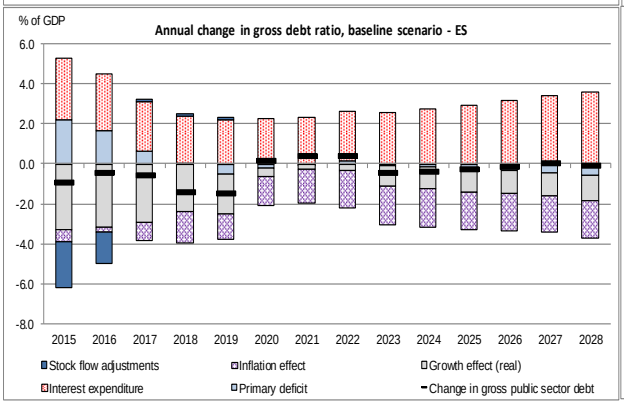


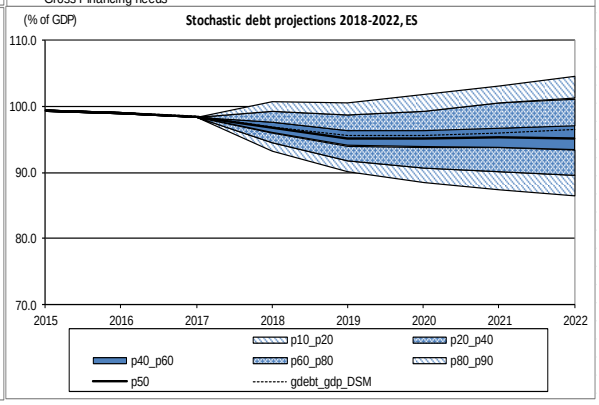












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	25.4	25.6	25.5	25.4	25.2	25.0	25.0	24.8	24.0	23.5
Revenues from pensions taxation	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Property incomes	1.1	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.79**	**0.37**	**0.46**
Fiscal sub-index	0.69	0.57	0.36
Financial competitiveness sub-index	0.85	0.27	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**3.2**	**5.2**	**3.6**	**2.2**	**4.9**
of which *Initial Budgetary position*	*1.0*	*1.4*	*1.0*	*-0.2*	*2.0*
*Cost of delaying adjustment***	*0.5*	*1.2*	*0.6*	*0.4*	*0.8*
*Debt requirement****	*2.7*	*3.9*	*2.7*	*2.9*	*3.0*
Ageing costs	*-1.0*	*-1.3*	*-0.7*	*-0.9*	*-0.9*
Required structural primary balance related to S1	**2.4**	**4.5**	**2.9**	**2.9**	**3.5**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**1.2**	**1.2**	**3.0**	**-0.1**	**1.9**
of which Initial Budgetary position	1.6	1.6	1.6	0.2	2.3
Long term component	-0.4	-0.4	1.4	-0.3	-0.5
of which Pensions	*-0.6*	*-0.7*	*-0.6*	*-0.6*	*-0.6*
Health care	*0.8*	*0.8*	*1.4*	*0.7*	*0.8*
Long-term care	*1.1*	*1.1*	*2.2*	*1.1*	*1.1*
Others	*-1.6*	*-1.6*	*-1.6*	*-1.5*	*-1.7*
Required structural primary balance related to S2	**0.5**	**0.5**	**2.3**	**0.6**	**0.5**

Risks related to the structure of public debt financing

Public debt structure - ES (2016)	Share of short-term public debt (p.p.):	Share of public debt in foreign currency (%):	Share of public debt by non-residents (%):
	8.7	0.3	45.0

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		ES	EU
State guarantees (% GDP) (2015)		9.6	8.5
of which One-off guarantees		*9.6*	*8.1*
Standardised guarantees		*0.0*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee [3]	0.09	0.92
	Securities issued under liquidity schemes	0.00	0.00
	Special purpose entity	3.72	0.21
	Total	3.81	1.13

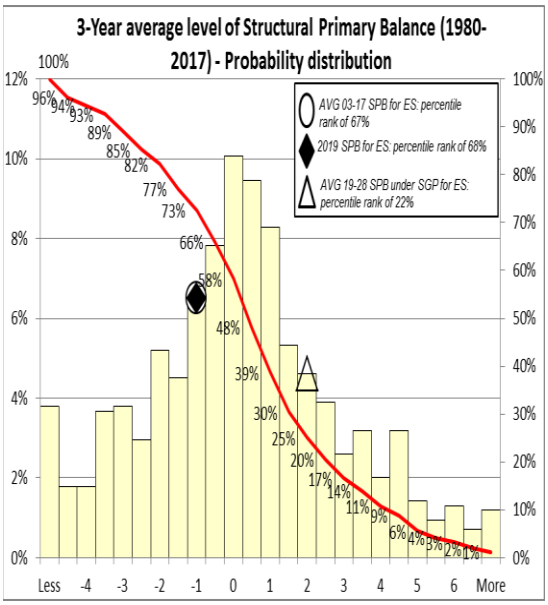
Government's contingent liability risks from banking sector - ES (2016)	Private sector credit flow (% GDP):	Change in nominal house price index:	Bank loans-to-deposits ratio (p.p.):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8%	bank recap. at 10.5%
	-3.6	4.6	117.6	5.7	-0.7	43.7	0.02%	0.08%

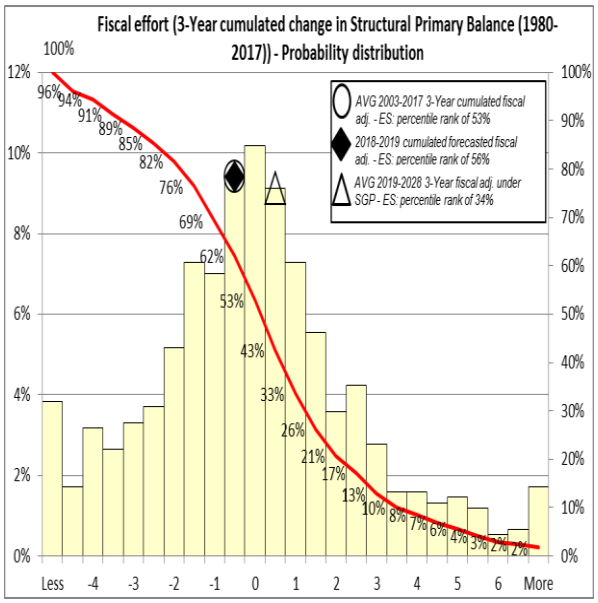
Financial market information

Sovereign Ratings as of Nov 2017, ES	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	Baa2		Baa2	P-2
S&P	BBB+	A-2	BBB+	A-2
Fitch	BBB+		BBB+	F2

Financial market information as of October 2017, ES		
Sovereign yield spreads(bp)*	10-year	124.0
CDS (bp)	5-year	61.5

Realism of baseline assumptions





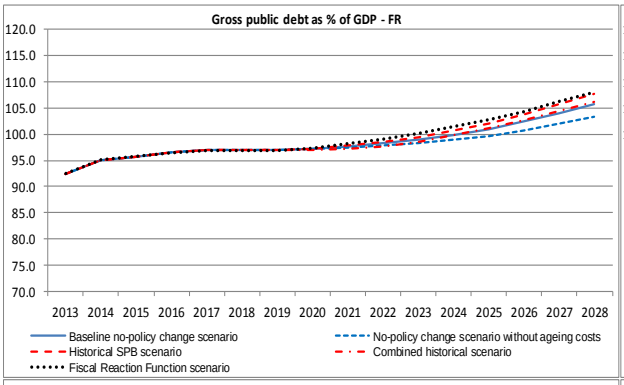
Underlying macro-fiscal assumptions

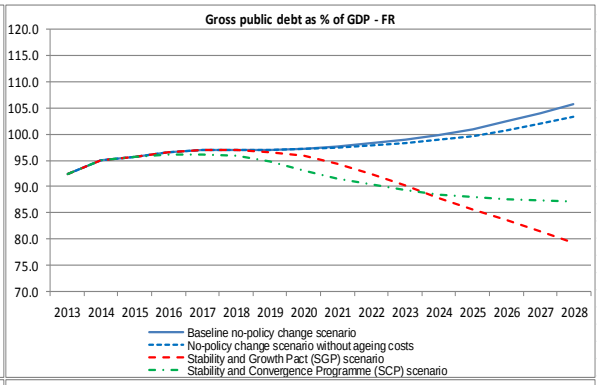
Macro-fiscal assumptions, Spain	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	98.4	96.9	95.5	95.6	95.1	95.1	96.9	95.6	95.9
Primary balance	-0.6	-0.1	0.5	0.2	0.3	0.6	-0.1	0.2	0.1
Structural primary balance (before CoA)	-0.6	-0.8	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7
Real GDP growth	3.1	2.5	2.1	1.2	1.2	1.4	2.6	0.9	1.3
Potential GDP growth	0.9	1.0	1.2	1.2	1.2	1.4	1.1	1.2	1.2
Inflation rate	0.9	1.6	1.4	2.0	2.0	2.0	1.3	1.9	1.8
Implicit interest rate (nominal)	2.6	2.5	2.4	3.0	3.5	3.9	2.5	3.1	2.9
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	98.4	96.9	95.5	93.6	93.1	93.8	96.9	94.2	94.9
Primary balance	-0.6	-0.1	0.5	0.3	0.1	-0.1	-0.1	0.3	0.2
Structural primary balance (before CoA)	-0.6	-0.8	-0.7	-0.6	-1.0	-1.4	-0.7	-0.7	-0.7
Real GDP growth	3.1	2.5	2.1	1.4	1.4	1.5	2.6	1.0	1.4
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	98.4	96.8	94.5	84.3	79.2	74.3	96.6	84.2	87.3
Primary balance	-0.6	0.5	1.9	2.5	2.7	2.8	0.6	2.5	2.0
Structural primary balance (before CoA)	-0.6	-0.2	0.6	2.5	2.7	2.8	-0.1	2.4	1.8
Real GDP growth	3.1	2.1	1.5	1.1	1.2	1.3	2.2	0.8	1.1
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	98.8	97.6	95.4	88.4	86.1	83.5	97.3	88.3	90.6
Primary balance	0.1	0.6	1.4	1.5	1.6	1.9	0.7	1.5	1.3
Structural primary balance (before CoA)	0.1	0.2	0.4	0.7	0.7	0.7	0.2	0.7	0.6
Real GDP growth	2.7	2.5	2.4	1.2	1.3	1.6	2.5	1.3	1.6
Potential GDP growth	0.8	1.0	1.2	1.2	1.3	1.6	1.0	1.2	1.2
Inflation rate	1.5	1.6	1.7	2.0	2.0	2.0	1.6	2.0	1.9
Implicit interest rate (nominal)	2.9	2.8	2.8	3.4	3.9	4.2	2.8	3.5	3.3
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	98.4	96.9	95.5	95.5	94.9	94.7	96.9	95.4	95.8
Primary balance	-0.6	-0.1	0.5	0.2	0.4	0.6	-0.1	0.3	0.2
Structural primary balance (before CoA)	-0.6	-0.8	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7
Real GDP growth	3.1	2.5	2.1	1.2	1.2	1.4	2.6	0.9	1.3
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	98.4	96.9	95.5	91.0	90.0	89.1	96.9	91.3	92.7
Primary balance	-0.6	-0.1	0.5	0.2	0.4	0.6	-0.1	0.3	0.2
Structural primary balance (before CoA)	-0.6	-0.8	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7
Real GDP growth	3.1	2.5	2.1	1.6	1.6	1.6	2.6	1.7	1.9
Implicit interest rate (nominal)	2.6	2.5	2.4	3.2	3.6	3.8	2.5	3.2	3.0
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	98.4	97.1	96.0	98.7	99.7	101.4	97.2	98.9	98.5
Implicit interest rate (nominal)	2.6	2.7	2.7	3.7	4.2	4.8	2.7	3.7	3.5
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	98.4	96.7	95.0	92.6	90.8	89.3	96.7	92.5	93.5
Implicit interest rate (nominal)	2.6	2.3	2.0	2.3	2.7	3.1	2.3	2.4	2.4
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	98.4	97.4	96.5	100.5	101.9	103.8	97.4	100.6	99.8
Implicit interest rate (nominal)	2.6	2.9	3.0	3.8	4.4	4.9	2.8	3.9	3.7
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	98.4	96.5	94.5	92.4	91.0	90.0	96.5	92.3	93.4
Real GDP growth	3.1	3.0	2.6	1.7	1.7	1.9	2.9	1.4	1.8
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	98.4	97.4	96.4	99.0	99.5	100.5	97.4	99.0	98.6
Real GDP growth	3.1	2.0	1.6	0.7	0.7	0.9	2.2	0.4	0.9
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	98.4	96.8	95.1	92.9	91.6	90.6	96.8	92.9	93.9
Real GDP growth	3.1	2.7	2.3	1.7	1.7	1.9	2.7	1.4	1.8
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	98.4	97.1	95.8	98.4	98.9	99.9	97.1	98.4	98.1
Real GDP growth	3.1	2.4	2.0	0.7	0.7	0.9	2.5	0.4	0.9
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	98.4	96.9	95.4	96.0	95.7	95.8	96.9	96.0	96.2
Primary balance	-0.6	0.0	0.4	0.1	0.3	0.5	-0.1	0.1	0.1
Structural primary balance (before CoA)	-0.6	-0.7	-0.8	-0.8	-0.8	-0.8	-0.7	-0.8	-0.8
Real GDP growth	3.1	2.5	2.3	1.2	1.2	1.4	2.6	0.9	1.4
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	98.4	97.0	95.6	95.7	95.3	95.2	97.0	95.7	96.0
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

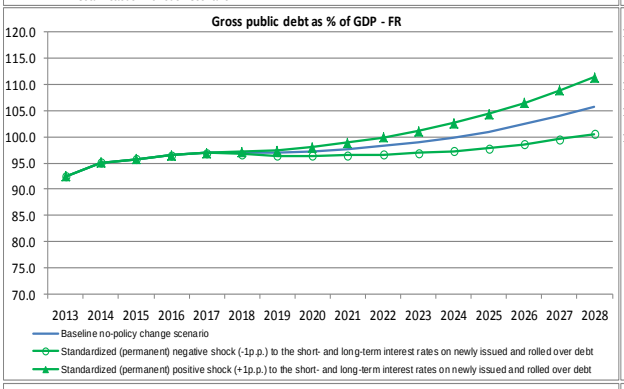
9. France

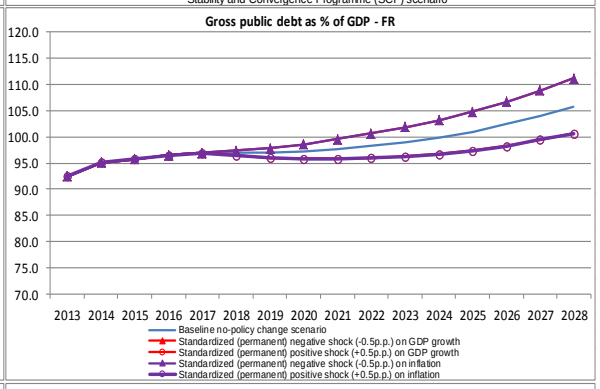
Public debt projections under baseline and alternative scenarios and sensitivity tests

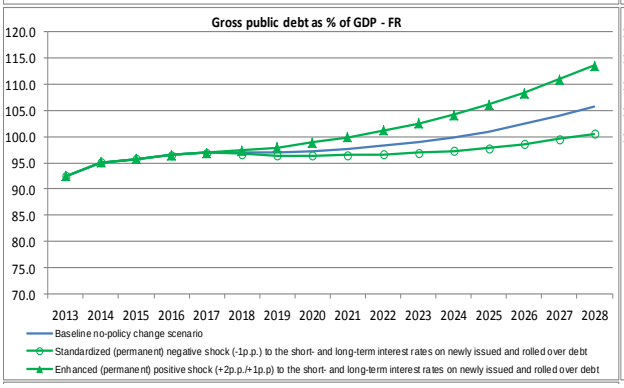
FR - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**95.8**	**96.5**	**96.9**	**96.9**	**96.9**	**97.2**	**97.6**	**98.2**	**99.0**	**99.8**	**101.0**	**102.3**	**104.0**	**105.7**
Changes in the ratio (-1+2+3)	*0.8*	*0.7*	*0.4*	*0.0*	*0.0*	*0.3*	*0.5*	*0.6*	*0.7*	*0.9*	*1.1*	*1.4*	*1.7*	*1.7*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-1.6**	**-1.5**	**-1.1**	**-1.2**	**-1.2**	**-1.3**	**-1.4**	**-1.5**	**-1.5**	**-1.6**	**-1.6**	**-1.6**	**-1.6**	**-1.5**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***-0.7***	***-0.7***	***-0.6***	***-1.0***	***-1.3***	***-1.3***	***-1.4***	***-1.5***	***-1.5***	***-1.6***	***-1.6***	***-1.6***	***-1.6***	***-1.5***
(1.1.1) Structural Primary Balance (bef. CoA)	*-0.7*	*-0.7*	*-0.6*	*-1.0*	*-1.3*	*-1.3*	*-1.3*	*-1.3*	*-1.3*	*-1.3*	*-1.3*	*-1.3*	*-1.3*	*-1.3*
(1.1.2) Cost of ageing						*0.0*	*0.2*	*0.2*	*0.3*	*0.3*	*0.4*	*0.4*	*0.4*	*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*	*0.1*
(1.2) Cyclical component	***-0.9***	***-0.7***	***-0.5***	***-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***	***-0.1***	***0.0***	***-0.1***	***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)	**0.0**	**0.4**	**-0.6**	**-1.2**	**-1.3**	**-1.0**	**-1.0**	**-0.9**	**-0.8**	**-0.7**	**-0.5**	**-0.2**	**0.1**	**0.2**
(2.1) Interest expenditure	*2.0*	*1.9*	*1.8*	*1.7*	*1.7*	*1.8*	*1.8*	*2.0*	*2.1*	*2.3*	*2.6*	*2.9*	*3.2*	*3.5*
(2.2) Growth effect	*-1.0*	*-1.1*	*-1.5*	*-1.6*	*-1.5*	*-1.2*	*-1.0*	*-0.9*	*-1.0*	*-1.0*	*-1.1*	*-1.1*	*-1.1*	*-1.2*
(2.3) Inflation effect	*-1.0*	*-0.4*	*-0.9*	*-1.3*	*-1.4*	*-1.6*	*-1.8*	*-1.9*	*-1.9*	*-1.9*	*-2.0*	*-2.0*	*-2.0*	*-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	**-0.8**	**-1.2**	**-0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*-1.4*	*-1.2*	*0.0*	*0.2*	*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	*0.6*	*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*
Per memo														
Structural balance	-2.1	-2.6	-2.4	-2.7	-3.0	-3.1	-3.3	-3.4	-3.6	-3.9	-4.2	-4.4	-4.8	-5.0

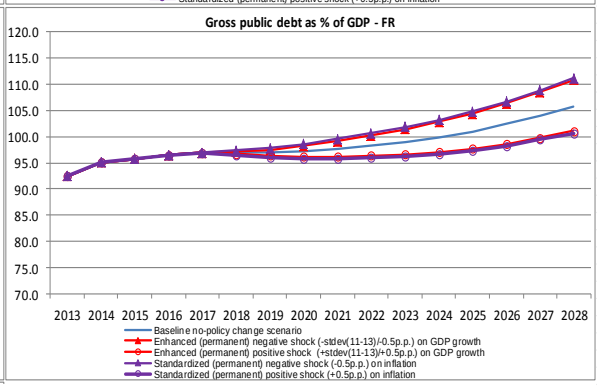


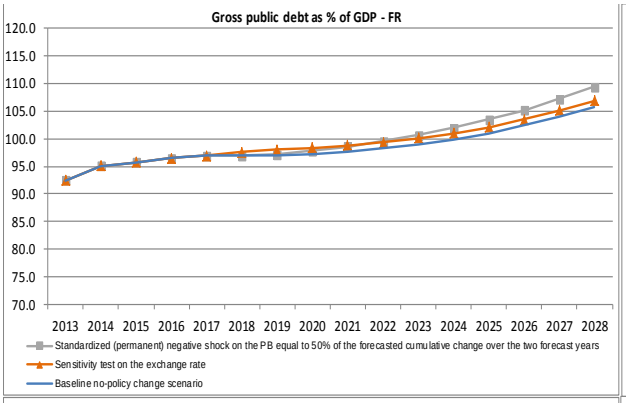


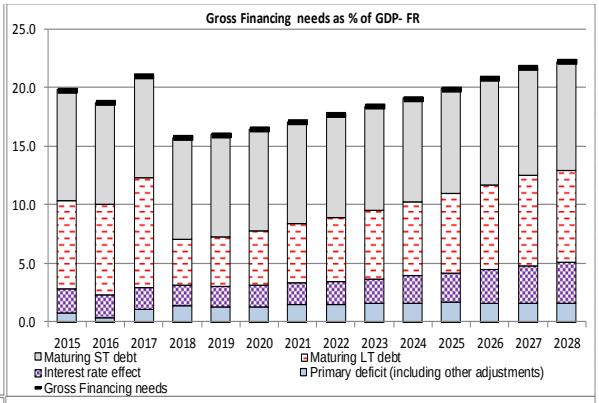


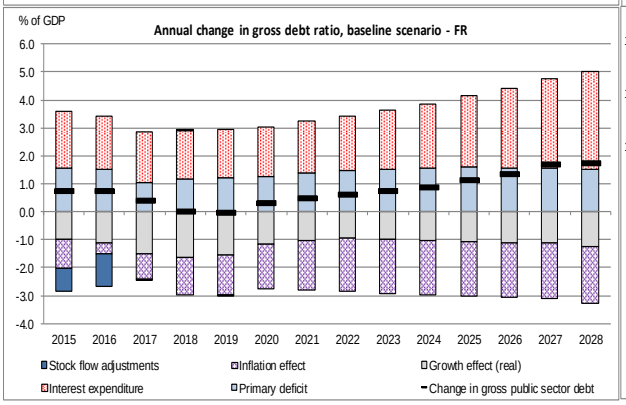


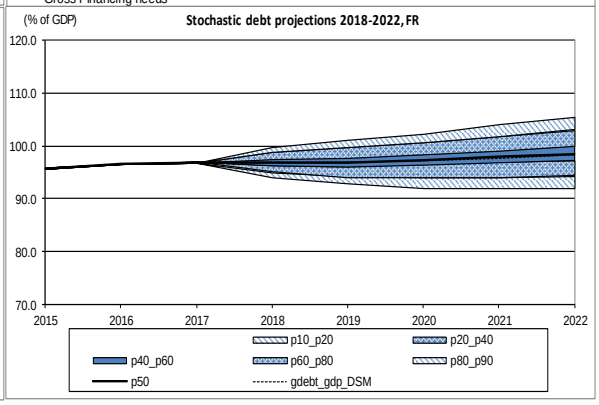












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	31.1	31.3	31.3	31.2	31.1	31.1	31.1	31.2	31.5	31.4
Revenues from pensions taxation	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Property incomes	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.39**	**0.24**	**0.46**
Fiscal sub-index	0.96	0.43	0.36
Financial competitiveness sub-index	0.09	0.13	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**4.9**	**8.6**	**5.3**	**3.0**	**4.5**
of which *Initial Budgetary position*	*1.0*	*2.0*	*1.0*	*-0.8*	*0.7*
*Cost of delaying adjustment***	*0.7*	*2.0*	*0.8*	*0.6*	*0.7*
*Debt requirement****	*2.9*	*4.3*	*2.9*	*3.0*	*2.9*
Ageing costs	*0.3*	*0.3*	*0.6*	*0.3*	*0.3*
Required structural primary balance related to S1	**3.6**	**7.1**	**4.0**	**3.8**	**3.7**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**1.1**	**1.5**	**3.1**	**-1.0**	**0.7**
of which Initial Budgetary position	2.2	2.6	2.2	0.1	1.7
Long term component	-1.0	-1.1	0.9	-1.1	-1.0
of which Pensions	*-1.7*	*-1.8*	*-1.7*	*-1.8*	*-1.7*
Health care	*0.6*	*0.6*	*1.1*	*0.6*	*0.6*
Long-term care	*0.6*	*0.6*	*2.0*	*0.6*	*0.6*
Others	*-0.5*	*-0.5*	*-0.5*	*-0.5*	*-0.5*
Required structural primary balance related to S2	**-0.1**	**-0.1**	**1.8**	**-0.2**	**-0.1**

Risks related to the structure of public debt financing

Public debt structure - FR (2016)	Share of short-term public debt (p.p.): 10.1	Share of public debt in foreign currency (%): 2.8	Share of public debt by non-residents (%): 52.0

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		FR	EU
State guarantees (% GDP) (2015)		4.2	8.5
of which One-off guarantees		*2.1*	*8.1*
Standardised guarantees		*2.1*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	1.98	0.92
	Securities issued under liquidity schemes	0.00	0.00
	Special purpose entity	0.00	0.21
	Total	1.98	1.13

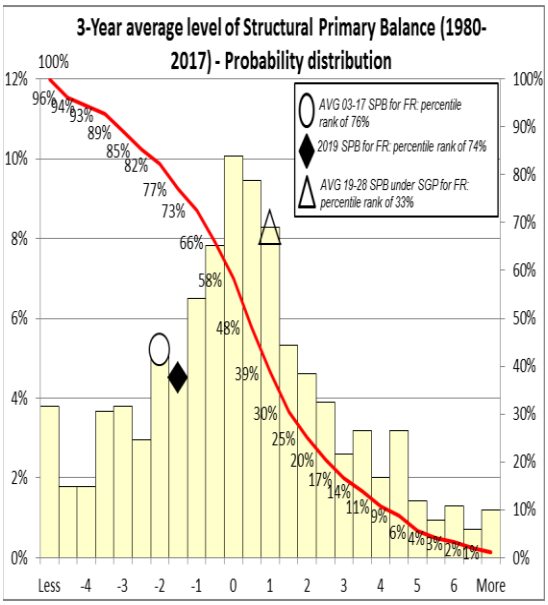
Government's contingent liability risks from banking sector - FR (2016)	Private sector credit flow (% GDP):	Change in nominal house price index:	Bank loans-to-deposits ratio (p.p.):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8%	bank recap. at 10.5%
	-6.2	1.0	112.3	3.7	-0.4	51.8	0.00%	0.00%

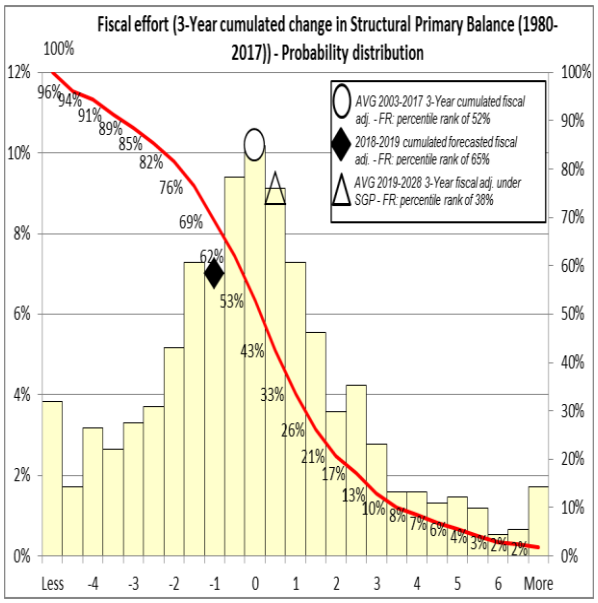
Financial market information

Sovereign Ratings as of Nov 2017, FR	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	Aa2		Aa2	
S&P	AAu	A-1+u	AAu	A-1+u
Fitch	AA		AA	F1+

Financial market information as of October 2017, FR		
Sovereign yield spreads(bp)*	10-year	44.0
CDS (bp)	5-year	18.6

Realism of baseline assumptions





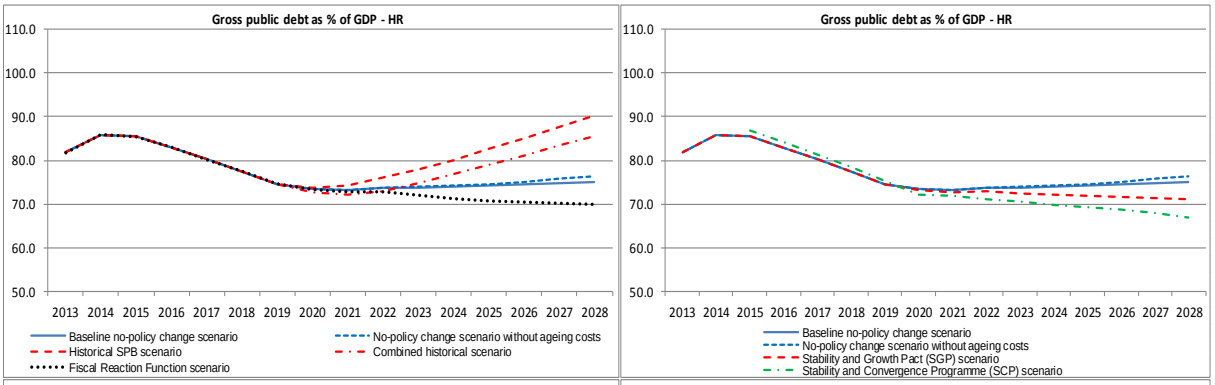
Underlying macro-fiscal assumptions

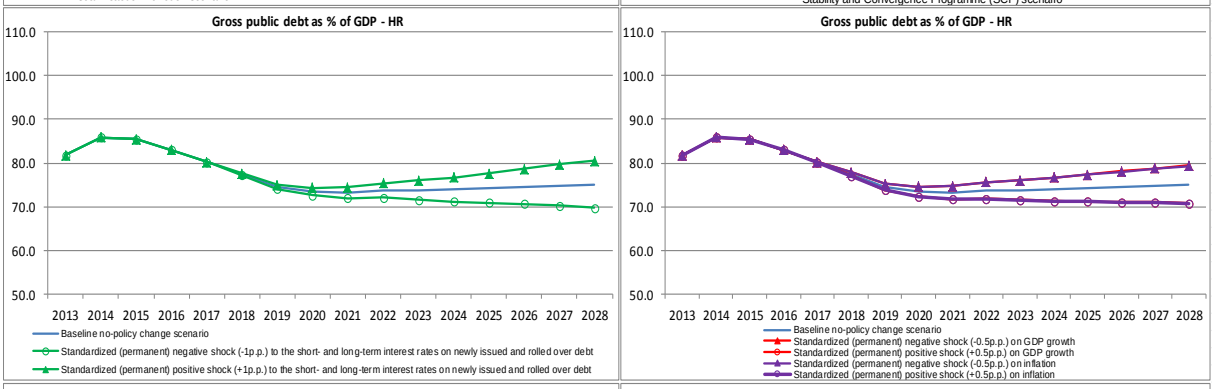
Macro-fiscal assumptions, France	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	96.9	96.9	96.9	99.8	102.3	105.7	96.9	100.5	99.6
Primary balance	-1.1	-1.2	-1.2	-1.6	-1.6	-1.5	-1.2	-1.5	-1.4
Structural primary balance (before CoA)	-0.6	-1.0	-1.3	-1.3	-1.3	-1.3	-0.9	-1.3	-1.2
Real GDP growth	1.6	1.7	1.6	1.1	1.1	1.2	1.7	1.1	1.2
Potential GDP growth	1.2	1.2	1.3	1.1	1.1	1.2	1.2	1.1	1.1
Inflation rate	0.9	1.4	1.5	2.0	2.0	2.0	1.3	1.9	1.8
Implicit interest rate (nominal)	1.9	1.9	1.8	2.4	2.9	3.4	1.9	2.5	2.4
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	96.9	96.9	96.9	101.4	104.4	108.0	96.9	102.0	100.7
Primary balance	-1.1	-1.2	-1.2	-1.8	-1.7	-1.6	-1.2	-1.8	-1.6
Structural primary balance (before CoA)	-0.6	-1.0	-1.3	-1.6	-1.4	-1.4	-0.9	-1.5	-1.4
Real GDP growth	1.6	1.7	1.6	1.0	1.1	1.2	1.7	1.1	1.3
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	96.9	96.9	96.6	87.9	83.6	79.4	96.8	87.9	90.1
Primary balance	-1.1	-1.2	-0.3	1.6	1.9	2.1	-0.8	1.5	0.9
Structural primary balance (before CoA)	-0.6	-1.0	-0.4	1.6	1.9	2.1	-0.6	1.5	1.0
Real GDP growth	1.6	1.7	1.0	1.0	1.0	1.2	1.4	0.9	1.0
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	96.0	95.9	94.7	88.5	87.6	87.1	95.5	89.2	90.8
Primary balance	-0.9	-0.4	0.3	0.6	0.5	0.6	-0.3	0.6	0.4
Structural primary balance (before CoA)	-0.3	0.1	0.6	0.8	0.8	0.8	0.1	0.8	0.6
Real GDP growth	1.5	1.5	1.6	1.2	1.2	1.4	1.5	1.3	1.3
Potential GDP growth	1.5	1.4	1.3	1.2	1.2	1.4	1.4	1.2	1.3
Inflation rate	0.9	1.0	1.4	2.0	2.0	2.0	1.1	1.9	1.7
Implicit interest rate (nominal)	2.0	1.9	2.0	2.9	3.5	3.8	2.0	3.0	2.7
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	96.9	96.9	96.9	100.6	103.7	107.7	96.9	101.4	100.3
Primary balance	-1.1	-1.2	-1.2	-1.8	-1.9	-1.8	-1.2	-1.7	-1.6
Structural primary balance (before CoA)	-0.6	-1.0	-1.3	-1.6	-1.6	-1.6	-0.9	-1.5	-1.4
Real GDP growth	1.6	1.7	1.6	1.1	1.1	1.2	1.7	1.1	1.3
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	96.9	96.9	96.9	99.7	102.7	106.1	96.9	100.5	99.6
Primary balance	-1.1	-1.2	-1.2	-1.8	-1.9	-1.8	-1.2	-1.7	-1.6
Structural primary balance (before CoA)	-0.6	-1.0	-1.3	-1.6	-1.6	-1.6	-0.9	-1.5	-1.4
Real GDP growth	1.6	1.7	1.6	1.3	1.3	1.3	1.7	1.4	1.4
Implicit interest rate (nominal)	1.9	1.9	1.8	2.6	3.0	3.2	1.9	2.6	2.4
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	96.9	97.1	97.4	102.5	106.4	111.4	97.1	103.5	101.9
Implicit interest rate (nominal)	1.9	2.1	2.1	3.0	3.6	4.2	2.0	3.1	2.8
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	96.9	96.7	96.4	97.3	98.6	100.5	96.7	97.8	97.5
Implicit interest rate (nominal)	1.9	1.6	1.5	1.8	2.2	2.7	1.7	2.0	1.9
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	96.9	97.4	97.9	104.1	108.3	113.6	97.4	105.0	103.1
Implicit interest rate (nominal)	1.9	2.3	2.4	3.2	3.7	4.3	2.2	3.3	3.0
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	96.9	96.4	96.0	96.6	98.2	100.7	96.4	97.3	97.1
Real GDP growth	1.6	2.2	2.1	1.6	1.6	1.7	2.0	1.6	1.7
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	96.9	97.4	97.8	103.2	106.7	111.1	97.4	103.9	102.3
Real GDP growth	1.6	1.2	1.1	0.6	0.6	0.7	1.3	0.6	0.8
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	96.9	96.6	96.4	97.0	98.6	101.0	96.6	97.7	97.4
Real GDP growth	1.6	2.0	1.9	1.6	1.6	1.7	1.9	1.6	1.7
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	96.9	97.2	97.4	102.8	106.3	110.7	97.2	103.5	101.9
Real GDP growth	1.6	1.5	1.4	0.6	0.6	0.7	1.5	0.6	0.8
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	96.9	97.0	97.1	101.9	105.2	109.3	97.0	102.6	101.2
Primary balance	-1.1	-1.3	-1.6	-1.9	-2.0	-1.9	-1.3	-1.9	-1.7
Structural primary balance (before CoA)	-0.6	-1.1	-1.7	-1.7	-1.7	-1.7	-1.1	-1.7	-1.5
Real GDP growth	1.6	1.8	1.8	1.1	1.1	1.2	1.8	1.1	1.3
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	96.9	97.5	98.0	100.9	103.4	106.8	97.5	101.6	100.6
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

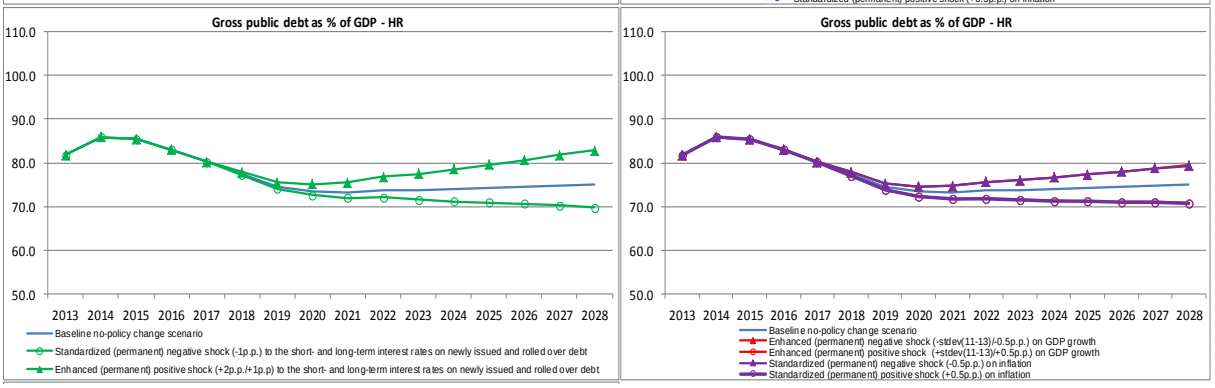
10. Croatia

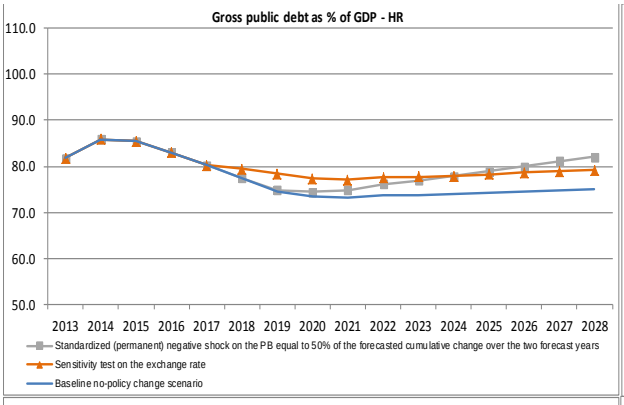
Public debt projections under baseline and alternative scenarios and sensitivity tests

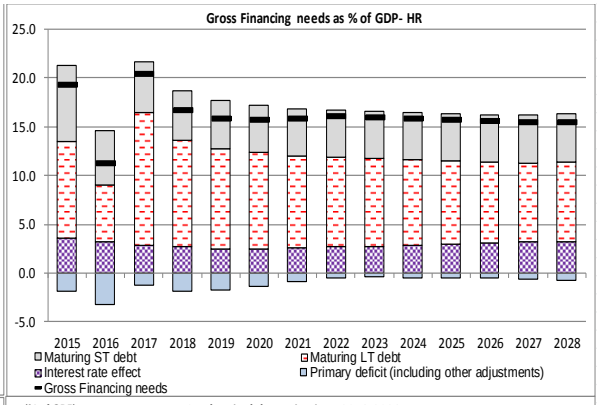
HR - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**85.4**	**82.9**	**80.3**	**77.4**	**74.5**	**73.4**	**73.2**	**73.7**	**73.7**	**73.9**	**74.2**	**74.5**	**74.8**	**74.9**
Changes in the ratio (-1+2+3)	*-0.4*	*-2.5*	*-2.7*	*-2.8*	*-2.9*	*-1.1*	*-0.3*	*0.5*	*0.0*	*0.2*	*0.3*	*0.3*	*0.3*	*0.1*
of which														
(1) Primary balance (1.1+1.2+1.3)	**0.2**	**2.3**	**2.0**	**1.7**	**1.8**	**1.4**	**1.0**	**0.5**	**0.5**	**0.5**	**0.5**	**0.6**	**0.7**	**0.8**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***1.7***	***2.9***	***1.9***	***0.8***	***0.5***	***0.5***	***0.5***	***0.5***	***0.5***	***0.5***	***0.5***	***0.6***	***0.7***	***0.8***
(1.1.1) Structural Primary Balance (bef. CoA)	*1.7*	*2.9*	*1.9*	*0.8*	*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*	*0.0*	*0.0*	*-0.1*	*-0.1*	*-0.2*	*-0.3*	*-0.4*
(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*
(1.2) Cyclical component	***-1.5***	***-0.7***	***0.3***	***1.0***	***1.3***	***0.9***	***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***	***0.1***	***-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)	**1.6**	**0.8**	**-0.7**	**-1.2**	**-1.1**	**0.3**	**0.7**	**1.0**	**0.5**	**0.7**	**0.8**	**0.9**	**1.0**	**0.9**
(2.1) Interest expenditure	*3.5*	*3.2*	*2.8*	*2.6*	*2.4*	*2.5*	*2.5*	*2.6*	*2.7*	*2.8*	*2.9*	*3.0*	*3.1*	*3.2*
(2.2) Growth effect	*-1.9*	*-2.5*	*-2.5*	*-2.2*	*-2.0*	*-0.6*	*-0.4*	*-0.2*	*-0.7*	*-0.7*	*-0.7*	*-0.6*	*-0.7*	*-0.8*
(2.3) Inflation effect	*0.0*	*0.1*	*-1.0*	*-1.6*	*-1.6*	*-1.5*	*-1.5*	*-1.4*	*-1.4*	*-1.4*	*-1.4*	*-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	**-1.7**	**-1.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*-2.2*	*-0.4*	*0.7*	*-0.2*	*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	*0.5*	*-0.7*	*-0.7*	*0.3*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Per memo														
Structural balance	-1.3	-1.0	-0.9	-1.9	-2.0	-2.0	-2.0	-2.1	-2.2	-2.3	-2.4	-2.4	-2.4	-2.4

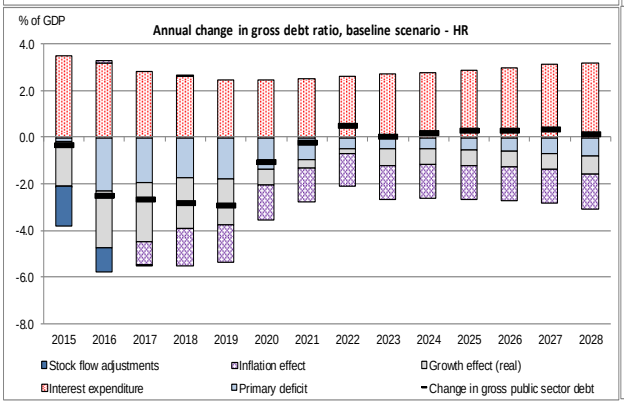


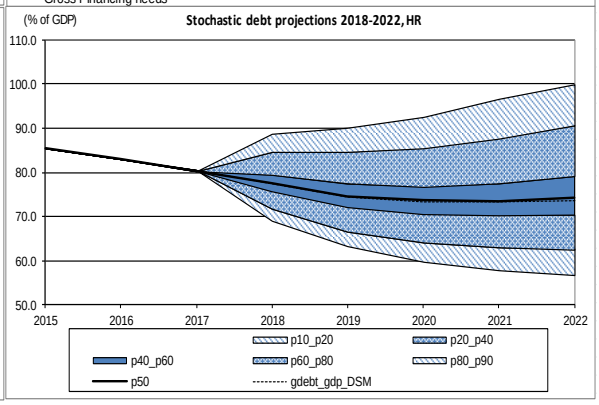












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	21.2	22.1	22.1	21.8	21.7	21.4	21.4	21.4	21.3	20.8
Revenues from pensions taxation	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Property incomes	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.84**	**0.20**	**0.46**
Fiscal sub-index	0.64	0.08	0.36
Financial competitiveness sub-index	0.93	0.26	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**1.2**	**5.7**	**1.5**	**0.2**	**2.4**
of which *Initial Budgetary position*	*0.3*	*2.9*	*0.3*	*-0.6*	*0.7*
*Cost of delaying adjustment***	*0.2*	*1.3*	*0.2*	*0.0*	*0.4*
*Debt requirement****	*1.0*	*1.9*	*1.0*	*1.0*	*1.6*
Ageing costs	*-0.3*	*-0.4*	*-0.1*	*-0.2*	*-0.3*
Required structural primary balance related to S1	**1.7**	**4.1**	**2.0**	**2.0**	**3.2**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**-1.5**	**0.6**	**-0.2**	**-2.8**	**-1.5**
of which Initial Budgetary position	0.8	3.1	0.8	-0.4	0.8
Long term component	-2.3	-2.5	-1.0	-2.3	-2.3
of which Pensions	*-2.6*	*-2.8*	*-2.6*	*-2.7*	*-2.6*
Health care	*0.6*	*0.6*	*1.2*	*0.6*	*0.6*
Long-term care	*0.0*	*0.0*	*0.7*	*0.0*	*0.0*
Others	*-0.3*	*-0.3*	*-0.3*	*-0.3*	*-0.3*
Required structural primary balance related to S2	**-1.0**	**-1.0**	**0.3**	**-1.0**	**-0.8**

Risks related to the structure of public debt financing

Public debt structure - HR (2016)	Share of short-term public debt (p.p.): 6.5	**Share of public debt in foreign currency (%): 76.5**	Share of public debt by non-residents (%): 37.5

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		HR	EU
State guarantees (% GDP) (2015)		2.2	8.5
of which One-off guarantees		*2.2*	*8.1*
Standardised guarantees		*0.0*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	0.00	0.92
	Securities issued under liquidity schemes	0.00	0.00
	Special purpose entity	0.00	0.21
	Total	0.00	1.13

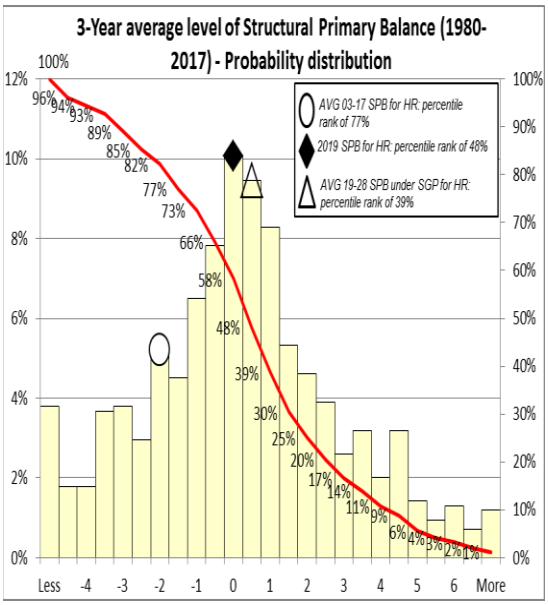
Government's contingent liability risks from banking sector - HR (2016)	Private sector credit flow (% GDP): -0.1	Change in nominal house price index: 0.9	Bank loans-to-deposits ratio (p.p.): 75.5	**Share of non-performing loans (%): 10.1**	Change in share of non-performing loans (p.p): -2.4	NPL coverage ratio 63.3	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL): bank recap. at 8% 0.00%	bank recap. at 10.5% 0.00%

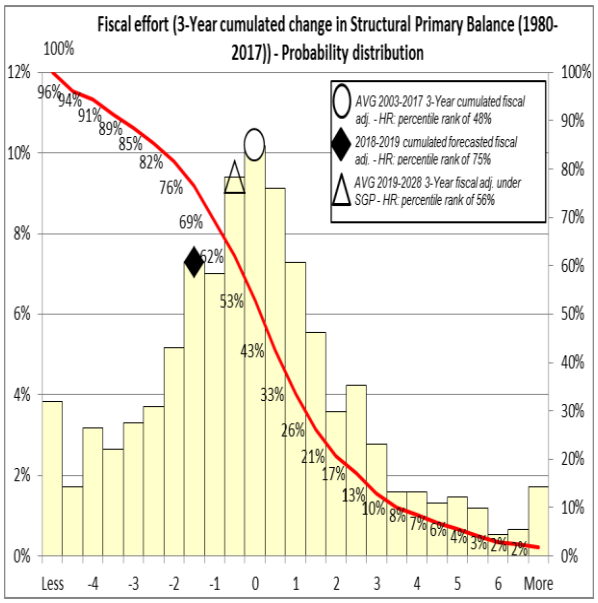
Financial market information

Sovereign Ratings as of Nov 2017, HR	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	Ba2		Ba2	
S&P	BB	B	BB	B
Fitch	BB		BB	B

Financial market information as of October 2017, HR		
Sovereign yield spreads(bp)*	10-year	229.0
CDS (bp)	5-year	225.9

Realism of baseline assumptions





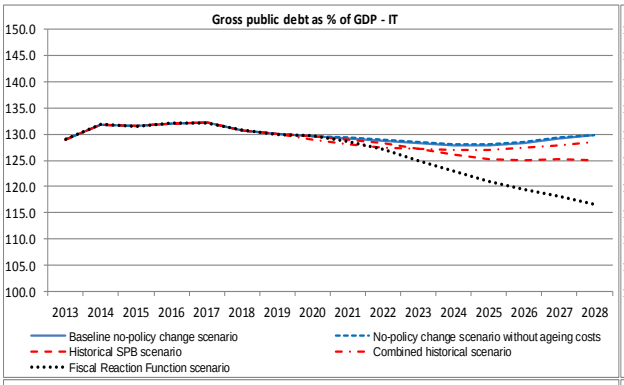
Underlying macro-fiscal assumptions

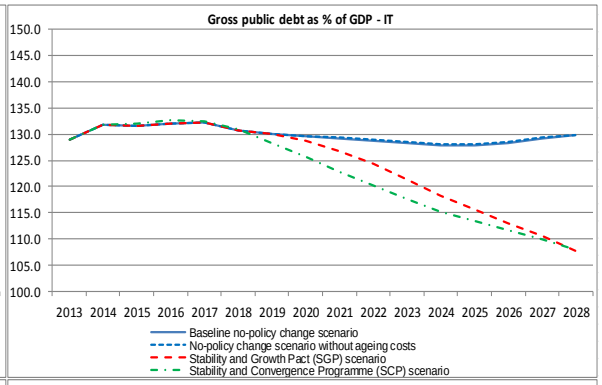
Macro-fiscal assumptions, Croatia	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	80.3	77.4	74.5	73.9	74.5	74.9	77.4	74.0	74.9
Primary balance	2.0	1.7	1.8	0.5	0.6	0.8	1.8	0.7	1.0
Structural primary balance (before CoA)	1.9	0.8	0.5	0.5	0.5	0.5	1.0	0.5	0.6
Real GDP growth	3.2	2.8	2.7	1.0	0.9	1.1	2.9	0.8	1.3
Potential GDP growth	1.1	1.4	1.9	1.0	0.9	1.1	1.4	1.1	1.2
Inflation rate	1.2	2.1	2.1	2.0	2.0	2.0	1.8	2.0	2.0
Implicit interest rate (nominal)	3.5	3.4	3.3	3.9	4.2	4.4	3.4	3.9	3.8
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	80.3	77.4	74.5	71.3	70.5	70.0	77.4	71.5	73.0
Primary balance	2.0	1.7	1.8	1.2	1.1	1.1	1.8	1.2	1.4
Structural primary balance (before CoA)	1.9	0.8	0.5	1.2	1.0	0.7	1.0	1.0	1.0
Real GDP growth	3.2	2.8	2.7	1.0	1.0	1.2	2.9	0.8	1.3
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	80.3	77.4	74.4	72.2	71.6	71.0	77.4	72.1	73.4
Primary balance	2.0	1.7	2.0	1.0	1.2	1.3	1.9	1.2	1.3
Structural primary balance (before CoA)	1.9	0.8	0.7	1.0	1.2	1.3	1.1	1.0	1.0
Real GDP growth	3.2	2.8	2.5	0.9	0.8	1.1	2.8	0.8	1.3
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	81.2	78.4	75.4	69.9	68.8	66.9	78.3	69.8	72.0
Primary balance	2.0	2.3	2.9	1.8	1.9	2.1	2.4	2.1	2.1
Structural primary balance (before CoA)	1.5	1.4	1.5	1.8	1.8	1.8	1.5	1.8	1.7
Real GDP growth	3.2	2.8	2.6	0.6	0.6	1.1	2.9	0.9	1.4
Potential GDP growth	0.9	1.4	1.6	0.6	0.6	1.1	1.3	0.9	1.0
Inflation rate	1.4	1.4	1.3	2.0	2.0	2.0	1.4	1.9	1.8
Implicit interest rate (nominal)	4.0	4.1	4.2	4.4	4.6	4.7	4.1	4.4	4.3
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	80.3	77.4	74.5	80.1	85.1	90.1	77.4	80.8	80.0
Primary balance	2.0	1.7	1.8	-1.6	-1.5	-1.3	1.8	-1.0	-0.3
Structural primary balance (before CoA)	1.9	0.8	0.5	-1.6	-1.6	-1.6	1.0	-1.3	-0.7
Real GDP growth	3.2	2.8	2.7	1.0	0.9	1.1	2.9	1.0	1.5
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	80.3	77.4	74.5	76.8	81.2	85.5	77.4	77.6	77.5
Primary balance	2.0	1.7	1.8	-1.6	-1.5	-1.3	1.8	-1.0	-0.3
Structural primary balance (before CoA)	1.9	0.8	0.5	-1.6	-1.6	-1.6	1.0	-1.3	-0.7
Real GDP growth	3.2	2.8	2.7	1.2	1.2	1.2	2.9	1.7	2.0
Implicit interest rate (nominal)	3.5	3.4	3.3	4.0	4.2	4.3	3.4	3.9	3.8
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	80.3	77.6	75.0	76.7	78.6	80.5	77.6	77.0	77.2
Implicit interest rate (nominal)	3.5	3.7	3.7	4.7	5.0	5.3	3.6	4.6	4.4
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	80.3	77.3	74.1	71.2	70.6	69.8	77.2	71.2	72.7
Implicit interest rate (nominal)	3.5	3.2	2.9	3.2	3.4	3.5	3.2	3.2	3.2
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	80.3	77.8	75.5	78.4	80.6	82.8	77.9	78.7	78.5
Implicit interest rate (nominal)	3.5	3.9	4.1	4.9	5.2	5.4	3.8	4.9	4.6
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	80.3	77.1	73.8	71.3	71.1	70.7	77.0	71.4	72.8
Real GDP growth	3.2	3.3	3.2	1.5	1.4	1.6	3.2	1.3	1.8
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	80.3	77.8	75.3	76.6	78.0	79.4	77.8	76.8	77.0
Real GDP growth	3.2	2.3	2.2	0.5	0.4	0.6	2.6	0.3	0.9
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	80.3	77.1	73.8	71.3	71.1	70.8	77.0	71.4	72.8
Real GDP growth	3.2	3.3	3.1	1.5	1.4	1.6	3.2	1.3	1.8
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	80.3	77.8	75.3	76.6	78.0	79.4	77.8	76.8	77.0
Real GDP growth	3.2	2.3	2.2	0.5	0.4	0.6	2.6	0.3	0.9
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	80.3	77.4	74.8	77.8	79.9	82.0	77.5	78.0	77.9
Primary balance	2.0	1.8	1.1	-0.2	-0.1	0.1	1.6	0.0	0.4
Structural primary balance (before CoA)	1.9	0.8	-0.2	-0.2	-0.2	-0.2	0.8	-0.2	0.0
Real GDP growth	3.2	2.8	3.2	1.0	0.9	1.1	3.1	0.8	1.4
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	80.3	79.5	78.4	77.9	78.6	79.1	79.4	78.1	78.4
Exchange rate depreciation	0.0%	2.1%	2.1%	0.0%	0.0%	0.0%	1.4%	0.0%	0.3%

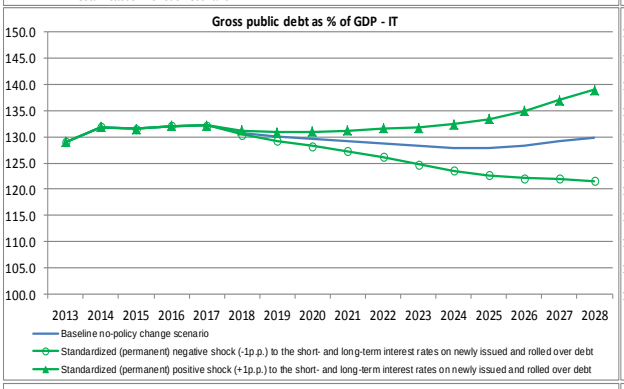
11. Italy

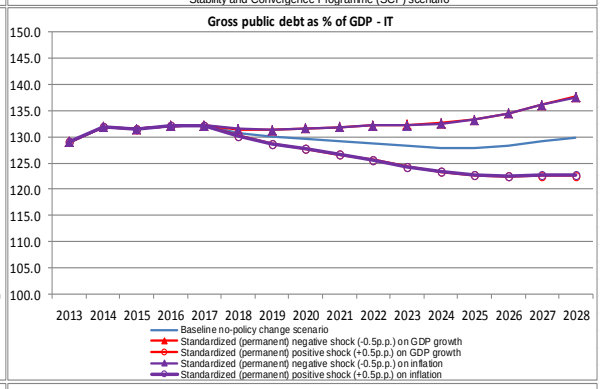
Public debt projections under baseline and alternative scenarios and sensitivity tests

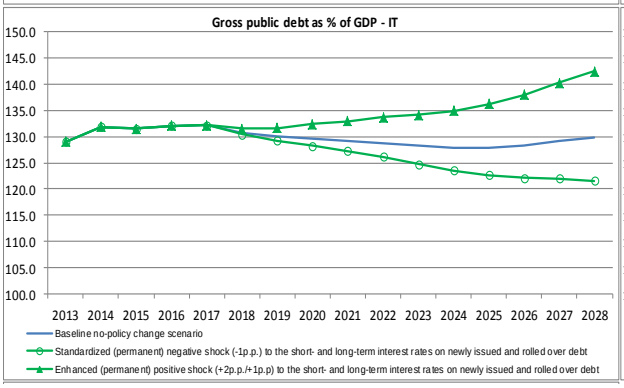
IT - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**131.5**	**132.0**	**132.1**	**130.8**	**130.0**	**129.6**	**129.2**	**128.8**	**128.2**	**127.8**	**127.8**	**128.3**	**129.2**	**129.9**
Changes in the ratio (-1+2+3)	*-0.2*	*0.5*	*0.1*	*-1.4*	*-0.8*	*-0.4*	*-0.4*	*-0.3*	*-0.6*	*-0.3*	*0.0*	*0.5*	*0.9*	*0.7*
of which														
(1) Primary balance (1.1+1.2+1.3)	**1.5**	**1.5**	**1.7**	**1.8**	**1.5**	**1.5**	**1.4**	**1.2**	**1.2**	**1.1**	**1.1**	**1.1**	**1.1**	**1.0**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***3.3***	***2.3***	***1.7***	***1.6***	***1.1***	***1.2***	***1.2***	***1.2***	***1.2***	***1.1***	***1.1***	***1.1***	***1.1***	***1.0***
(1.1.1) Structural Primary Balance (bef. CoA)	*3.3*	*2.3*	*1.7*	*1.6*	*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*	*-0.1*	*-0.1*	*0.0*	*0.1*	*0.1*	*0.1*	*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*	*0.1*
(1.2) Cyclical component	***-1.6***	***-1.0***	***-0.3***	***0.2***	***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	***-0.2***	***0.2***	***0.3***	***0.0***	***-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)	**1.7**	**1.7**	**1.2**	**0.3**	**0.5**	**1.1**	**0.9**	**0.9**	**0.6**	**0.8**	**1.1**	**1.6**	**1.9**	**1.7**
(2.1) Interest expenditure	*4.1*	*4.0*	*3.8*	*3.6*	*3.5*	*3.5*	*3.6*	*3.7*	*3.8*	*4.0*	*4.2*	*4.5*	*4.8*	*5.0*
(2.2) Growth effect	*-1.3*	*-1.2*	*-1.9*	*-1.7*	*-1.2*	*-0.4*	*-0.3*	*-0.2*	*-0.7*	*-0.7*	*-0.6*	*-0.4*	*-0.4*	*-0.8*
(2.3) Inflation effect	*-1.1*	*-1.0*	*-0.8*	*-1.6*	*-1.8*	*-2.0*	*-2.3*	*-2.5*	*-2.5*	*-2.5*	*-2.5*	*-2.5*	*-2.5*	*-2.5*
(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	**-0.4**	**0.2**	**0.7**	**0.1**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*-0.4*	*0.2*	*0.7*	*0.1*	*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*
Per memo														
Structural balance	-0.7	-1.7	-2.1	-2.0	-2.4	-2.3	-2.3	-2.4	-2.6	-2.8	-3.1	-3.4	-3.8	-4.1

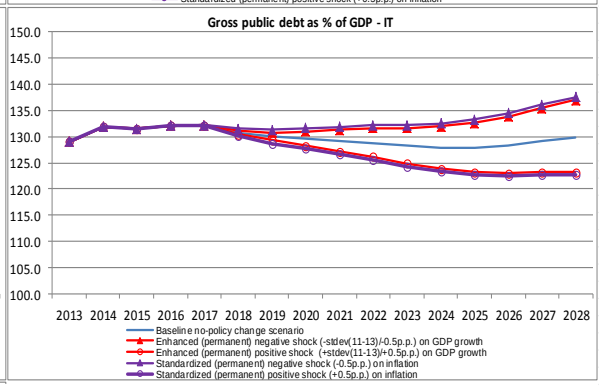


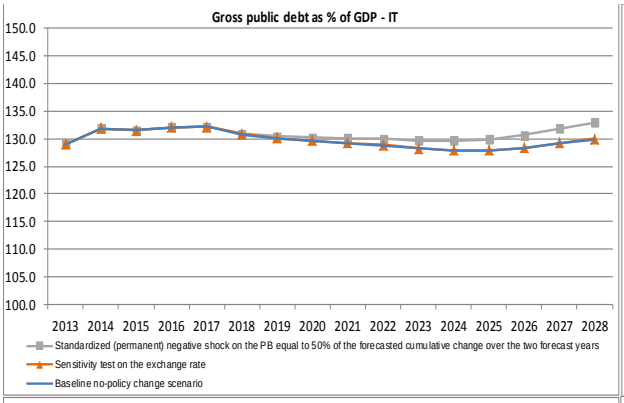


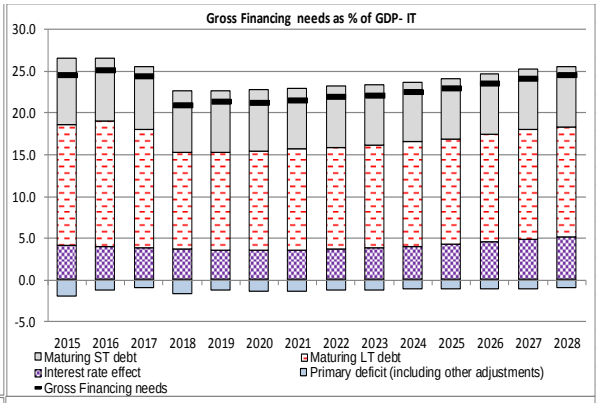


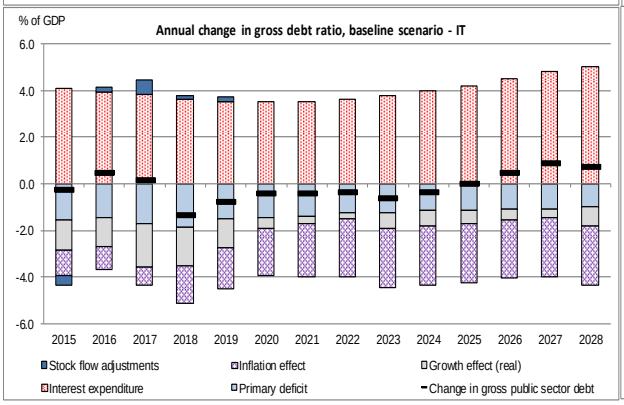


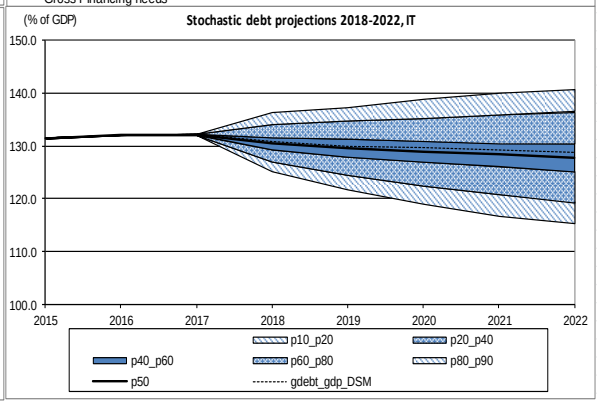












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	28.2	28.3	28.2	28.1	28.0	27.8	27.7	27.7	27.8	28.1
Revenues from pensions taxation	2.8	2.9	2.9	2.8	2.8	2.8	2.8	2.8	2.8	2.9
Property incomes	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.58**	**0.36**	**0.46**
Fiscal sub-index	0.96	0.47	0.36
Financial competitiveness sub-index	0.38	0.31	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**6.7**	**10.1**	**6.8**	**4.9**	**6.6**
of which *Initial Budgetary position*	*0.4*	*0.5*	*0.4*	*-1.8*	*0.2*
*Cost of delaying adjustment***	*1.1*	*2.4*	*1.1*	*0.9*	*1.1*
*Debt requirement****	*5.1*	*7.1*	*5.1*	*5.6*	*5.3*
Ageing costs	*0.1*	*0.2*	*0.2*	*0.1*	*0.0*
Required structural primary balance related to S1	**7.8**	**11.9**	**8.0**	**8.4**	**7.8**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**0.6**	**-0.1**	**1.1**	**-1.8**	**0.5**
of which Initial Budgetary position	0.5	-0.2	0.5	-1.9	0.4
Long term component	0.1	0.1	0.6	0.1	0.0
of which Pensions	*-0.8*	*-0.8*	*-0.8*	*-0.8*	*-0.8*
Health care	*0.5*	*0.6*	*0.9*	*0.5*	*0.5*
Long-term care	*0.6*	*0.7*	*0.8*	*0.6*	*0.6*
Others	*-0.3*	*-0.3*	*-0.3*	*-0.3*	*-0.4*
Required structural primary balance related to S2	**1.7**	**1.7**	**2.2**	**1.7**	**1.7**

Risks related to the structure of public debt financing

Public debt structure - IT (2016)	Share of short-term public debt (p.p.): 13.1	Share of public debt in foreign currency (%): 0.2	Share of public debt by non-residents (%): 32.7

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		IT	EU
State guarantees (% GDP) (2015)		2.2	8.5
of which One-off guarantees		*1.2*	*8.1*
Standardised guarantees		*1.0*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	0.38	0.92
	Securities issued under liquidity schemes	0.00	0.00
	Special purpose entity	0.00	0.21
	Total	0.38	1.13

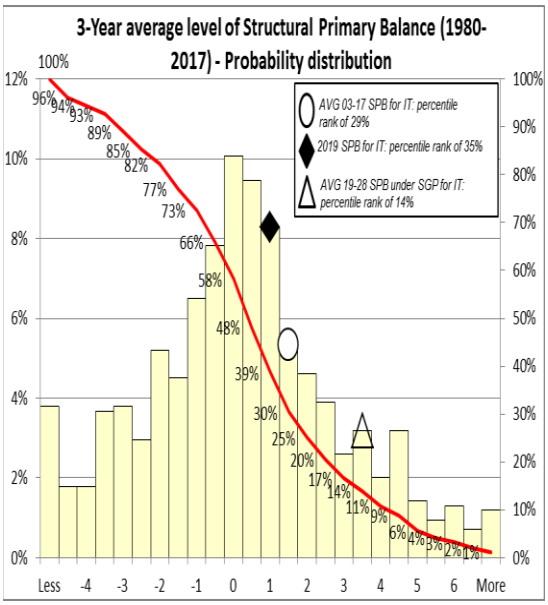
Government's contingent liability risks from banking sector - IT (2016)	Private sector credit flow (% GDP): 0.6	Change in nominal house price index: -0.8	Bank loans-to-deposits ratio (p.p.): 126.9	Share of non-performing loans (%): 15.3	Change in share of non-performing loans (p.p): -1.5	NPL coverage ratio 48.9	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8% 0.00%	bank recap. at 10.5% 0.01%

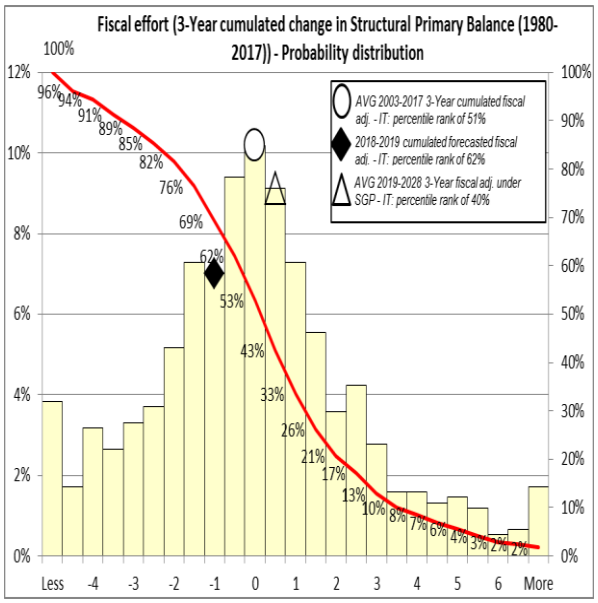
Financial market information

Sovereign Ratings as of Nov 2017, IT	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	Baa2	P-2	Baa2	(P)P-2
S&P	BBBu	A-2u	BBBu	A-2u
Fitch	BBB		BBB	F2

Financial market information as of October 2017, IT		
Sovereign yield spreads(bp)*	10-year	170.0
CDS (bp)	5-year	117.4

Realism of baseline assumptions





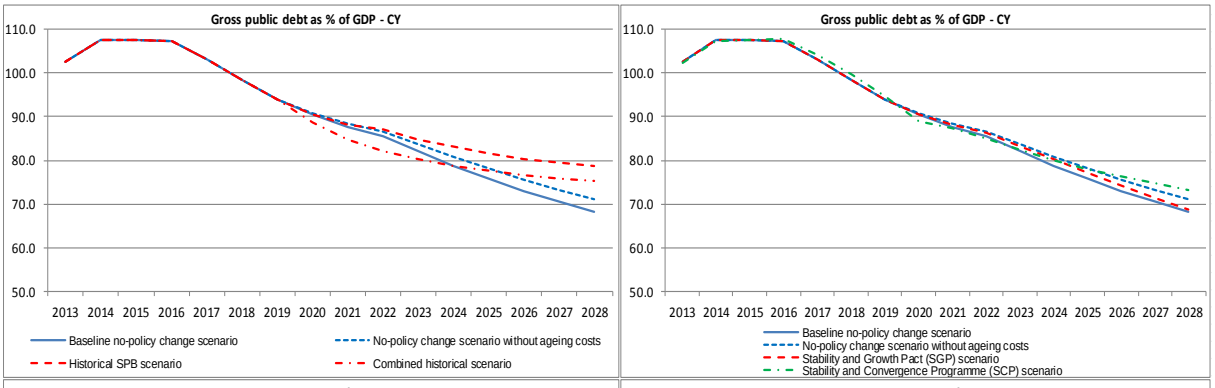
Underlying macro-fiscal assumptions

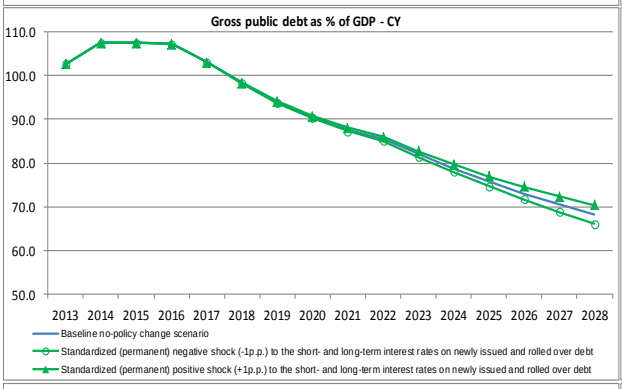
Macro-fiscal assumptions, Italy	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	132.1	130.8	130.0	127.8	128.3	129.9	131.0	128.8	129.3
Primary balance	1.7	1.8	1.5	1.1	1.1	1.0	1.7	1.2	1.3
Structural primary balance (before CoA)	1.7	1.6	1.1	1.1	1.1	1.1	1.5	1.1	1.2
Real GDP growth	1.5	1.3	1.0	0.5	0.4	0.6	1.2	0.4	0.6
Potential GDP growth	0.2	0.4	0.5	0.5	0.4	0.6	0.4	0.5	0.5
Inflation rate	0.6	1.3	1.4	2.0	2.0	2.0	1.1	1.9	1.7
Implicit interest rate (nominal)	3.0	2.8	2.8	3.2	3.6	4.0	2.8	3.3	3.2
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	132.1	130.8	130.0	122.9	119.4	116.6	131.0	123.1	125.1
Primary balance	1.7	1.8	1.5	3.0	3.0	3.0	1.7	2.8	2.5
Structural primary balance (before CoA)	1.7	1.6	1.1	3.0	3.1	3.2	1.5	2.8	2.5
Real GDP growth	1.5	1.3	1.0	0.4	0.3	0.6	1.2	0.2	0.5
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	132.1	130.8	130.0	118.3	113.0	107.8	131.0	118.4	121.6
Primary balance	1.7	1.8	2.5	3.7	4.0	4.2	2.0	3.7	3.3
Structural primary balance (before CoA)	1.7	1.6	2.1	3.7	4.0	4.2	1.8	3.7	3.2
Real GDP growth	1.5	1.3	0.2	0.5	0.2	0.6	1.0	0.2	0.4
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	132.5	131.0	128.2	115.2	111.7	107.9	130.6	116.0	119.7
Primary balance	1.6	2.4	3.5	3.5	3.4	3.3	2.5	3.5	3.2
Structural primary balance (before CoA)	1.9	2.5	3.4	3.5	3.5	3.5	2.6	3.5	3.3
Real GDP growth	1.1	1.0	1.0	0.5	0.4	1.0	1.0	0.6	0.7
Potential GDP growth	0.1	0.3	0.4	0.5	0.4	1.0	0.3	0.6	0.5
Inflation rate	1.2	1.7	1.9	2.0	2.0	2.0	1.6	2.0	1.9
Implicit interest rate (nominal)	3.0	2.9	2.9	3.6	4.0	4.2	2.9	3.6	3.4
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	132.1	130.8	130.0	126.1	125.0	125.1	131.0	126.7	127.8
Primary balance	1.7	1.8	1.5	1.8	1.8	1.7	1.7	1.8	1.7
Structural primary balance (before CoA)	1.7	1.6	1.1	1.8	1.8	1.8	1.5	1.7	1.7
Real GDP growth	1.5	1.3	1.0	0.5	0.4	0.6	1.2	0.3	0.6
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	132.1	130.8	130.0	127.0	127.3	128.5	131.0	127.7	128.5
Primary balance	1.7	1.8	1.5	1.8	1.8	1.7	1.7	1.8	1.7
Structural primary balance (before CoA)	1.7	1.6	1.1	1.8	1.8	1.8	1.5	1.7	1.7
Real GDP growth	1.5	1.3	1.0	0.2	0.2	0.2	1.2	0.2	0.5
Implicit interest rate (nominal)	3.0	2.8	2.8	3.5	3.8	4.0	2.8	3.5	3.3
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	132.1	131.1	130.8	132.3	134.9	138.9	131.4	133.5	133.0
Implicit interest rate (nominal)	3.0	3.1	3.1	3.9	4.4	4.9	3.1	3.9	3.7
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	132.1	130.4	129.2	123.6	122.1	121.6	130.6	124.2	125.8
Implicit interest rate (nominal)	3.0	2.6	2.4	2.5	2.8	3.2	2.6	2.6	2.6
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	132.1	131.5	131.6	134.9	137.9	142.4	131.7	136.1	135.0
Implicit interest rate (nominal)	3.0	3.4	3.5	4.0	4.5	5.0	3.3	4.1	3.9
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	132.1	130.1	128.7	123.3	122.4	122.6	130.3	124.2	125.7
Real GDP growth	1.5	1.8	1.5	1.0	0.9	1.1	1.6	0.9	1.1
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	132.1	131.4	131.3	132.6	134.5	137.6	131.6	133.5	133.1
Real GDP growth	1.5	0.8	0.5	0.0	-0.1	0.1	0.9	-0.1	0.2
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	132.1	130.4	129.3	123.9	123.0	123.2	130.6	124.8	126.2
Real GDP growth	1.5	1.6	1.3	1.0	0.9	1.1	1.4	0.9	1.0
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	132.1	131.2	130.7	131.9	133.8	137.0	131.3	132.9	132.5
Real GDP growth	1.5	1.0	0.7	0.0	-0.1	0.1	1.1	-0.1	0.2
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	132.1	130.8	130.4	129.6	130.7	132.9	131.1	130.5	130.7
Primary balance	1.7	1.5	1.2	0.9	0.8	0.7	1.5	0.9	1.1
Structural primary balance (before CoA)	1.7	1.3	0.9	0.9	0.9	0.9	1.3	0.9	1.0
Real GDP growth	1.5	1.6	0.9	0.5	0.4	0.6	1.3	0.4	0.6
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	132.1	130.8	130.1	127.9	128.4	130.0	131.0	128.8	129.4
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

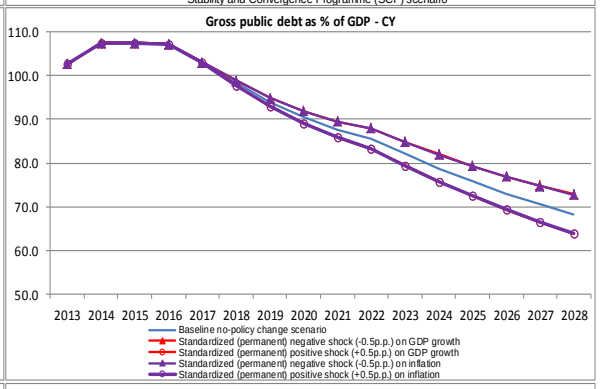
12. Cyprus

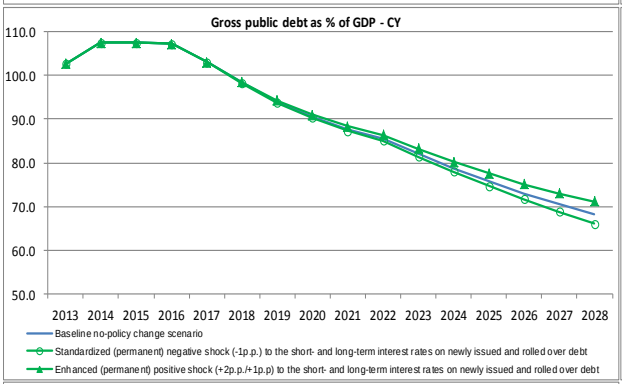
Public debt projections under baseline and alternative scenarios and sensitivity tests

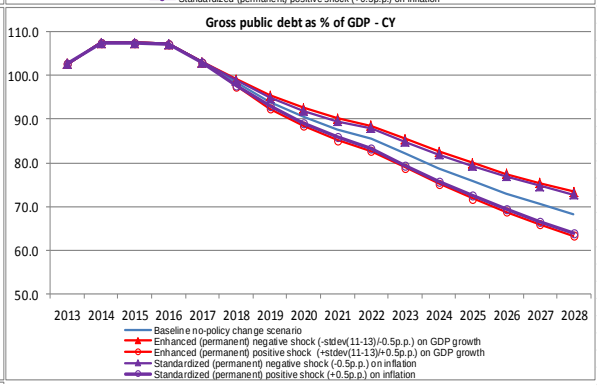
CY - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**107.5**	**107.1**	**103.0**	**98.3**	**93.9**	**90.5**	**87.6**	**85.5**	**82.1**	**78.8**	**75.8**	**73.0**	**70.5**	**68.2**
Changes in the ratio (-1+2+3)	*0.0*	*-0.4*	*-4.1*	*-4.8*	*-4.4*	*-3.4*	*-2.8*	*-2.1*	*-3.5*	*-3.2*	*-3.0*	*-2.7*	*-2.5*	*-2.3*
of which														
(1) Primary balance (1.1+1.2+1.3)	**1.7**	**3.0**	**3.5**	**3.6**	**3.9**	**3.5**	**3.0**	**2.4**	**2.5**	**2.3**	**2.2**	**2.1**	**2.1**	**2.0**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***4.4***	***3.6***	***2.8***	***2.2***	***2.0***	***2.2***	***2.4***	***2.4***	***2.5***	***2.3***	***2.2***	***2.1***	***2.1***	***2.0***
(1.1.1) Structural Primary Balance (bef. CoA)	*4.4*	*3.6*	*2.8*	*2.2*	*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						*-0.2*	*-0.4*	*-0.5*	*-0.6*	*-0.4*	*-0.3*	*-0.2*	*-0.1*	*-0.1*
(1.1.3) Others (taxes and property incomes)						*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*-0.1*	*-0.1*	*-0.1*
(1.2) Cyclical component	***-1.9***	***-0.6***	***0.7***	***1.4***	***1.9***	***1.3***	***0.6***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***-0.8***	***-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)	**2.0**	**0.3**	**-2.5**	**-1.7**	**-2.0**	**0.1**	**0.2**	**0.3**	**-0.9**	**-0.9**	**-0.8**	**-0.6**	**-0.5**	**-0.3**
(2.1) Interest expenditure	*2.9*	*2.6*	*2.4*	*2.2*	*2.1*	*2.1*	*2.1*	*2.1*	*2.1*	*2.1*	*2.2*	*2.3*	*2.3*	*2.4*
(2.2) Growth effect	*-2.1*	*-3.2*	*-3.6*	*-2.8*	*-2.5*	*-0.4*	*-0.2*	*0.0*	*-1.4*	*-1.4*	*-1.4*	*-1.4*	*-1.4*	*-1.3*
(2.3) Inflation effect	*1.3*	*0.9*	*-1.3*	*-1.1*	*-1.6*	*-1.6*	*-1.7*	*-1.7*	*-1.7*	*-1.6*	*-1.5*	*-1.5*	*-1.4*	*-1.4*
(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	**-0.3**	**2.4**	**1.9**	**0.6**	**1.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*-0.3*	*2.4*	*1.9*	*0.6*	*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*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Per memo														
Structural balance	1.6	1.1	0.4	0.0	-0.1	0.1	0.3	0.4	0.4	0.2	0.0	-0.1	-0.3	-0.4

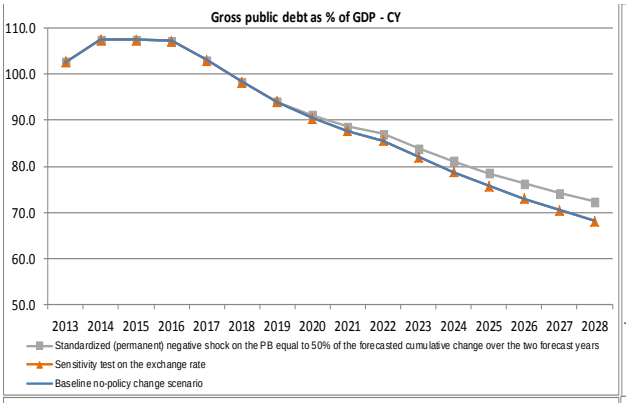


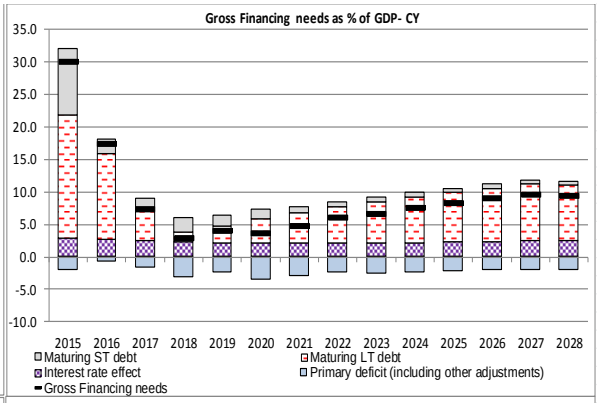


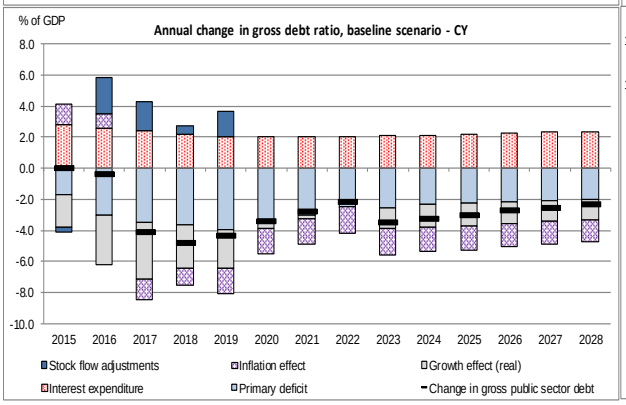


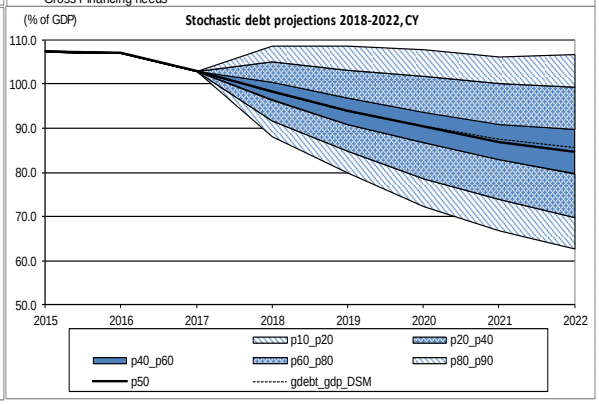












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	20.9	21.1	20.6	20.4	20.2	20.2	19.9	19.7	19.6	19.9
Revenues from pensions taxation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Property incomes	0.6	1.6	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.71**	**0.44**	**0.46**
Fiscal sub-index	0.56	0.19	0.36
Financial competitiveness sub-index	0.77	0.57	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**0.0**	**2.5**	**0.2**	**1.1**	**2.9**
of which *Initial Budgetary position*	*-2.4*	*-0.6*	*-2.4*	*-1.7*	*-0.2*
*Cost of delaying adjustment***	*0.0*	*0.6*	*0.0*	*0.2*	*0.5*
*Debt requirement****	*2.7*	*2.8*	*2.7*	*2.6*	*3.1*
Ageing costs	*-0.2*	*-0.2*	*-0.1*	*0.0*	*-0.4*
Required structural primary balance related to S1	**2.0**	**3.0**	**2.1**	**2.9**	**3.6**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**-1.8**	**-0.3**	**-0.3**	**-1.4**	**-0.7**
of which Initial Budgetary position	-1.2	0.2	-1.2	-1.1	0.1
Long term component	-0.5	-0.5	1.0	-0.3	-0.7
of which Pensions	*0.3*	*0.3*	*0.3*	*0.4*	*0.2*
Health care	*0.2*	*0.2*	*0.5*	*0.2*	*0.2*
Long-term care	*0.2*	*0.2*	*1.4*	*0.2*	*0.2*
Others	*-1.2*	*-1.2*	*-1.2*	*-1.0*	*-1.3*
Required structural primary balance related to S2	**0.2**	**0.2**	**1.7**	**0.4**	**0.1**

Risks related to the structure of public debt financing

Public debt structure - CY (2016)	Share of short-term public debt (p.p.): 1.6	Share of public debt in foreign currency (%): 5.2	**Share of public debt by non-residents (%): 79.4**

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		CY	EU
State guarantees (% GDP) (2015)		15.4	8.5
of which One-off guarantees		*15.4*	*8.1*
Standardised guarantees		*0.0*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	0.00	0.92
	Securities issued under liquidity schemes	0.00	0.00
	Special purpose entity	0.00	0.21
	Total	0.00	1.13

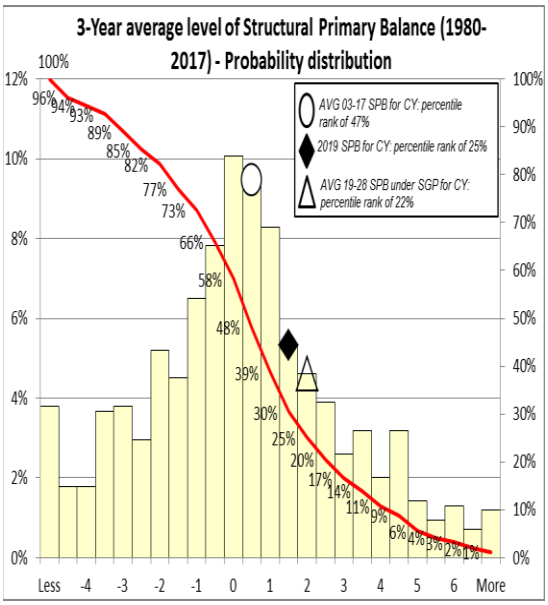
Government's contingent liability risks from banking sector - CY (2016)	Private sector credit flow (% GDP): 10.2	Change in nominal house price index: 0.3	Bank loans-to-deposits ratio (p.p.): 83.9	**Share of non-performing loans (%): 44.8**	Change in share of non-performing loans (p.p): -4.2	NPL coverage ratio 39.7	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8% 0.11%	**bank recap. at 10.5% 0.57%**

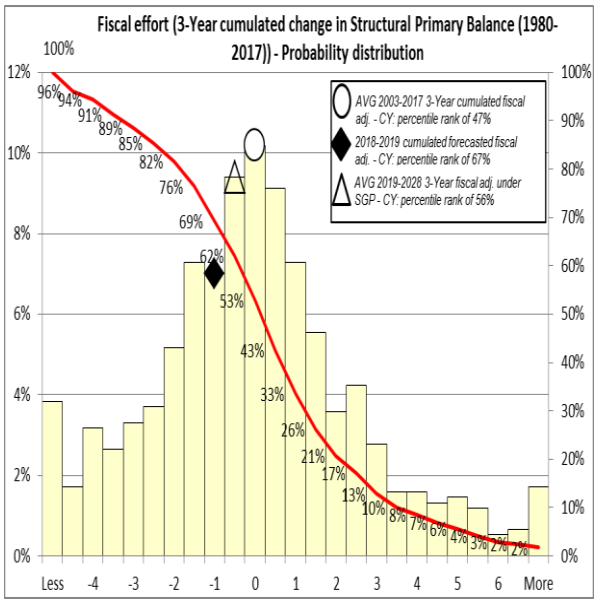
Financial market information

Sovereign Ratings as of Nov 2017, CY	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	Ba3	NP	(P)Ba3	NP
S&P	BB+	B	BB+	B
Fitch	BB		BB	B

Financial market information as of October 2017, CY		
Sovereign yield spreads(bp)*	10-year	147.0
CDS (bp)	5-year	1054.8

Realism of baseline assumptions





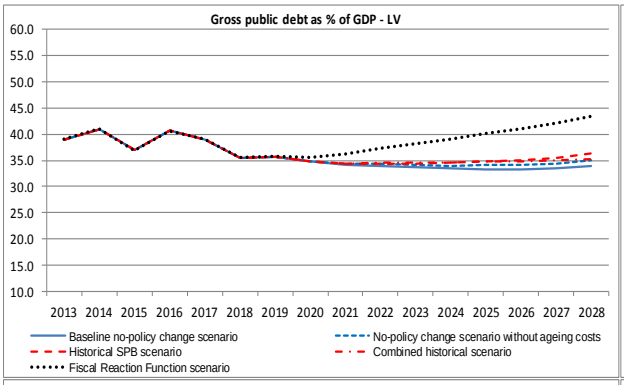
Underlying macro-fiscal assumptions

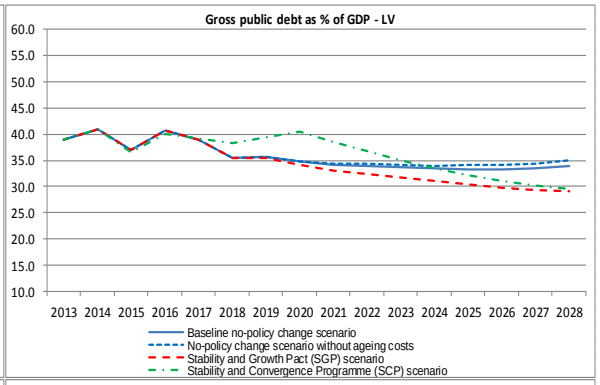
Macro-fiscal assumptions, Cyprus	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.0	98.3	93.9	78.8	73.0	68.2	98.4	79.1	83.9
Primary balance	3.5	3.6	3.9	2.3	2.1	2.0	3.7	2.5	2.8
Structural primary balance (before CoA)	2.8	2.2	2.0	2.0	2.0	2.0	2.3	2.0	2.1
Real GDP growth	3.5	2.9	2.7	1.8	1.9	1.9	3.0	1.3	1.7
Potential GDP growth	1.1	1.4	1.7	1.8	1.9	1.9	1.4	1.7	1.7
Inflation rate	1.2	1.1	1.6	2.0	2.0	2.0	1.3	2.0	1.8
Implicit interest rate (nominal)	2.4	2.2	2.2	2.7	3.1	3.5	2.3	2.8	2.7
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.0	98.3	93.9	80.2	74.3	68.8	98.4	80.0	84.6
Primary balance	3.5	3.6	4.0	2.2	2.3	2.4	3.7	2.4	2.8
Structural primary balance (before CoA)	2.8	2.2	2.1	2.2	2.3	2.4	2.4	2.2	2.3
Real GDP growth	3.5	2.9	2.6	1.8	1.9	1.9	3.0	1.3	1.7
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	104.0	99.7	94.6	80.1	76.2	73.3	99.4	80.7	85.3
Primary balance	2.7	2.9	3.0	1.9	1.7	1.6	2.9	2.0	2.2
Structural primary balance (before CoA)	2.5	2.2	2.0	1.8	1.8	1.8	2.2	1.8	1.9
Real GDP growth	2.9	2.9	2.7	1.9	2.0	1.8	2.8	1.8	2.0
Potential GDP growth	1.0	1.6	2.0	1.9	2.0	1.8	1.5	1.8	1.7
Inflation rate	1.3	1.0	1.5	2.0	2.0	2.0	1.3	2.0	1.8
Implicit interest rate (nominal)	2.4	2.5	2.7	3.5	3.9	4.2	2.5	3.5	3.3
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.0	98.3	93.9	83.1	80.4	78.6	98.4	83.7	87.4
Primary balance	3.5	3.6	3.9	0.8	0.6	0.5	3.7	1.2	1.8
Structural primary balance (before CoA)	2.8	2.2	2.0	0.5	0.5	0.5	2.3	0.7	1.1
Real GDP growth	3.5	2.9	2.7	1.8	1.9	1.9	3.0	1.4	1.8
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.0	98.3	93.9	78.7	76.6	75.3	98.4	80.0	84.6
Primary balance	3.5	3.6	3.9	0.8	0.6	0.5	3.7	1.2	1.8
Structural primary balance (before CoA)	2.8	2.2	2.0	0.5	0.5	0.5	2.3	0.7	1.1
Real GDP growth	3.5	2.9	2.7	1.5	1.5	1.5	3.0	1.8	2.1
Implicit interest rate (nominal)	2.4	2.2	2.2	2.8	3.1	3.5	2.3	2.8	2.7
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.0	98.3	94.0	79.7	74.5	70.4	98.5	80.2	84.7
Implicit interest rate (nominal)	2.4	2.3	2.3	3.0	3.5	4.1	2.3	3.1	2.9
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.0	98.2	93.7	78.0	71.6	66.1	98.3	78.1	83.2
Implicit interest rate (nominal)	2.4	2.2	2.1	2.4	2.7	3.0	2.2	2.5	2.4
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.0	98.4	94.2	80.3	75.2	71.2	98.5	80.7	85.1
Implicit interest rate (nominal)	2.4	2.4	2.4	3.1	3.6	4.2	2.4	3.2	3.0
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.0	97.8	92.9	75.8	69.3	63.9	97.9	76.2	81.6
Real GDP growth	3.5	3.4	3.2	2.3	2.4	2.4	3.4	1.8	2.2
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.0	98.8	94.8	82.0	76.9	72.8	98.9	82.2	86.4
Real GDP growth	3.5	2.4	2.2	1.3	1.4	1.4	2.7	0.8	1.3
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.0	97.5	92.4	75.3	68.8	63.4	97.6	75.6	81.1
Real GDP growth	3.5	3.7	3.5	2.3	2.4	2.4	3.6	1.8	2.3
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.0	99.0	95.4	82.6	77.5	73.4	99.2	82.8	86.9
Real GDP growth	3.5	2.1	1.9	1.3	1.4	1.4	2.5	0.8	1.2
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.0	98.3	94.0	81.1	76.2	72.3	98.4	81.4	85.7
Primary balance	3.5	3.6	3.5	1.9	1.7	1.6	3.5	2.0	2.4
Structural primary balance (before CoA)	2.8	2.2	1.6	1.6	1.6	1.6	2.2	1.6	1.7
Real GDP growth	3.5	2.9	3.0	1.8	1.9	1.9	3.1	1.3	1.8
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	103.0	98.3	93.9	78.8	73.0	68.2	98.4	79.1	83.9
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

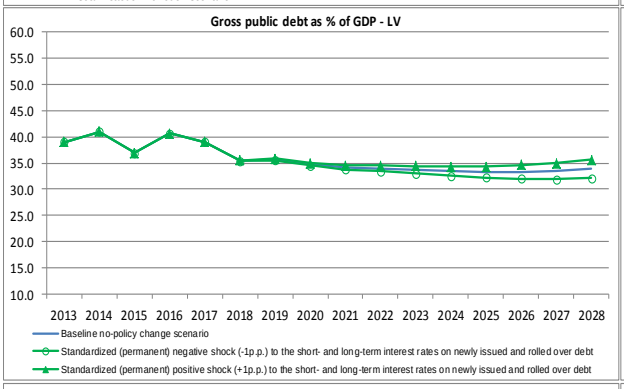
13. Latvia

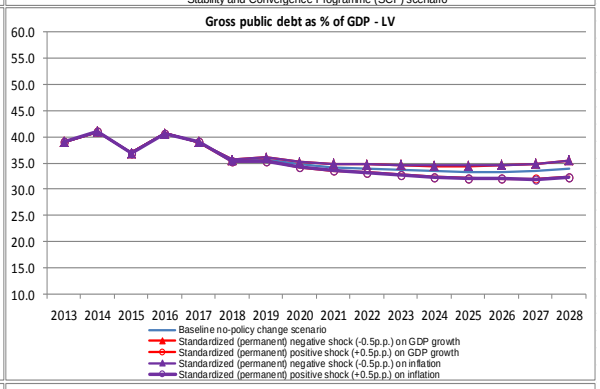
Public debt projections under baseline and alternative scenarios and sensitivity tests

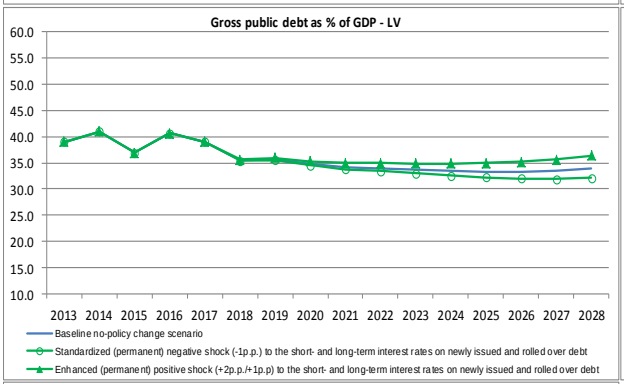
LV - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**36.9**	**40.6**	**39.0**	**35.5**	**35.7**	**34.7**	**34.2**	**34.0**	**33.7**	**33.4**	**33.2**	**33.3**	**33.4**	**33.8**
Changes in the ratio (-1+2+3)	*-4.0*	*3.7*	*-1.6*	*-3.5*	*0.2*	*-1.0*	*-0.6*	*-0.2*	*-0.3*	*-0.3*	*-0.1*	*0.0*	*0.1*	*0.4*
of which														
(1) Primary balance (1.1+1.2+1.3)	**0.1**	**1.1**	**0.0**	**-0.2**	**-0.3**	**-0.4**	**-0.6**	**-0.8**	**-0.7**	**-0.7**	**-0.7**	**-0.7**	**-0.8**	**-0.8**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***-0.3***	***0.4***	***-0.8***	***-1.0***	***-0.9***	***-0.7***	***-0.8***	***-0.8***	***-0.7***	***-0.7***	***-0.7***	***-0.7***	***-0.8***	***-0.8***
(1.1.1) Structural Primary Balance (bef. CoA)	*-0.3*	*0.4*	*-0.8*	*-1.0*	*-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						*-0.1*	*-0.1*	*-0.1*	*-0.1*	*-0.2*	*-0.2*	*-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*
(1.2) Cyclical component	***0.4***	***0.5***	***0.9***	***0.8***	***0.5***	***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***	***0.2***	***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)	**0.3**	**0.2**	**-1.5**	**-1.7**	**-1.4**	**-1.3**	**-1.1**	**-1.0**	**-1.0**	**-0.9**	**-0.8**	**-0.7**	**-0.7**	**-0.3**
(2.1) Interest expenditure	*1.3*	*1.0*	*0.9*	*0.8*	*0.7*	*0.7*	*0.7*	*0.8*	*0.8*	*0.8*	*0.9*	*1.0*	*1.0*	*1.1*
(2.2) Growth effect	*-1.1*	*-0.7*	*-1.6*	*-1.3*	*-1.1*	*-1.1*	*-1.1*	*-1.1*	*-1.2*	*-1.1*	*-1.1*	*-1.0*	*-1.1*	*-0.8*
(2.3) Inflation effect	*0.0*	*-0.1*	*-0.9*	*-1.3*	*-1.1*	*-1.0*	*-0.8*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.7*
(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	**-4.2**	**4.6**	**0.0**	**-2.0**	**1.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*-5.6*	*4.6*	*0.1*	*-1.7*	*1.3*	*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	*1.4*	*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*
Per memo														
Structural balance	-0.2	-0.6	-1.8	-1.8	-1.6	-1.5	-1.5	-1.6	-1.5	-1.5	-1.6	-1.7	-1.8	-1.9

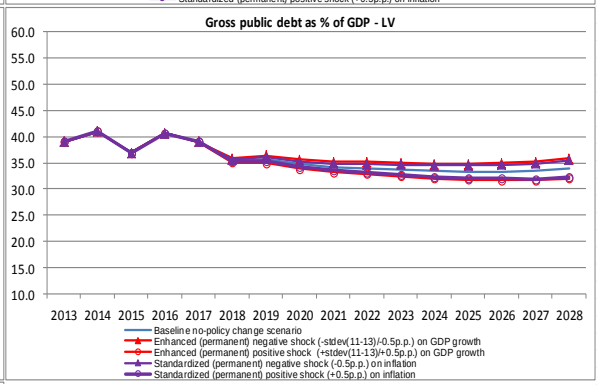


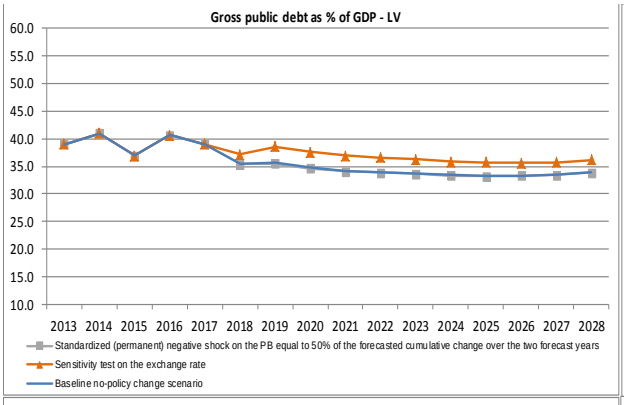


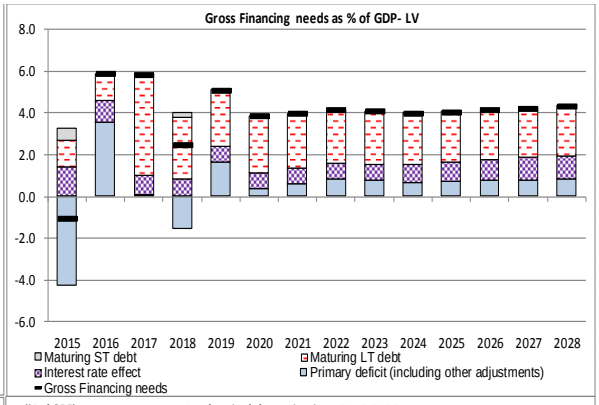


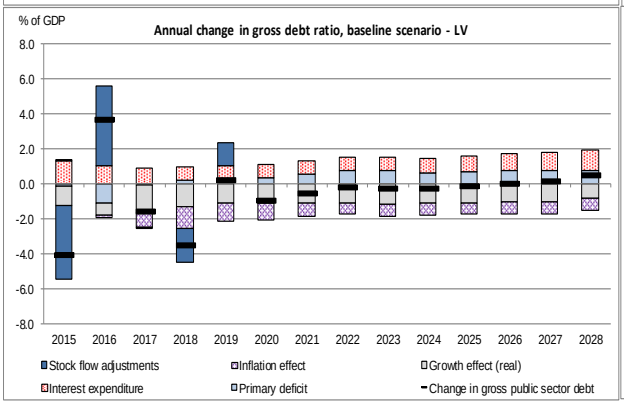


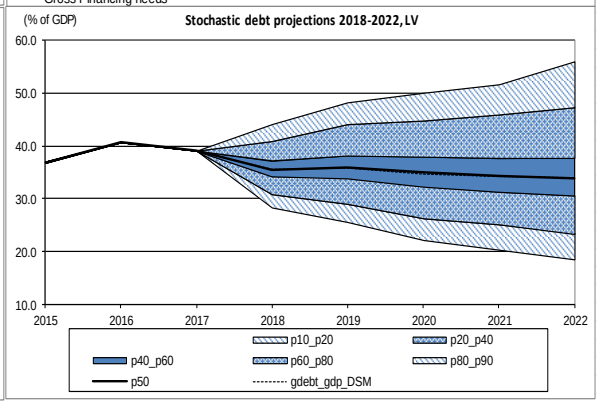












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	16.2	15.5	15.1	14.9	14.9	14.9	14.8	14.6	14.6	14.7
Revenues from pensions taxation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Property incomes	1.0	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.65**	**0.24**	**0.46**
Fiscal sub-index	0.45	0.08	0.36
Financial competitiveness sub-index	0.76	0.33	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**-2.0**	**-2.5**	**-1.5**	**-3.5**	**-2.1**
of which *Initial Budgetary position*	*0.3*	*0.9*	*0.3*	*-1.1*	*0.4*
*Cost of delaying adjustment***	*-0.3*	*-0.5*	*-0.2*	*-0.6*	*-0.3*
*Debt requirement****	*-1.9*	*-2.8*	*-1.9*	*-1.8*	*-1.9*
Ageing costs	*-0.1*	*-0.1*	*0.3*	*0.0*	*-0.3*
Required structural primary balance related to S1	**-2.9**	**-3.7**	**-2.3**	**-2.9**	**-2.7**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**1.1**	**1.5**	**3.5**	**-0.2**	**0.8**
of which Initial Budgetary position	1.3	1.7	1.3	-0.1	1.2
Long term component	-0.2	-0.2	2.2	-0.1	-0.4
of which Pensions	*-1.2*	*-1.3*	*-1.2*	*-1.0*	*-1.5*
Health care	*0.4*	*0.4*	*1.0*	*0.4*	*0.4*
Long-term care	*0.1*	*0.1*	*1.9*	*0.1*	*0.1*
Others	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*
Required structural primary balance related to S2	**0.2**	**0.3**	**2.6**	**0.4**	**0.1**

Risks related to the structure of public debt financing

Public debt structure - LV (2016)	Share of short-term public debt (p.p.): 3.4	Share of public debt in foreign currency (%): 15.9	**Share of public debt by non-residents (%): 72.4**

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		LV	EU
State guarantees (% GDP) (2015)		1.6	8.5
of which One-off guarantees		*1.1*	*8.1*
Standardised guarantees		*0.5*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	0.00	0.92
	Securities issued under liquidity schemes	0.00	0.00
	Special purpose entity	0.00	0.21
	Total	0.00	1.13

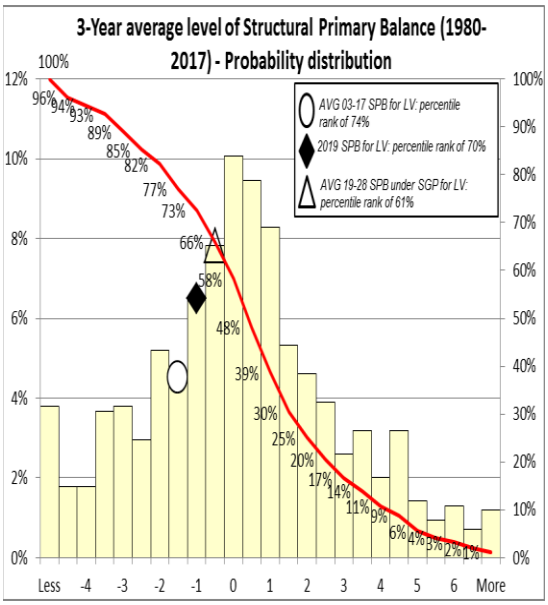
Government's contingent liability risks from banking sector - LV (2016)	Private sector credit flow (% GDP): 0.3	Change in nominal house price index: 8.5	Bank loans-to-deposits ratio (p.p.): 74.9	**Share of non-performing loans (%): 3.2**	Change in share of non-performing loans (p.p): -0.8	**NPL coverage ratio 28.6**	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8% 0.00%	bank recap. at 10.5% 0.00%

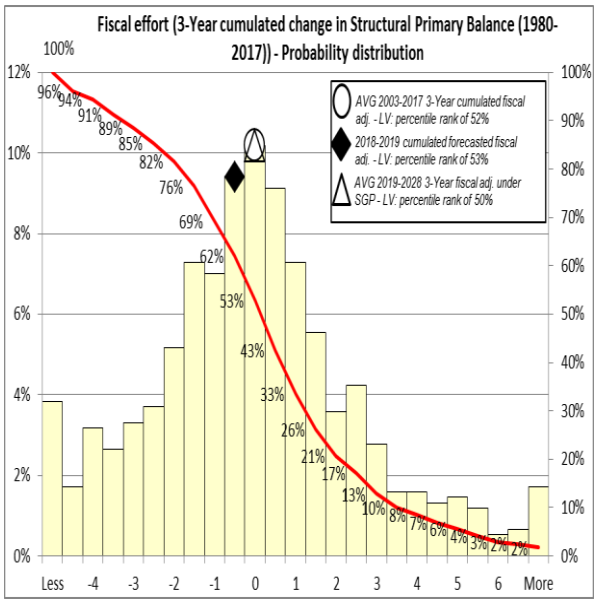
Financial market information

Sovereign Ratings as of Nov 2017, LV	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	A3		A3	
S&P	A-	A-2	A-	A-2
Fitch	A-		A-	F1

Financial market information as of October 2017, LV		
Sovereign yield spreads(bp)*	10-year	34.0
CDS (bp)	5-year	81.8

Realism of baseline assumptions





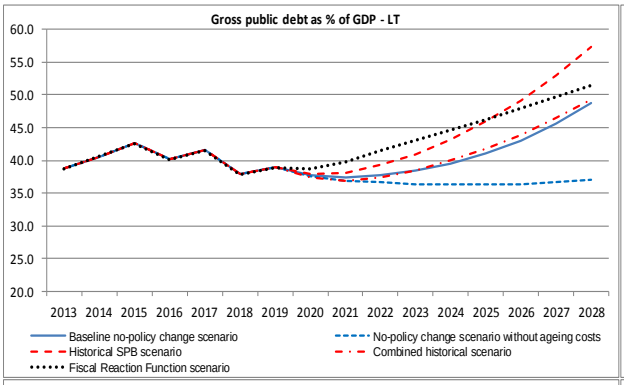
Underlying macro-fiscal assumptions

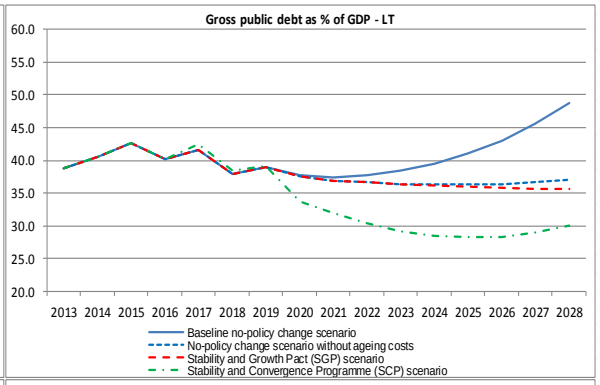
Macro-fiscal assumptions, Latvia	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	35.5	35.7	33.4	33.3	33.8	36.7	33.7	34.5
Primary balance	0.0	-0.2	-0.3	-0.7	-0.7	-0.8	-0.2	-0.7	-0.6
Structural primary balance (before CoA)	-0.8	-1.0	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9
Real GDP growth	4.2	3.5	3.2	3.5	3.3	2.6	3.6	3.3	3.4
Potential GDP growth	3.2	3.7	3.9	3.5	3.3	2.6	3.6	3.4	3.5
Inflation rate	2.2	3.4	3.2	2.0	2.0	2.0	2.9	2.1	2.3
Implicit interest rate (nominal)	2.4	2.2	2.2	2.6	3.1	3.5	2.3	2.7	2.6
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	35.5	35.7	39.1	41.1	43.4	36.7	39.2	38.6
Primary balance	0.0	-0.2	-0.3	-2.0	-1.8	-1.6	-0.2	-1.8	-1.4
Structural primary balance (before CoA)	-0.8	-1.0	-0.9	-2.2	-1.9	-1.7	-0.9	-2.0	-1.7
Real GDP growth	4.2	3.5	3.2	3.5	3.2	2.5	3.6	3.4	3.4
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	35.5	35.4	31.0	29.8	29.0	36.6	31.2	32.6
Primary balance	0.0	-0.2	0.0	-0.2	-0.1	0.0	-0.1	-0.1	-0.1
Structural primary balance (before CoA)	-0.8	-1.0	-0.6	-0.2	-0.1	0.0	-0.8	-0.2	-0.3
Real GDP growth	4.2	3.5	3.0	3.5	3.3	2.5	3.5	3.2	3.3
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.2	38.2	39.4	33.6	31.0	29.5	38.9	34.1	35.3
Primary balance	0.2	-0.7	-0.2	0.7	0.6	0.5	-0.2	0.5	0.4
Structural primary balance (before CoA)	-0.8	-1.3	-0.4	0.6	0.6	0.6	-0.8	0.6	0.2
Real GDP growth	3.2	4.3	4.4	3.5	3.2	1.9	4.0	3.4	3.5
Potential GDP growth	2.8	3.8	4.0	3.5	3.2	1.9	3.5	3.4	3.5
Inflation rate	1.9	1.8	2.7	2.0	2.0	2.0	2.1	2.1	2.1
Implicit interest rate (nominal)	2.6	2.5	2.8	2.9	3.3	3.6	2.6	2.9	2.9
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	35.5	35.7	34.5	35.1	36.4	36.7	34.9	35.4
Primary balance	0.0	-0.2	-0.3	-1.0	-1.1	-1.2	-0.2	-1.0	-0.8
Structural primary balance (before CoA)	-0.8	-1.0	-0.9	-1.2	-1.2	-1.2	-0.9	-1.2	-1.1
Real GDP growth	4.2	3.5	3.2	3.5	3.3	2.6	3.6	3.3	3.4
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	35.5	35.7	34.6	34.9	35.2	36.7	34.8	35.2
Primary balance	0.0	-0.2	-0.3	-1.0	-1.1	-1.2	-0.2	-1.0	-0.8
Structural primary balance (before CoA)	-0.8	-1.0	-0.9	-1.2	-1.2	-1.2	-0.9	-1.2	-1.1
Real GDP growth	4.2	3.5	3.2	3.1	3.1	3.1	3.6	3.1	3.3
Implicit interest rate (nominal)	2.4	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	35.5	35.8	34.3	34.6	35.6	36.8	34.7	35.2
Implicit interest rate (nominal)	2.4	2.4	2.4	3.3	3.8	4.4	2.4	3.3	3.1
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	35.4	35.5	32.5	32.0	32.2	36.6	32.8	33.8
Implicit interest rate (nominal)	2.4	2.0	1.9	2.0	2.3	2.7	2.1	2.1	2.1
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	35.6	36.0	34.8	35.2	36.4	36.9	35.2	35.6
Implicit interest rate (nominal)	2.4	2.6	2.7	3.5	4.0	4.5	2.6	3.6	3.3
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	35.3	35.3	32.4	32.0	32.3	36.5	32.7	33.7
Real GDP growth	4.2	4.0	3.7	4.0	3.8	3.1	3.9	3.8	3.8
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	35.7	36.0	34.4	34.6	35.5	36.9	34.8	35.3
Real GDP growth	4.2	3.0	2.7	3.0	2.8	2.1	3.3	2.8	2.9
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	35.1	35.0	32.0	31.7	32.0	36.4	32.4	33.4
Real GDP growth	4.2	4.5	4.3	4.0	3.8	3.1	4.3	3.8	3.9
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	35.9	36.4	34.8	34.9	35.8	37.1	35.1	35.6
Real GDP growth	4.2	2.4	2.1	3.0	2.8	2.1	2.9	2.8	2.8
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	35.4	35.5	33.3	33.3	33.9	36.6	33.7	34.4
Primary balance	0.0	-0.1	-0.3	-0.7	-0.8	-0.8	-0.1	-0.7	-0.6
Structural primary balance (before CoA)	-0.8	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9
Real GDP growth	4.2	3.4	3.3	3.5	3.3	2.6	3.6	3.3	3.4
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	37.1	38.6	35.9	35.6	36.1	38.2	36.2	36.7
Exchange rate depreciation	0.0%	0.6%	0.6%	0.0%	0.0%	0.0%	0.4%	0.0%	0.1%

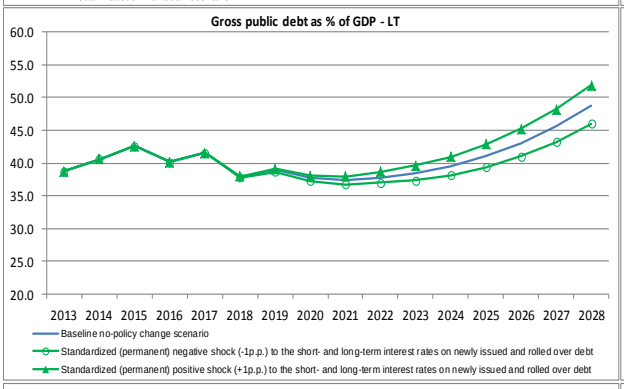
14. Lithuania

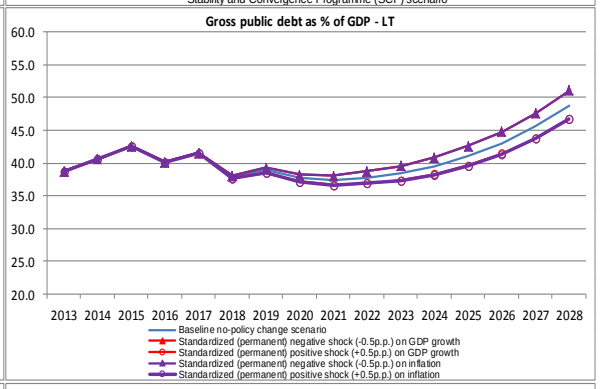
Public debt projections under baseline and alternative scenarios and sensitivity tests

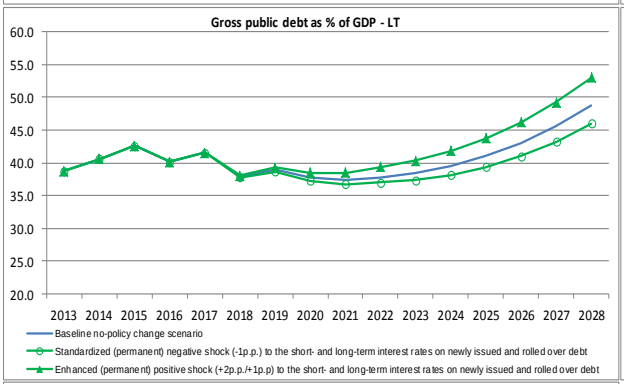
LT - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**42.6**	**40.1**	**41.5**	**37.9**	**38.9**	**37.7**	**37.3**	**37.8**	**38.4**	**39.5**	**41.0**	**43.0**	**45.6**	**48.8**
Changes in the ratio (-1+2+3)	*2.0*	*-2.5*	*1.4*	*-3.6*	*1.0*	*-1.2*	*-0.3*	*0.5*	*0.6*	*1.1*	*1.5*	*2.0*	*2.6*	*3.2*
of which														
(1) Primary balance (1.1+1.2+1.3)	**1.3**	**1.6**	**1.3**	**1.1**	**1.0**	**0.5**	**0.0**	**-0.6**	**-0.9**	**-1.2**	**-1.5**	**-1.8**	**-2.2**	**-2.5**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***0.9***	***1.1***	***0.2***	***0.0***	***0.0***	***-0.1***	***-0.3***	***-0.6***	***-0.9***	***-1.2***	***-1.5***	***-1.8***	***-2.2***	***-2.5***
(1.1.1) Structural Primary Balance (bef. CoA)	*0.9*	*1.1*	*0.2*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(1.1.2) Cost of ageing						*0.1*	*0.3*	*0.6*	*0.9*	*1.2*	*1.5*	*1.8*	*2.2*	*2.6*
(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*
(1.2) Cyclical component	***0.2***	***0.4***	***1.0***	***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	***0.1***	***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)	**0.7**	**0.0**	**-1.6**	**-1.8**	**-1.2**	**-0.7**	**-0.3**	**-0.1**	**-0.2**	**-0.1**	**0.1**	**0.2**	**0.4**	**0.7**
(2.1) Interest expenditure	*1.5*	*1.3*	*1.2*	*0.9*	*0.9*	*0.9*	*0.9*	*0.9*	*1.0*	*1.1*	*1.2*	*1.4*	*1.6*	*1.8*
(2.2) Growth effect	*-0.8*	*-1.0*	*-1.4*	*-1.1*	*-0.9*	*-0.6*	*-0.4*	*-0.3*	*-0.5*	*-0.4*	*-0.4*	*-0.4*	*-0.4*	*-0.2*
(2.3) Inflation effect	*-0.1*	*-0.4*	*-1.4*	*-1.6*	*-1.1*	*-1.0*	*-0.9*	*-0.7*	*-0.7*	*-0.8*	*-0.8*	*-0.8*	*-0.8*	*-0.9*
(2.4) Exchange rate effect linked to the interest rate	*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*
(3) Stock flow adjustments	**2.7**	**-0.8**	**4.3**	**-0.7**	**3.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*0.5*	*-0.9*	*4.5*	*-0.2*	*3.2*	*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	*2.1*	*0.0*	*-0.2*	*-0.4*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Per memo														
Structural balance	1.5	-0.2	-0.9	-0.9	-0.8	-1.0	-1.2	-1.5	-1.9	-2.3	-2.7	-3.2	-3.8	-4.3

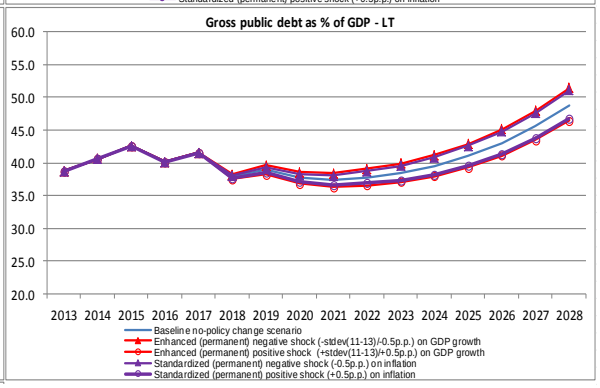


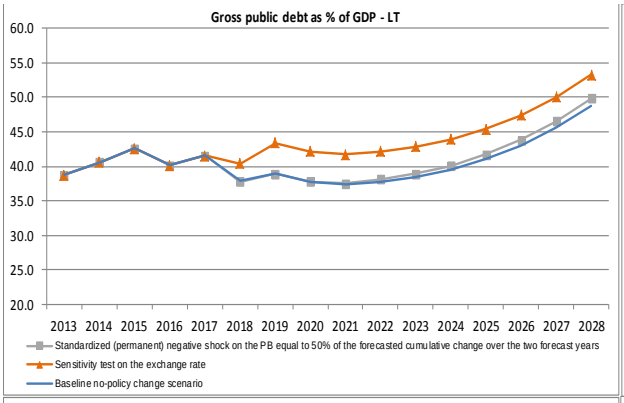


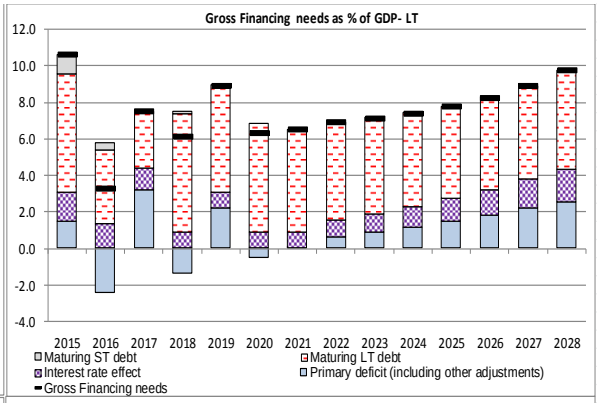


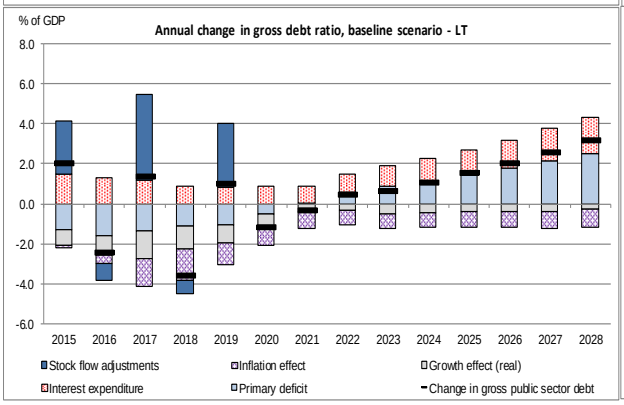


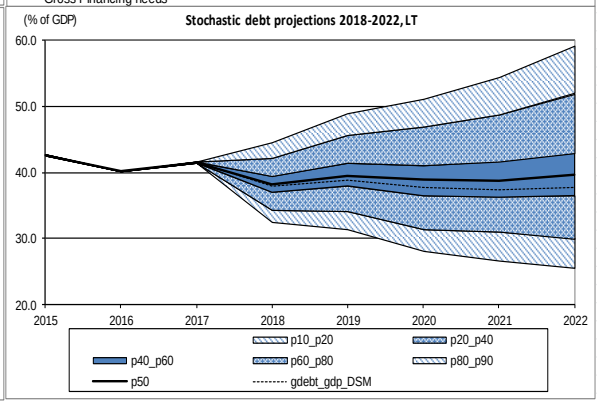












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	16.9	16.4	16.1	16.2	16.2	16.3	16.4	16.6	17.9	19.6
Revenues from pensions taxation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Property incomes	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.58**	**0.21**	**0.46**
Fiscal sub-index	0.58	0.00	0.36
Financial competitiveness sub-index	0.57	0.33	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**0.6**	**3.0**	**1.2**	**-2.5**	**1.1**
of which *Initial Budgetary position*	*0.1*	*1.7*	*0.1*	*-1.5*	*0.6*
*Cost of delaying adjustment***	*0.1*	*0.7*	*0.2*	*-0.5*	*0.2*
*Debt requirement****	*-1.5*	*-1.9*	*-1.5*	*-2.2*	*-1.3*
Ageing costs	*1.9*	*2.5*	*2.3*	*1.7*	*1.6*
Required structural primary balance related to S1	**0.6**	**1.8**	**1.2**	**-0.7**	**1.0**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**3.1**	**4.5**	**5.5**	**1.2**	**3.4**
of which Initial Budgetary position	0.4	1.6	0.4	-1.4	0.6
Long term component	2.7	2.8	5.1	2.6	2.8
of which Pensions	*1.1*	*1.2*	*1.2*	*1.1*	*1.2*
Health care	*0.0*	*0.0*	*0.5*	*0.0*	*0.1*
Long-term care	*0.7*	*0.7*	*2.6*	*0.7*	*0.7*
Others	*0.9*	*0.9*	*0.9*	*0.9*	*0.9*
Required structural primary balance related to S2	**3.2**	**3.4**	**5.5**	**3.0**	**3.3**

Risks related to the structure of public debt financing

Public debt structure - LT (2016)	Share of short-term public debt (p.p.): 1.0	Share of public debt in foreign currency (%): 27.4	**Share of public debt by non-residents (%): 69.3**

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		LT	EU
State guarantees (% GDP) (2015)		0.8	8.5
of which One-off guarantees		*0.2*	*8.1*
Standardised guarantees		*0.5*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	0.00	0.92
	Securities issued under liquidity schemes	0.00	0.00
	Special purpose entity	0.00	0.21
	Total	0.00	1.13

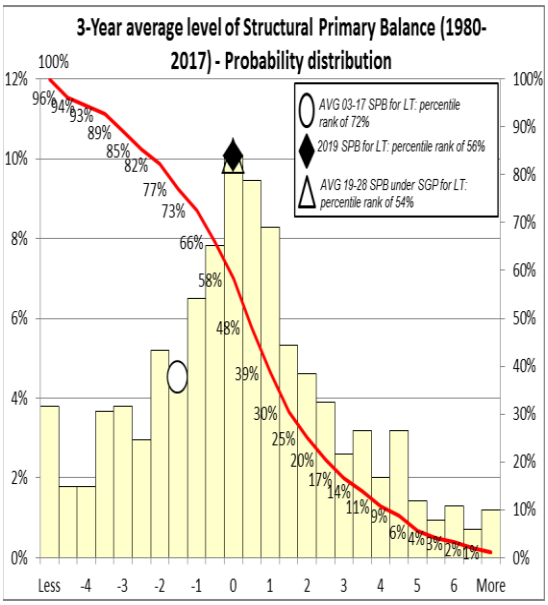
Government's contingent liability risks from banking sector - LT (2016)	Private sector credit flow (% GDP): 4.3	Change in nominal house price index: 5.4	Bank loans-to-deposits ratio (p.p.): 97.4	**Share of non-performing loans (%): 3.8**	Change in share of non-performing loans (p.p): -1.3	**NPL coverage ratio 30.4**	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8% 0.00%	bank recap. at 10.5% 0.00%

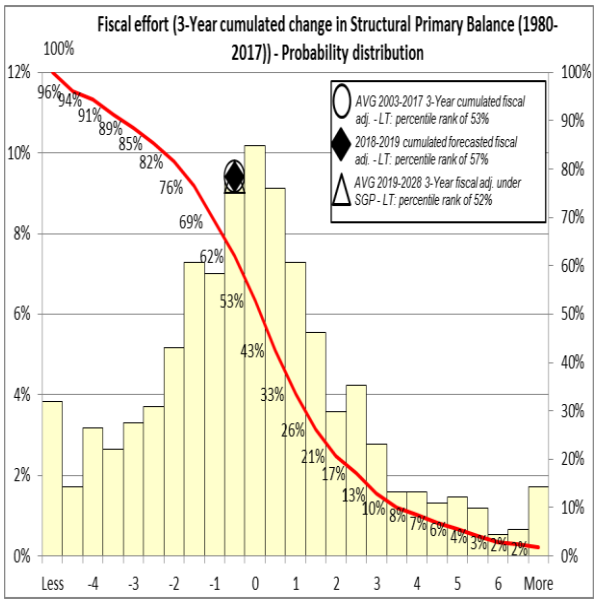
Financial market information

Sovereign Ratings as of Nov 2017, LT	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	A3		A3	P-2
S&P	A-	A-2	A-	A-2
Fitch	A-		A-	F1

Financial market information as of October 2017, LT		
Sovereign yield spreads(bp)*	10-year	-6.0
CDS (bp)	5-year	n.a.

Realism of baseline assumptions





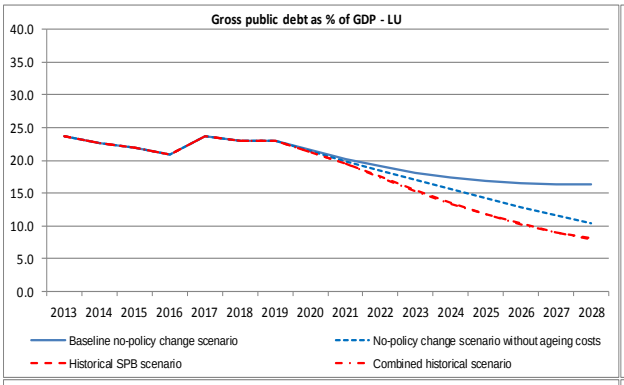
Underlying macro-fiscal assumptions

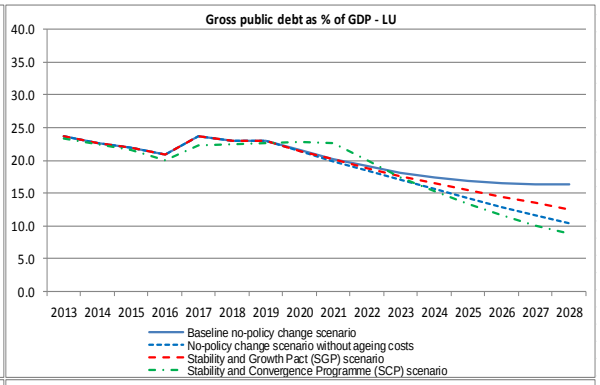
Macro-fiscal assumptions, Lithuania	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	41.5	37.9	38.9	39.5	43.0	48.8	39.4	41.0	40.6
Primary balance	1.3	1.1	1.0	-1.2	-1.8	-2.5	1.2	-1.1	-0.6
Structural primary balance (before CoA)	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Real GDP growth	3.8	2.9	2.6	1.2	1.0	0.6	3.1	1.1	1.6
Potential GDP growth	2.4	2.8	2.9	1.2	1.0	0.6	2.7	1.3	1.7
Inflation rate	3.5	3.9	3.0	2.0	2.0	2.0	3.5	2.1	2.5
Implicit interest rate (nominal)	3.2	2.2	2.4	3.0	3.5	4.0	2.6	3.1	3.0
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	41.5	37.9	38.9	44.6	47.9	51.5	39.4	44.7	43.4
Primary balance	1.3	1.1	1.0	-1.5	-1.3	-1.0	1.2	-1.3	-0.7
Structural primary balance (before CoA)	0.2	0.0	0.0	-0.4	0.6	1.6	0.1	-0.2	-0.1
Real GDP growth	3.8	2.9	2.6	0.9	0.6	0.2	3.1	0.9	1.5
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	41.5	37.9	38.9	36.1	35.7	35.6	39.4	36.3	37.1
Primary balance	1.3	1.1	1.0	0.2	0.3	0.5	1.1	0.3	0.5
Structural primary balance (before CoA)	0.2	0.0	0.0	0.2	0.3	0.5	0.1	0.2	0.2
Real GDP growth	3.8	2.9	2.6	1.1	0.9	0.5	3.1	1.0	1.5
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	42.4	38.4	39.1	28.5	28.4	30.1	40.0	30.0	32.5
Primary balance	1.0	1.2	1.3	0.8	0.1	-0.6	1.2	0.7	0.8
Structural primary balance (before CoA)	0.6	0.9	1.1	1.8	1.8	1.8	0.9	1.8	1.6
Real GDP growth	2.7	2.6	2.5	0.7	0.7	0.2	2.6	0.9	1.3
Potential GDP growth	2.3	2.5	2.4	0.7	0.7	0.2	2.4	1.0	1.3
Inflation rate	2.3	1.8	1.7	2.0	2.0	2.0	1.9	2.0	2.0
Implicit interest rate (nominal)	3.0	2.7	2.5	3.0	3.5	3.9	2.7	3.0	2.9
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	41.5	37.9	38.9	43.2	49.1	57.3	39.4	44.9	43.6
Primary balance	1.3	1.1	1.0	-2.3	-2.9	-3.7	1.2	-2.1	-1.3
Structural primary balance (before CoA)	0.2	0.0	0.0	-1.1	-1.1	-1.1	0.1	-0.9	-0.7
Real GDP growth	3.8	2.9	2.6	1.2	1.0	0.6	3.1	1.2	1.6
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	41.5	37.9	38.9	39.9	43.9	49.3	39.4	41.3	40.8
Primary balance	1.3	1.1	1.0	-2.3	-2.9	-3.7	1.2	-2.1	-1.3
Structural primary balance (before CoA)	0.2	0.0	0.0	-1.1	-1.1	-1.1	0.1	-0.9	-0.7
Real GDP growth	3.8	2.9	2.6	3.3	3.3	3.3	3.1	3.3	3.2
Implicit interest rate (nominal)	3.2	2.2	2.4	3.1	3.4	3.6	2.6	3.0	2.9
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	41.5	38.0	39.1	40.9	45.2	51.8	39.5	42.6	41.8
Implicit interest rate (nominal)	3.2	2.5	2.7	3.8	4.4	5.0	2.8	3.8	3.6
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	41.5	37.8	38.7	38.1	41.0	46.0	39.3	39.6	39.5
Implicit interest rate (nominal)	3.2	2.0	2.0	2.2	2.6	3.1	2.4	2.3	2.3
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	41.5	38.0	39.3	41.8	46.2	53.0	39.6	43.4	42.4
Implicit interest rate (nominal)	3.2	2.7	3.1	4.0	4.5	5.1	3.0	4.1	3.8
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	41.5	37.7	38.5	38.3	41.4	46.7	39.2	39.7	39.6
Real GDP growth	3.8	3.4	3.1	1.7	1.5	1.1	3.5	1.6	2.0
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	41.5	38.1	39.2	40.8	44.8	51.0	39.6	42.4	41.7
Real GDP growth	3.8	2.4	2.1	0.7	0.5	0.1	2.8	0.6	1.1
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	41.5	37.5	38.2	38.0	41.1	46.4	39.1	39.4	39.4
Real GDP growth	3.8	3.9	3.5	1.7	1.5	1.1	3.8	1.6	2.1
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	41.5	38.2	39.6	41.1	45.1	51.4	39.8	42.7	42.0
Real GDP growth	3.8	2.0	1.6	0.7	0.5	0.1	2.5	0.6	1.0
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	41.5	37.8	38.9	40.1	43.8	49.8	39.4	41.6	41.0
Primary balance	1.3	1.2	0.9	-1.3	-1.9	-2.6	1.1	-1.2	-0.6
Structural primary balance (before CoA)	0.2	0.1	-0.1	-0.1	-0.1	-0.1	0.1	-0.1	0.0
Real GDP growth	3.8	2.9	2.7	1.2	1.0	0.6	3.1	1.1	1.6
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	41.5	40.4	43.4	43.9	47.4	53.3	41.8	45.4	44.5
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

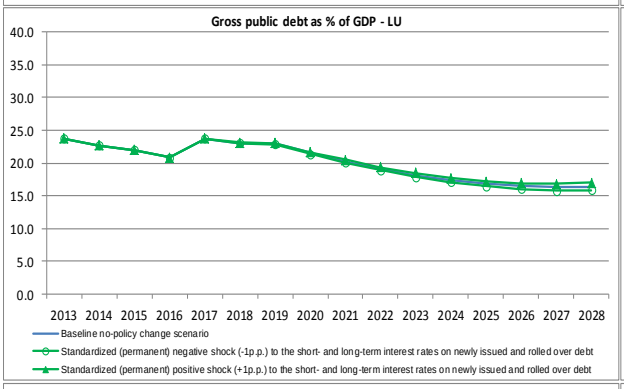
15. Luxembourg

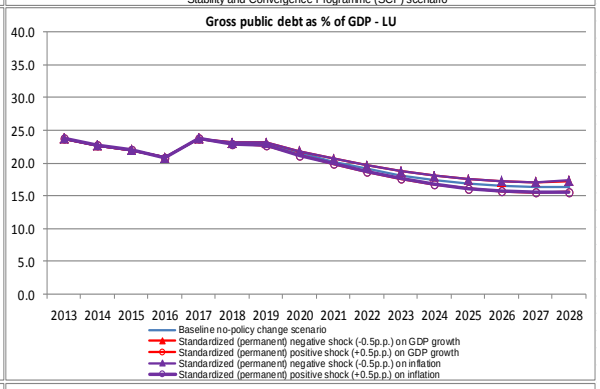
Public debt projections under baseline and alternative scenarios and sensitivity tests

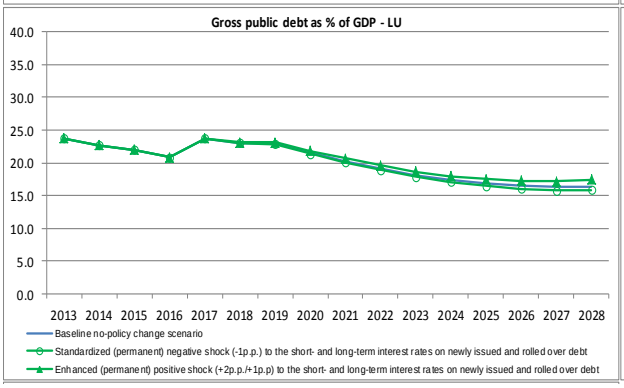
LU - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**22.0**	**20.8**	**23.7**	**23.0**	**22.9**	**21.5**	**20.3**	**19.2**	**18.2**	**17.4**	**16.8**	**16.4**	**16.3**	**16.4**
Changes in the ratio (-1+2+3)	*-0.7*	*-1.2*	*2.9*	*-0.6*	*-0.1*	*-1.4*	*-1.2*	*-1.1*	*-1.0*	*-0.8*	*-0.6*	*-0.4*	*-0.2*	*0.1*
of which														
(1) Primary balance (1.1+1.2+1.3)	**1.7**	**1.9**	**0.8**	**0.6**	**0.7**	**0.6**	**0.5**	**0.4**	**0.3**	**0.2**	**0.0**	**-0.1**	**-0.3**	**-0.5**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***2.1***	***2.3***	***0.9***	***0.6***	***0.6***	***0.5***	***0.4***	***0.4***	***0.3***	***0.2***	***0.0***	***-0.1***	***-0.3***	***-0.5***
(1.1.1) Structural Primary Balance (bef. CoA)	*2.1*	*2.3*	*0.9*	*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						*0.1*	*0.2*	*0.3*	*0.4*	*0.6*	*0.8*	*1.0*	*1.2*	*1.4*
(1.1.3) Others (taxes and property incomes)						*0.0*	*0.1*	*0.1*	*0.2*	*0.2*	*0.2*	*0.3*	*0.3*	*0.3*
(1.2) Cyclical component	***-0.5***	***-0.4***	***-0.2***	***0.0***	***0.1***	***0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.2***	***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**	**-0.1**	**-0.8**	**-1.0**	**-0.9**	**-0.8**	**-0.8**	**-0.7**	**-0.7**	**-0.6**	**-0.6**	**-0.5**	**-0.4**	**-0.4**
(2.1) Interest expenditure	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*	*0.2*	*0.2*	*0.2*	*0.3*	*0.3*	*0.3*	*0.4*
(2.2) Growth effect	*-0.6*	*-0.7*	*-0.7*	*-0.8*	*-0.7*	*-0.7*	*-0.6*	*-0.6*	*-0.6*	*-0.5*	*-0.5*	*-0.4*	*-0.4*	*-0.4*
(2.3) Inflation effect	*-0.3*	*0.3*	*-0.5*	*-0.5*	*-0.4*	*-0.4*	*-0.4*	*-0.4*	*-0.4*	*-0.4*	*-0.3*	*-0.3*	*-0.3*	*-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	**1.6**	**0.8**	**4.5**	**1.0**	**1.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*1.6*	*0.8*	*4.5*	*1.0*	*1.4*	*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*
Per memo														
Structural balance	1.7	2.0	0.6	0.3	0.3	0.2	0.2	0.1	0.1	-0.1	-0.2	-0.4	-0.6	-0.9

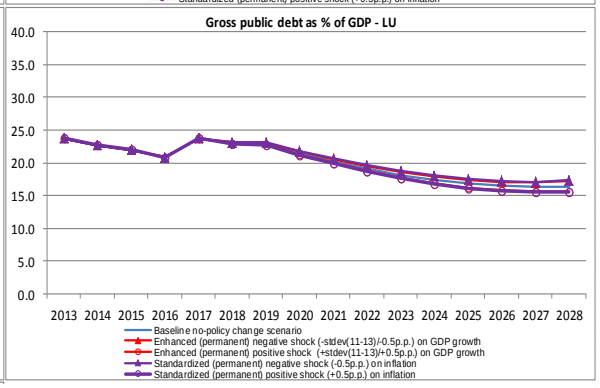


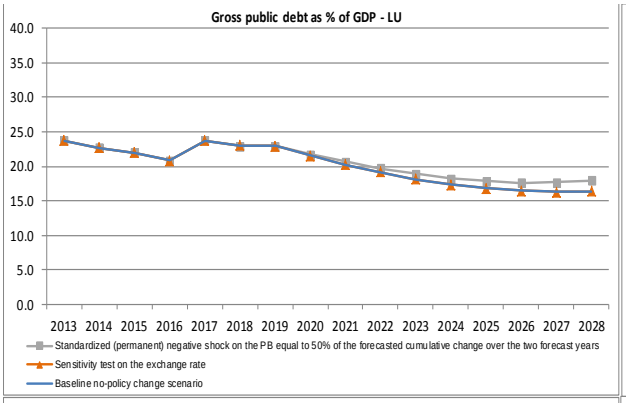


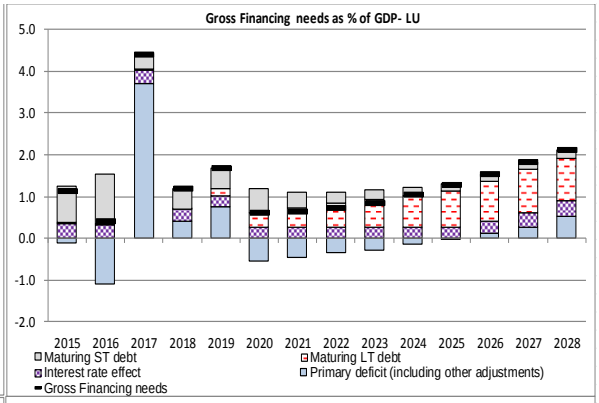


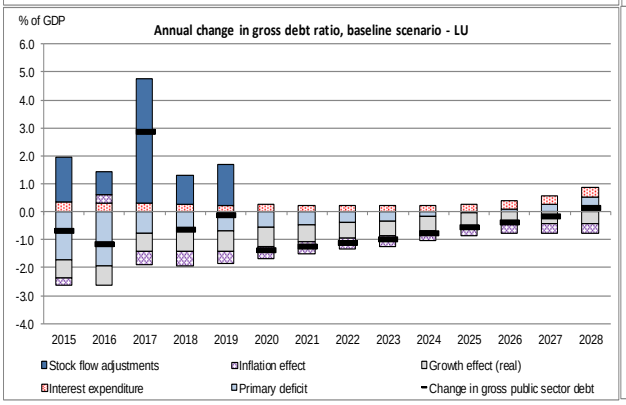


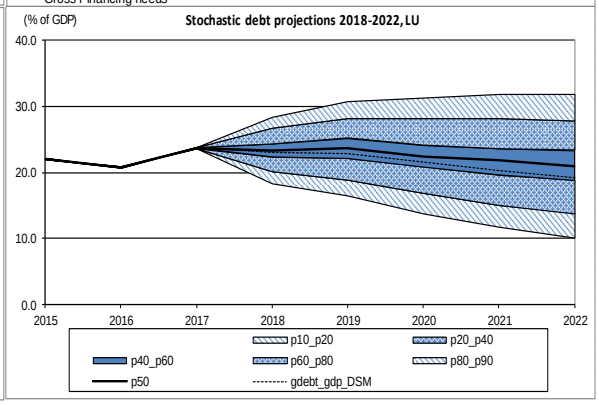












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	19.5	19.6	19.8	20.0	20.2	20.4	20.5	20.6	21.3	22.3
Revenues from pensions taxation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Property incomes	1.5	1.4	1.3	1.4	1.4	1.5	1.5	1.6	1.8	1.7

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.23**	**0.12**	**0.46**
Fiscal sub-index	0.26	0.00	0.36
Financial competitiveness sub-index	0.22	0.18	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**-3.8**	**-7.8**	**-3.6**	**-6.8**	**-3.7**
of which *Initial Budgetary position*	*-1.3*	*-2.4*	*-1.3*	*-2.5*	*-1.2*
*Cost of delaying adjustment***	*-0.5*	*-1.6*	*-0.5*	*-1.2*	*-0.5*
*Debt requirement****	*-3.1*	*-5.2*	*-3.1*	*-4.0*	*-3.0*
Ageing costs	*1.1*	*1.4*	*1.3*	*0.9*	*1.0*
Required structural primary balance related to S1	**-3.2**	**-6.0**	**-3.0**	**-5.0**	**-3.0**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**4.4**	**3.3**	**5.9**	**3.1**	**4.3**
of which Initial Budgetary position	-0.1	-1.3	-0.1	-1.2	-0.2
Long term component	4.5	4.6	5.9	4.3	4.5
of which Pensions	*2.6*	*2.7*	*2.6*	*2.4*	*2.8*
Health care	*0.4*	*0.4*	*0.7*	*0.4*	*0.4*
Long-term care	*1.2*	*1.3*	*2.5*	*1.2*	*1.2*
Others	*0.1*	*0.1*	*0.1*	*0.2*	*0.1*
Required structural primary balance related to S2	**5.0**	**5.1**	**6.4**	**4.9**	**5.1**

Risks related to the structure of public debt financing

Public debt structure - LU (2016)	Share of short-term public debt (p.p.):	Share of public debt in foreign currency (%):	Share of public debt by non-residents (%):
	6.9	0.0	35.7

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		LU	EU
State guarantees (% GDP) (2015)		5.2	8.5
of which One-off guarantees		*3.7*	*8.1*
Standardised guarantees		*1.6*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	4.04	0.92
	Securities issued under liquidity schemes	0.00	0.00
	Special purpose entity	0.00	0.21
	Total	4.04	1.13

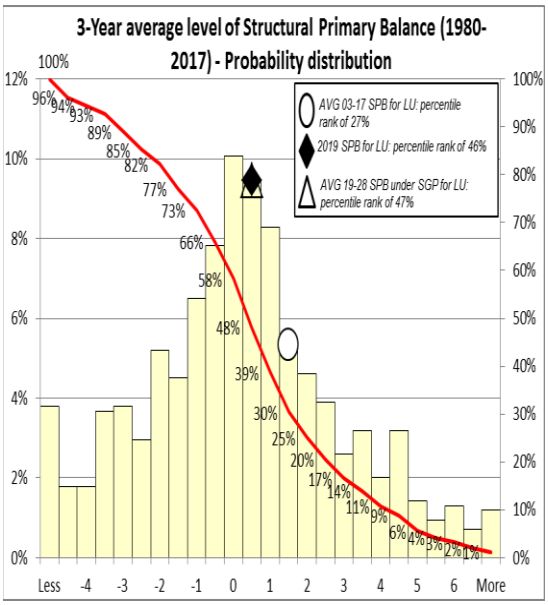
Government's contingent liability risks from banking sector - LU (2016)	Private sector credit flow (% GDP):	Change in nominal house price index:	Bank loans-to-deposits ratio (p.p.):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8%	bank recap. at 10.5%
	1.5	6.0	130.1	1.1	0.0	44.7	0.02%	0.07%

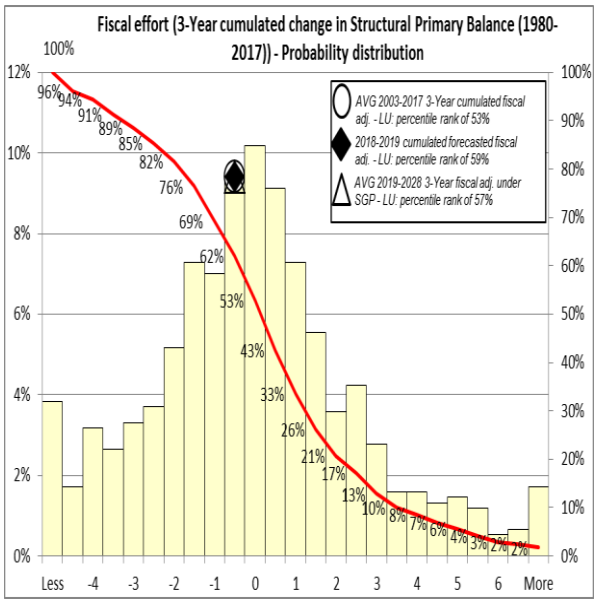
Financial market information

Sovereign Ratings as of Nov 2017, LU	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	Aaa		Aaa	
S&P	AAA	A-1+	AAA	A-1+
Fitch	AAA		AAA	F1+

Financial market information as of October 2017, LU		
Sovereign yield spreads(bp)*	10-year	20.0
CDS (bp)	5-year	n.a.

Realism of baseline assumptions





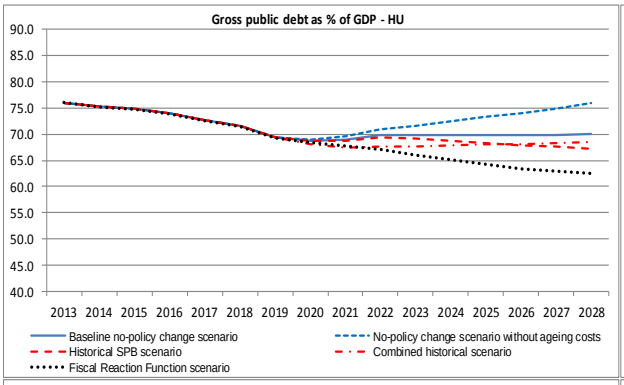
Underlying macro-fiscal assumptions

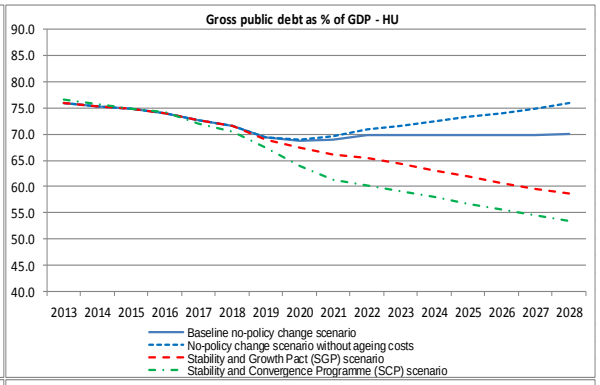
Macro-fiscal assumptions, Luxembourg	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	23.7	23.0	22.9	17.4	16.4	16.4	23.2	18.0	19.3
Primary balance	0.8	0.6	0.7	0.2	-0.1	-0.5	0.7	0.1	0.3
Structural primary balance (before CoA)	0.9	0.6	0.6	0.6	0.6	0.6	0.7	0.6	0.6
Real GDP growth	3.4	3.5	3.3	3.0	2.7	2.8	3.4	2.9	3.0
Potential GDP growth	2.9	3.0	3.2	3.0	2.7	2.8	3.0	2.9	3.0
Inflation rate	2.3	2.3	1.9	2.0	2.0	2.0	2.1	2.0	2.0
Implicit interest rate (nominal)	1.6	1.3	1.2	1.4	1.8	2.3	1.3	1.6	1.5
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	23.7	23.0	22.9	16.5	14.4	12.6	23.2	16.7	18.3
Primary balance	0.8	0.6	0.6	0.5	0.5	0.5	0.7	0.5	0.6
Structural primary balance (before CoA)	0.9	0.6	0.5	0.5	0.5	0.5	0.7	0.5	0.6
Real GDP growth	3.4	3.5	3.3	3.0	2.7	2.7	3.4	2.9	3.0
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	22.2	22.4	22.6	15.2	11.5	8.8	22.4	15.7	17.4
Primary balance	0.5	0.6	0.9	1.5	1.3	0.9	0.6	1.3	1.2
Structural primary balance (before CoA)	0.7	0.2	0.3	1.8	1.8	1.8	0.4	1.7	1.4
Real GDP growth	4.4	5.2	4.4	3.3	3.0	2.9	4.7	3.0	3.4
Potential GDP growth	3.6	3.8	3.8	3.3	3.0	2.9	3.7	3.2	3.4
Inflation rate	2.1	1.8	1.1	2.0	2.0	2.0	1.7	1.8	1.8
Implicit interest rate (nominal)	1.6	1.5	1.3	1.3	1.3	1.3	1.5	1.2	1.3
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	23.7	23.0	22.9	13.5	10.3	8.1	23.2	14.0	16.3
Primary balance	0.8	0.6	0.7	1.3	1.1	0.7	0.7	1.1	1.0
Structural primary balance (before CoA)	0.9	0.6	0.6	1.8	1.8	1.8	0.7	1.6	1.4
Real GDP growth	3.4	3.5	3.3	3.0	2.7	2.8	3.4	2.8	3.0
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	23.7	23.0	22.9	13.5	10.2	7.9	23.2	14.0	16.3
Primary balance	0.8	0.6	0.7	1.3	1.1	0.7	0.7	1.1	1.0
Structural primary balance (before CoA)	0.9	0.6	0.6	1.8	1.8	1.8	0.7	1.6	1.4
Real GDP growth	3.4	3.5	3.3	3.0	3.0	3.0	3.4	2.9	3.1
Implicit interest rate (nominal)	1.6	1.3	1.2	1.2	1.2	1.2	1.3	1.2	1.3
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	23.7	23.1	23.0	17.7	16.9	17.0	23.2	18.4	19.6
Implicit interest rate (nominal)	1.6	1.5	1.4	1.7	2.2	2.9	1.5	1.9	1.8
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	23.7	23.0	22.8	17.1	16.0	15.9	23.2	17.7	19.1
Implicit interest rate (nominal)	1.6	1.1	0.9	1.1	1.4	1.8	1.2	1.2	1.2
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	23.7	23.1	23.1	18.0	17.2	17.4	23.3	18.7	19.8
Implicit interest rate (nominal)	1.6	1.7	1.6	2.0	2.4	3.1	1.6	2.2	2.0
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	23.7	22.9	22.7	16.8	15.7	15.6	23.1	17.4	18.9
Real GDP growth	3.4	4.0	3.8	3.5	3.2	3.3	3.7	3.4	3.5
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	23.7	23.1	23.1	18.0	17.2	17.3	23.3	18.7	19.8
Real GDP growth	3.4	3.0	2.8	2.5	2.2	2.3	3.1	2.4	2.6
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	23.7	23.0	22.8	16.8	15.8	15.6	23.1	17.5	18.9
Real GDP growth	3.4	3.8	3.6	3.5	3.2	3.3	3.6	3.4	3.4
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	23.7	23.1	23.0	17.9	17.1	17.2	23.3	18.6	19.7
Real GDP growth	3.4	3.3	3.0	2.5	2.2	2.3	3.2	2.4	2.6
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	23.7	23.0	22.9	18.3	17.6	17.9	23.2	18.9	20.0
Primary balance	0.8	0.7	0.5	0.0	-0.3	-0.7	0.7	-0.1	0.1
Structural primary balance (before CoA)	0.9	0.7	0.4	0.4	0.4	0.4	0.7	0.4	0.5
Real GDP growth	3.4	3.5	3.5	3.0	2.7	2.8	3.5	2.9	3.0
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	23.7	23.0	22.9	17.4	16.4	16.4	23.2	18.0	19.3
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

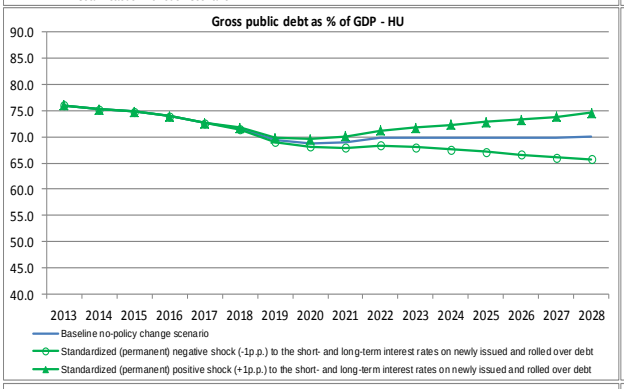
16. Hungary

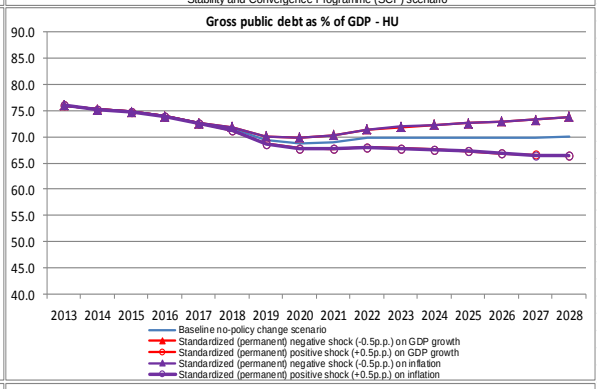
Public debt projections under baseline and alternative scenarios and sensitivity tests

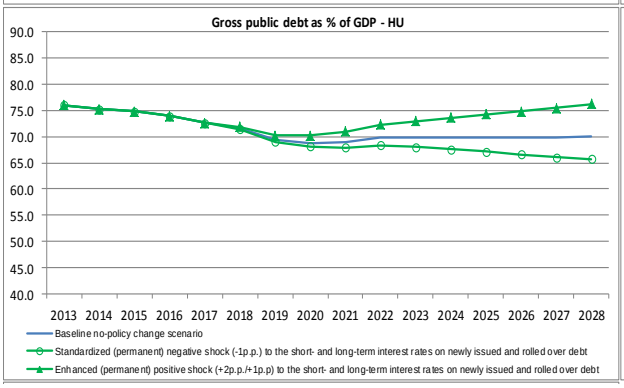
HU - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**74.7**	**73.9**	**72.6**	**71.5**	**69.4**	**68.8**	**69.0**	**69.7**	**69.8**	**69.9**	**69.9**	**69.8**	**69.8**	**69.9**
Changes in the ratio (-1+2+3)	*-0.4*	*-0.9*	*-1.3*	*-1.1*	*-2.2*	*-0.6*	*0.2*	*0.7*	*0.1*	*0.0*	*0.0*	*-0.1*	*0.0*	*0.1*
of which														
(1) Primary balance (1.1+1.2+1.3)	**1.5**	**1.3**	**0.7**	**0.1**	**0.2**	**0.0**	**-0.2**	**-0.4**	**-0.3**	**-0.2**	**-0.2**	**-0.2**	**-0.1**	**-0.1**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***1.4***	***1.2***	***-0.4***	***-1.0***	***-1.0***	***-0.8***	***-0.6***	***-0.4***	***-0.3***	***-0.2***	***-0.2***	***-0.2***	***-0.1***	***-0.1***
(1.1.1) Structural Primary Balance (bef. CoA)	*1.4*	*1.2*	*-0.4*	*-1.0*	*-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						*-0.2*	*-0.3*	*-0.6*	*-0.7*	*-0.7*	*-0.8*	*-0.8*	*-0.9*	*-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*
(1.2) Cyclical component	***0.1***	***0.2***	***0.7***	***1.1***	***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***	***-0.1***	***0.4***	***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)	**-0.2**	**0.9**	**-1.8**	**-1.8**	**-1.7**	**-0.5**	**-0.1**	**0.3**	**-0.2**	**-0.2**	**-0.2**	**-0.2**	**-0.1**	**0.1**
(2.1) Interest expenditure	*3.5*	*3.2*	*2.8*	*2.6*	*2.5*	*2.5*	*2.5*	*2.6*	*2.6*	*2.7*	*2.8*	*2.8*	*2.9*	*3.0*
(2.2) Growth effect	*-2.4*	*-1.6*	*-2.6*	*-2.5*	*-2.1*	*-1.2*	*-1.0*	*-0.9*	*-1.5*	*-1.5*	*-1.6*	*-1.7*	*-1.7*	*-1.5*
(2.3) Inflation effect	*-1.4*	*-0.7*	*-2.0*	*-2.0*	*-2.2*	*-1.9*	*-1.6*	*-1.4*	*-1.4*	*-1.4*	*-1.4*	*-1.4*	*-1.4*	*-1.4*
(2.4) Exchange rate effect linked to the interest rate	*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*
(3) Stock flow adjustments	**1.3**	**-0.4**	**1.2**	**0.9**	**-0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*-1.4*	*-0.5*	*1.6*	*1.2*	*-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	*2.6*	*0.1*	*-0.4*	*-0.4*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Per memo														
Structural balance	0.5	-1.8	-3.2	-3.6	-3.5	-3.3	-3.2	-3.0	-2.9	-2.9	-3.0	-3.0	-3.0	-3.1

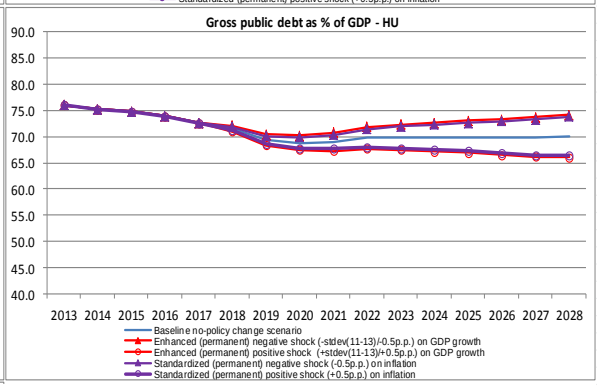


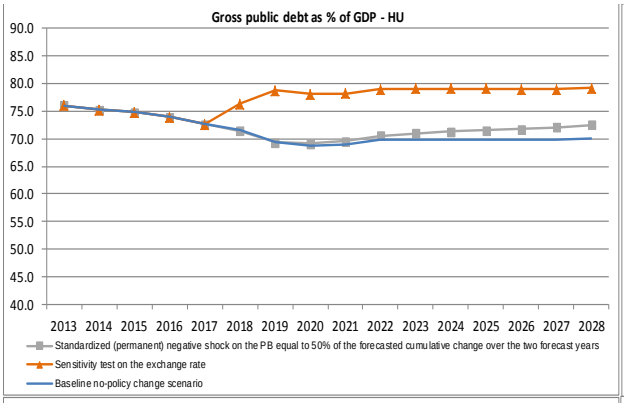


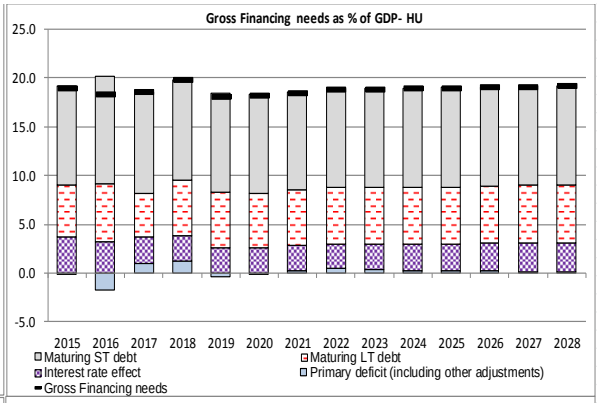


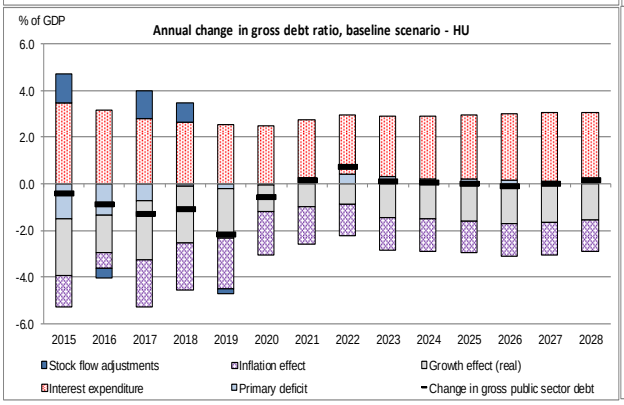


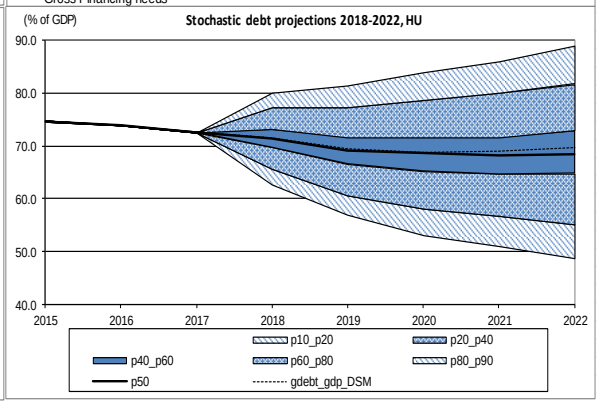












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	20.8	20.3	20.0	19.6	19.4	19.2	19.0	18.8	18.2	18.0
Revenues from pensions taxation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Property incomes	0.7	0.6	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.74**	**0.39**	**0.46**
Fiscal sub-index	0.56	0.61	0.36
Financial competitiveness sub-index	0.84	0.27	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**1.1**	**1.1**	**1.6**	**-1.2**	**0.8**
of which *Initial Budgetary position*	*1.0*	*0.8*	*1.0*	*-0.6*	*0.7*
*Cost of delaying adjustment***	*0.2*	*0.2*	*0.2*	*-0.2*	*0.1*
*Debt requirement****	*0.7*	*1.0*	*0.7*	*0.1*	*0.9*
Ageing costs	*-0.7*	*-0.9*	*-0.3*	*-0.5*	*-0.9*
Required structural primary balance related to S1	**0.1**	**0.5**	**0.6**	**-0.5**	**0.5**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**3.4**	**3.2**	**6.3**	**2.1**	**2.7**
of which Initial Budgetary position	2.0	1.7	2.0	0.3	1.5
Long term component	1.4	1.5	4.3	1.8	1.2
of which Pensions	*0.6*	*0.7*	*0.6*	*0.9*	*0.4*
Health care	*0.5*	*0.5*	*1.0*	*0.5*	*0.5*
Long-term care	*0.3*	*0.3*	*2.6*	*0.3*	*0.3*
Others	*0.0*	*0.1*	*0.0*	*0.1*	*0.0*
Required structural primary balance related to S2	**2.4**	**2.6**	**5.3**	**2.8**	**2.3**

Risks related to the structure of public debt financing

Public debt structure - HU (2016)	Share of short-term public debt (p.p.): 18.5	Share of public debt in foreign currency (%): 28.7	Share of public debt by non-residents (%): 41.7

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		HU	EU
State guarantees (% GDP) (2015)		9.2	8.5
of which One-off guarantees		*9.0*	*8.1*
Standardised guarantees		*0.2*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	0.00	0.92
	Securities issued under liquidity schemes	0.00	0.00
	Special purpose entity	0.00	0.21
	Total	0.00	1.13

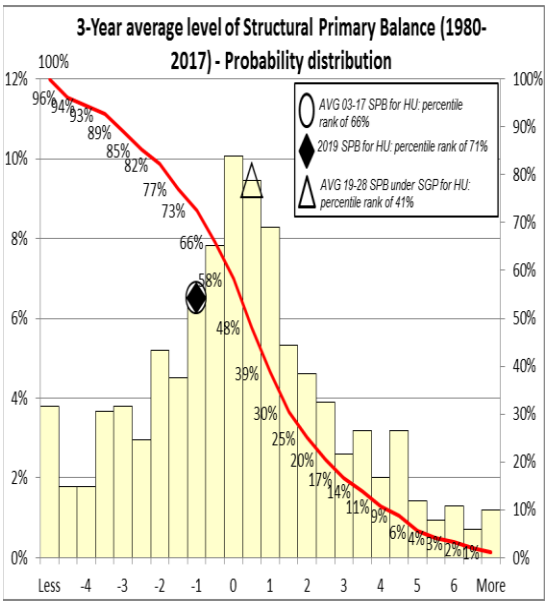
Government's contingent liability risks from banking sector - HU (2016)	Private sector credit flow (% GDP): -3.6	Change in nominal house price index: 13.4	Bank loans-to-deposits ratio (p.p.): 77.7	Share of non-performing loans (%): 11.5	Change in share of non-performing loans (p.p): -2.4	NPL coverage ratio 63.9	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8% 0.00%	bank recap. at 10.5% 0.00%

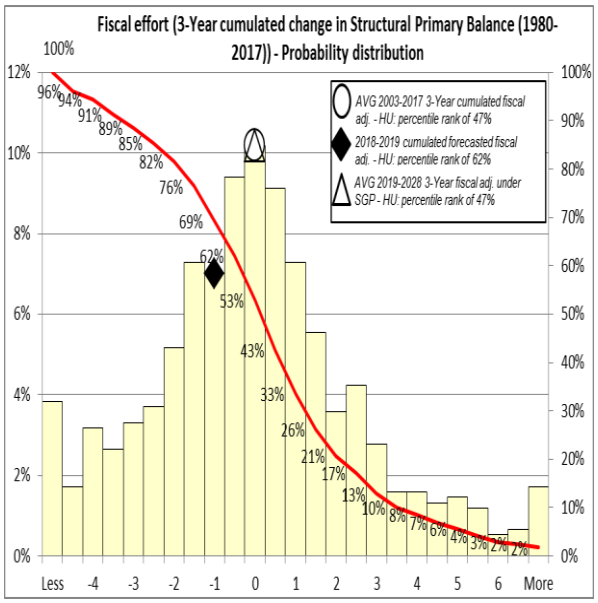
Financial market information

Sovereign Ratings as of Nov 2017, HU	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	Baa3		Baa3	
S&P	BBB-	A-3	BBB-	A-3
Fitch	BBB-		BBB-	F3

Financial market information as of October 2017, HU		
Sovereign yield spreads(bp)*	10-year	220.0
CDS (bp)	5-year	115.1

Realism of baseline assumptions





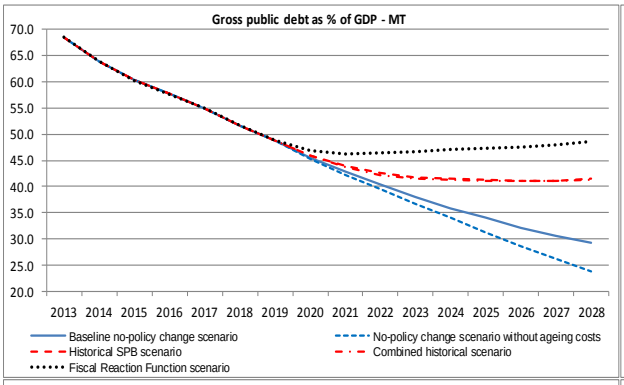
Underlying macro-fiscal assumptions

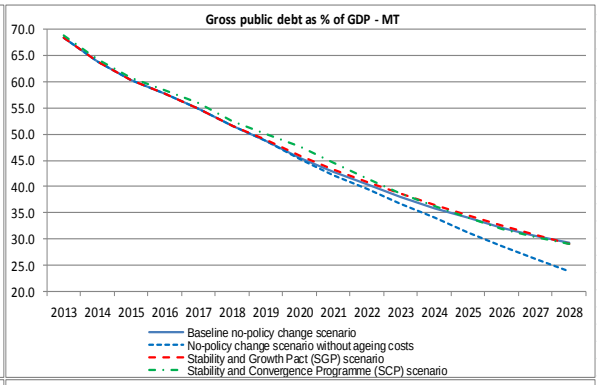
Macro-fiscal assumptions, Hungary	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	72.6	71.5	69.4	69.9	69.8	69.9	71.2	69.6	70.0
Primary balance	0.7	0.1	0.2	-0.2	-0.2	-0.1	0.3	-0.2	-0.1
Structural primary balance (before CoA)	-0.4	-1.0	-1.0	-1.0	-1.0	-1.0	-0.8	-1.0	-0.9
Real GDP growth	3.7	3.6	3.1	2.3	2.6	2.3	3.5	2.1	2.4
Potential GDP growth	2.6	2.9	2.9	2.3	2.6	2.3	2.8	2.4	2.5
Inflation rate	2.8	2.9	3.1	2.0	2.0	2.0	2.9	2.1	2.3
Implicit interest rate (nominal)	4.0	3.9	3.8	4.0	4.2	4.4	3.9	4.1	4.0
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	72.6	71.5	69.4	65.1	63.4	62.5	71.2	65.3	66.7
Primary balance	0.7	0.1	0.2	0.7	0.5	0.4	0.3	0.7	0.6
Structural primary balance (before CoA)	-0.4	-1.0	-1.0	0.0	-0.3	-0.5	-0.8	-0.1	-0.3
Real GDP growth	3.7	3.6	3.1	2.4	2.6	2.4	3.5	2.0	2.4
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	72.6	71.5	68.9	63.1	60.7	58.6	71.0	63.0	65.0
Primary balance	0.7	0.1	1.1	1.0	1.0	1.0	0.6	1.1	1.0
Structural primary balance (before CoA)	-0.4	-1.0	-0.1	1.0	1.0	1.0	-0.5	0.9	0.6
Real GDP growth	3.7	3.6	2.4	2.3	2.5	2.3	3.2	2.0	2.3
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	72.0	70.5	67.3	58.0	55.6	53.3	69.9	58.1	61.0
Primary balance	0.4	0.3	0.7	1.1	1.2	1.3	0.5	1.1	1.0
Structural primary balance (before CoA)	-0.3	-0.4	0.0	0.7	0.7	0.7	-0.2	0.7	0.4
Real GDP growth	4.1	4.3	3.8	2.3	2.4	2.2	4.1	2.6	2.9
Potential GDP growth	3.4	3.8	3.7	2.3	2.4	2.2	3.6	2.6	2.8
Inflation rate	2.9	3.2	3.0	2.0	2.0	2.0	3.0	2.2	2.4
Implicit interest rate (nominal)	4.1	4.0	3.9	4.2	4.4	4.5	4.0	4.2	4.2
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	72.6	71.5	69.4	68.7	67.9	67.3	71.2	68.4	69.1
Primary balance	0.7	0.1	0.2	0.1	0.2	0.3	0.3	0.1	0.2
Structural primary balance (before CoA)	-0.4	-1.0	-1.0	-0.6	-0.6	-0.6	-0.8	-0.6	-0.7
Real GDP growth	3.7	3.6	3.1	2.3	2.6	2.3	3.5	2.0	2.4
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	72.6	71.5	69.4	67.8	68.1	68.5	71.2	68.0	68.8
Primary balance	0.7	0.1	0.2	0.1	0.2	0.3	0.3	0.1	0.2
Structural primary balance (before CoA)	-0.4	-1.0	-1.0	-0.6	-0.6	-0.6	-0.8	-0.6	-0.7
Real GDP growth	3.7	3.6	3.1	1.8	1.8	1.8	3.5	2.0	2.3
Implicit interest rate (nominal)	4.0	3.9	3.8	4.2	4.4	4.5	3.9	4.2	4.1
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	72.6	71.7	69.8	72.2	73.2	74.6	71.3	72.1	71.9
Implicit interest rate (nominal)	4.0	4.1	4.1	4.7	5.0	5.3	4.1	4.7	4.6
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	72.6	71.3	68.9	67.6	66.6	65.7	71.0	67.3	68.2
Implicit interest rate (nominal)	4.0	3.6	3.4	3.3	3.5	3.6	3.7	3.4	3.5
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	72.6	71.9	70.2	73.6	74.7	76.2	71.5	73.4	72.9
Implicit interest rate (nominal)	4.0	4.4	4.5	4.9	5.2	5.4	4.3	4.9	4.8
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	72.6	71.2	68.7	67.5	66.8	66.4	70.8	67.3	68.2
Real GDP growth	3.7	4.1	3.6	2.8	3.1	2.8	3.8	2.6	2.9
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	72.6	71.9	70.0	72.3	72.9	73.8	71.5	72.0	71.9
Real GDP growth	3.7	3.1	2.6	1.8	2.1	1.8	3.1	1.6	2.0
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	72.6	71.0	68.3	67.2	66.5	66.0	70.6	67.0	67.9
Real GDP growth	3.7	4.4	3.9	2.8	3.1	2.8	4.0	2.6	2.9
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	72.6	72.0	70.4	72.6	73.3	74.2	71.7	72.4	72.2
Real GDP growth	3.7	2.8	2.3	1.8	2.1	1.8	3.0	1.6	1.9
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	72.6	71.4	69.4	71.2	71.7	72.5	71.1	71.0	71.0
Primary balance	0.7	0.2	-0.1	-0.5	-0.4	-0.4	0.3	-0.5	-0.3
Structural primary balance (before CoA)	-0.4	-0.8	-1.2	-1.2	-1.2	-1.2	-0.8	-1.2	-1.1
Real GDP growth	3.7	3.5	3.5	2.3	2.6	2.3	3.5	2.1	2.4
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	72.6	76.3	78.7	79.1	78.9	79.1	75.9	78.8	78.1
Exchange rate depreciation	0.0%	11.5%	11.5%	0.0%	0.0%	0.0%	7.6%	0.0%	1.9%

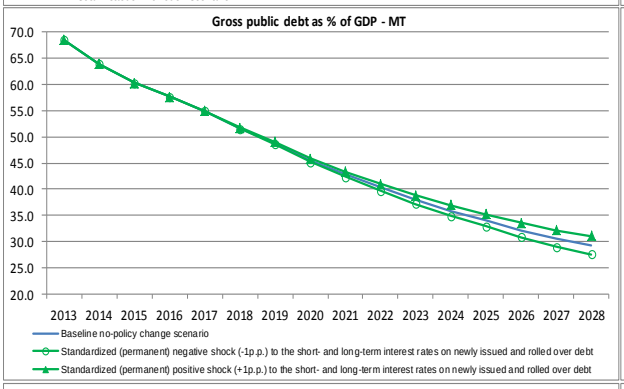
17. Malta

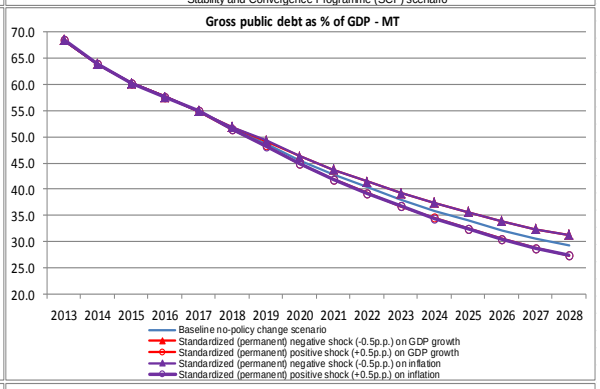
Public debt projections under baseline and alternative scenarios and sensitivity tests

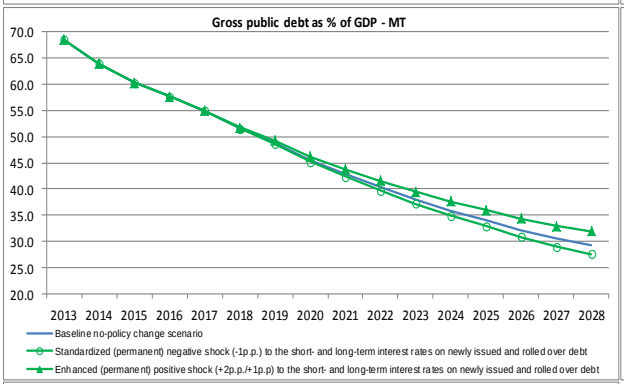
MT - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**60.3**	**57.6**	**54.9**	**51.6**	**48.8**	**45.5**	**42.8**	**40.3**	**38.0**	**35.9**	**34.0**	**32.2**	**30.5**	**29.3**
Changes in the ratio (-1+2+3)	*-3.5*	*-2.7*	*-2.7*	*-3.3*	*-2.8*	*-3.3*	*-2.7*	*-2.5*	*-2.3*	*-2.1*	*-1.9*	*-1.9*	*-1.6*	*-1.2*
of which														
(1) Primary balance (1.1+1.2+1.3)	**1.3**	**3.3**	**2.8**	**2.3**	**2.1**	**1.9**	**1.7**	**1.7**	**1.5**	**1.3**	**1.2**	**1.3**	**1.1**	**0.9**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***0.4***	***3.0***	***2.5***	***1.9***	***2.0***	***1.8***	***1.6***	***1.7***	***1.5***	***1.3***	***1.2***	***1.3***	***1.1***	***0.9***
(1.1.1) Structural Primary Balance (bef. CoA)	*0.4*	*3.0*	*2.5*	*1.9*	*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						*0.2*	*0.4*	*0.3*	*0.5*	*0.7*	*0.8*	*0.8*	*0.9*	*1.1*
(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*
(1.2) Cyclical component	***0.9***	***0.5***	***0.5***	***0.4***	***0.1***	***0.1***	***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***	***-0.2***	***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)	**-3.2**	**-1.9**	**-2.2**	**-1.9**	**-1.5**	**-1.3**	**-1.0**	**-0.7**	**-0.8**	**-0.7**	**-0.7**	**-0.6**	**-0.5**	**-0.3**
(2.1) Interest expenditure	*2.5*	*2.2*	*1.9*	*1.7*	*1.6*	*1.5*	*1.4*	*1.3*	*1.3*	*1.2*	*1.2*	*1.2*	*1.1*	*1.1*
(2.2) Growth effect	*-4.1*	*-3.1*	*-3.0*	*-2.5*	*-2.0*	*-1.8*	*-1.5*	*-1.2*	*-1.3*	*-1.2*	*-1.2*	*-1.1*	*-1.0*	*-0.8*
(2.3) Inflation effect	*-1.5*	*-1.0*	*-1.1*	*-1.1*	*-1.2*	*-1.0*	*-0.9*	*-0.8*	*-0.8*	*-0.7*	*-0.7*	*-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	**1.0**	**2.5**	**2.3**	**0.9**	**0.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*1.0*	*2.5*	*2.3*	*0.9*	*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*
Per memo														
Structural balance	-2.1	0.8	0.6	0.1	0.4	0.3	0.2	0.4	0.3	0.1	0.0	0.1	0.0	-0.2

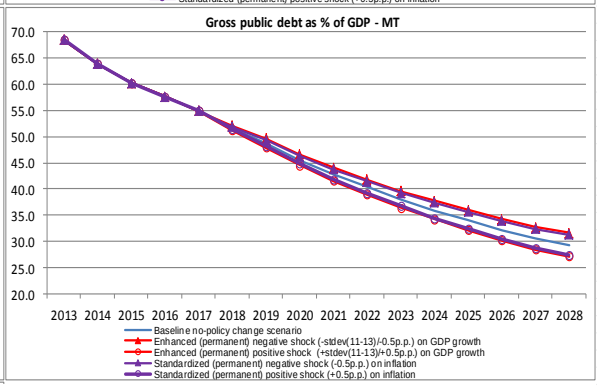


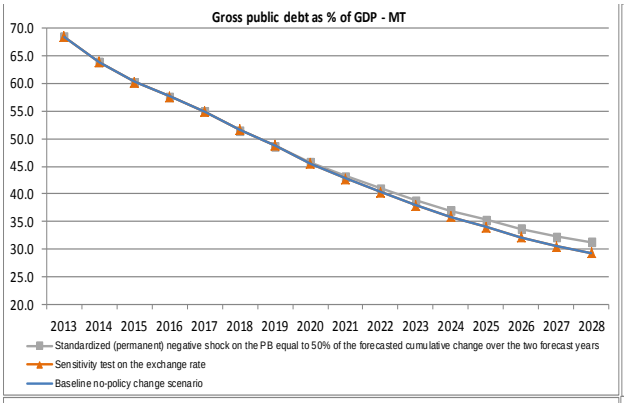


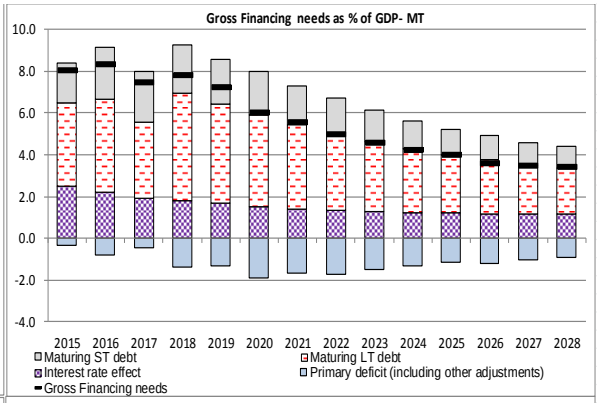


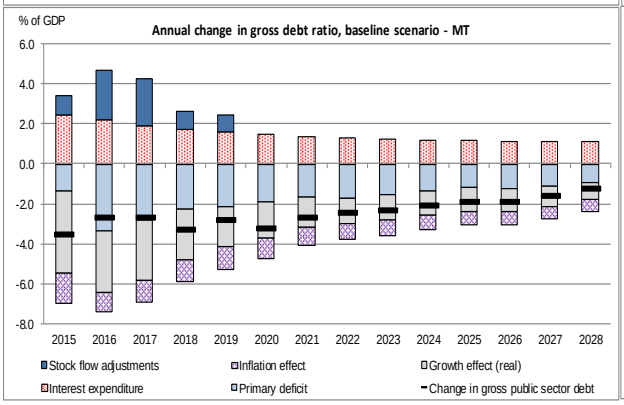


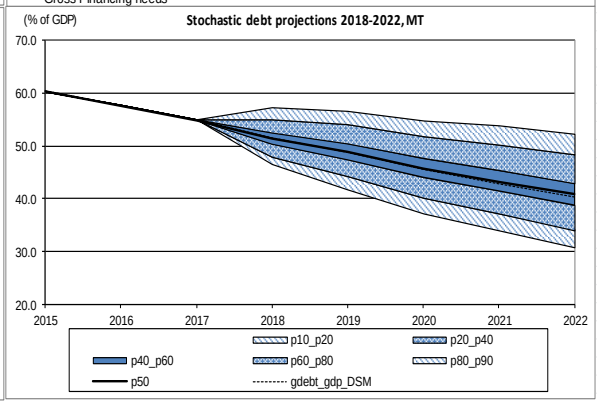












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	22.6	22.6	22.5	22.6	22.7	22.6	22.8	23.0	23.7	24.3
Revenues from pensions taxation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Property incomes	1.2	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.45**	**0.05**	**0.46**
Fiscal sub-index	0.20	0.00	0.36
Financial competitiveness sub-index	0.58	0.08	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**-3.1**	**-1.9**	**-2.7**	**-3.8**	**-1.2**
of which *Initial Budgetary position*	*-2.7*	*-0.6*	*-2.6*	*-2.7*	*-1.8*
*Cost of delaying adjustment***	*-0.4*	*-0.4*	*-0.4*	*-0.6*	*-0.2*
*Debt requirement****	*-0.9*	*-2.0*	*-0.9*	*-1.2*	*-0.2*
Ageing costs	*0.9*	*1.1*	*1.2*	*0.7*	*1.0*
Required structural primary balance related to S1	**-1.1**	**-1.7**	**-0.7**	**-1.7**	**0.2**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**3.2**	**5.1**	**4.7**	**3.0**	**4.0**
of which Initial Budgetary position	-1.5	0.3	-1.5	-1.6	-0.8
Long term component	4.6	4.9	6.2	4.6	4.8
of which Pensions	*2.0*	*2.1*	*1.9*	*1.9*	*2.1*
Health care	*1.4*	*1.4*	*2.0*	*1.3*	*1.4*
Long-term care	*0.9*	*0.9*	*1.8*	*0.8*	*0.9*
Others	*0.4*	*0.5*	*0.4*	*0.5*	*0.4*
Required structural primary balance related to S2	**5.2**	**5.4**	**6.7**	**5.1**	**5.5**

Risks related to the structure of public debt financing

Public debt structure - MT (2016)	Share of short-term public debt (p.p.): 6.1	Share of public debt in foreign currency (%): 0.0	Share of public debt by non-residents (%): 10.5

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		MT	EU
State guarantees (% GDP) (2015)		16.0	8.5
of which One-off guarantees		*16.0*	*8.1*
Standardised guarantees		*0.0*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	:	0.92
	Securities issued under liquidity schemes	:	0.00
	Special purpose entity	:	0.21
	Total	0.00	1.13

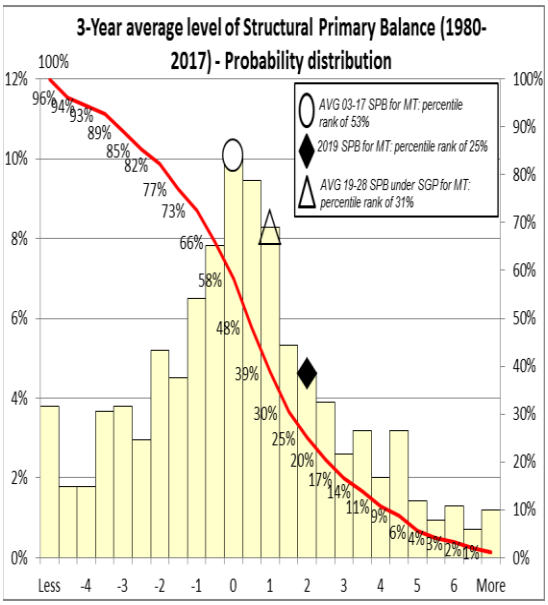
Government's contingent liability risks from banking sector - MT (2016)	Private sector credit flow (% GDP): 11.1	Change in nominal house price index: 5.6	Bank loans-to-deposits ratio (p.p.): 56.0	**Share of non-performing loans (%): 4.4**	Change in share of non-performing loans (p.p): -3.0	NPL coverage ratio 35.9	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8% 0.01%	bank recap. at 10.5% 0.03%

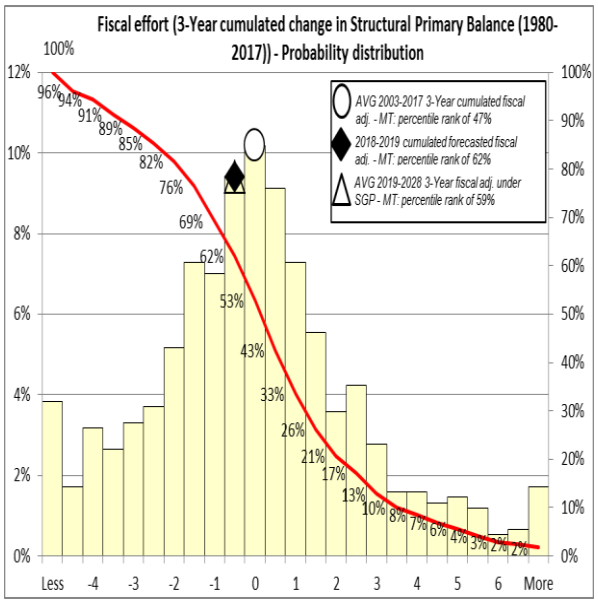
Financial market information

Sovereign Ratings as of Nov 2017, MT	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	A3			
S&P	A-	A-2	A-	A-2
Fitch	A+		A+	F1+

Financial market information as of October 2017, MT		
Sovereign yield spreads(bp)*	10-year	87.0
CDS (bp)	5-year	n.a.

Realism of baseline assumptions





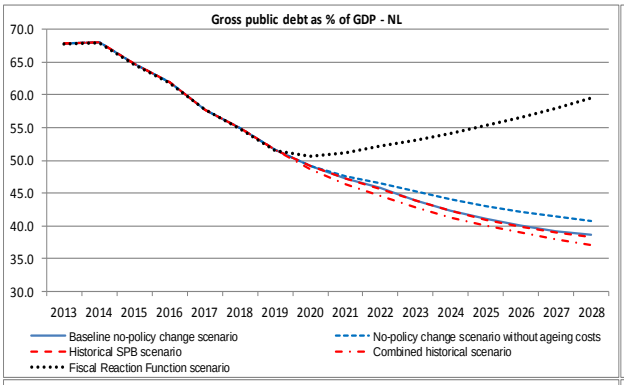
Underlying macro-fiscal assumptions

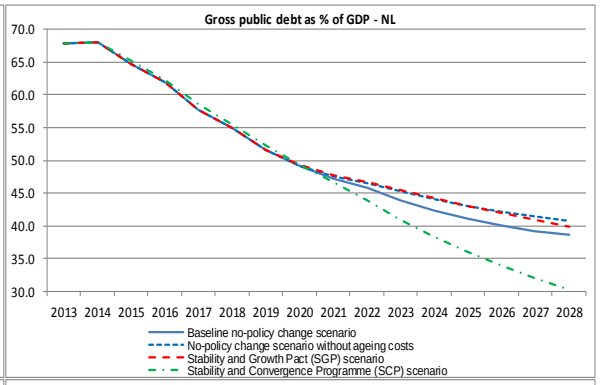
Macro-fiscal assumptions, Malta	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	54.9	51.6	48.8	35.9	32.2	29.3	51.8	36.5	40.3
Primary balance	2.8	2.3	2.1	1.3	1.3	0.9	2.4	1.4	1.7
Structural primary balance (before CoA)	2.5	1.9	2.0	2.0	2.0	2.0	2.1	2.0	2.0
Real GDP growth	5.6	4.9	4.1	3.3	3.4	2.9	4.9	3.3	3.7
Potential GDP growth	5.6	5.2	4.7	3.3	3.4	2.9	5.1	3.4	3.8
Inflation rate	2.0	2.1	2.3	2.0	2.0	2.0	2.1	2.0	2.1
Implicit interest rate (nominal)	3.6	3.4	3.4	3.4	3.6	3.8	3.5	3.4	3.4
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	54.9	51.6	48.8	47.0	47.5	48.7	51.8	47.2	48.3
Primary balance	2.8	2.3	2.1	-1.1	-1.1	-1.0	2.4	-0.9	-0.1
Structural primary balance (before CoA)	2.5	1.9	2.0	-0.5	-0.4	0.0	2.1	-0.3	0.3
Real GDP growth	5.6	4.9	4.1	3.2	3.5	2.7	4.9	3.5	3.9
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	54.9	51.6	48.9	36.6	32.5	29.1	51.8	36.9	40.6
Primary balance	2.8	2.3	1.9	1.4	1.3	1.3	2.3	1.4	1.6
Structural primary balance (before CoA)	2.5	1.9	1.8	1.4	1.3	1.3	2.1	1.4	1.6
Real GDP growth	5.6	4.9	4.3	3.4	3.5	2.9	4.9	3.4	3.8
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	55.9	52.5	50.0	36.3	32.0	29.0	52.8	37.1	41.1
Primary balance	2.4	2.3	2.2	1.6	1.5	1.2	2.3	1.6	1.8
Structural primary balance (before CoA)	2.2	2.2	2.3	2.1	2.1	2.1	2.2	2.1	2.1
Real GDP growth	4.3	3.7	3.5	3.8	3.6	2.5	3.8	3.5	3.6
Potential GDP growth	5.3	4.7	3.9	3.8	3.6	2.5	4.6	3.5	3.8
Inflation rate	1.9	2.1	2.3	2.0	2.0	2.0	2.1	2.1	2.1
Implicit interest rate (nominal)	3.6	3.4	3.5	3.6	3.8	4.0	3.5	3.6	3.6
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	54.9	51.6	48.8	41.4	41.0	41.6	51.8	42.3	44.6
Primary balance	2.8	2.3	2.1	-0.4	-0.5	-0.9	2.4	-0.1	0.5
Structural primary balance (before CoA)	2.5	1.9	2.0	0.2	0.2	0.2	2.1	0.5	0.9
Real GDP growth	5.6	4.9	4.1	3.3	3.4	2.9	4.9	3.5	3.8
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	54.9	51.6	48.8	41.2	41.0	41.4	51.8	42.1	44.5
Primary balance	2.8	2.3	2.1	-0.4	-0.5	-0.9	2.4	-0.1	0.5
Structural primary balance (before CoA)	2.5	1.9	2.0	0.2	0.2	0.2	2.1	0.5	0.9
Real GDP growth	5.6	4.9	4.1	3.5	3.5	3.5	4.9	3.7	4.0
Implicit interest rate (nominal)	3.6	3.4	3.4	3.6	3.9	4.0	3.5	3.6	3.6
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	54.9	51.7	49.0	37.0	33.6	31.1	51.9	37.6	41.1
Implicit interest rate (nominal)	3.6	3.5	3.6	3.9	4.2	4.5	3.6	4.0	3.9
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	54.9	51.5	48.6	34.9	30.8	27.6	51.7	35.5	39.6
Implicit interest rate (nominal)	3.6	3.3	3.1	2.8	3.0	3.1	3.3	2.9	3.0
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	54.9	51.8	49.2	37.6	34.3	31.9	51.9	38.2	41.6
Implicit interest rate (nominal)	3.6	3.7	3.9	4.1	4.4	4.7	3.7	4.2	4.1
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	54.9	51.4	48.3	34.5	30.5	27.4	51.5	35.2	39.3
Real GDP growth	5.6	5.4	4.6	3.8	3.9	3.4	5.2	3.8	4.2
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	54.9	51.9	49.3	37.4	33.9	31.3	52.0	37.9	41.4
Real GDP growth	5.6	4.4	3.6	2.8	2.9	2.4	4.6	2.8	3.3
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	54.9	51.2	47.9	34.2	30.2	27.1	51.3	34.9	39.0
Real GDP growth	5.6	5.8	5.0	3.8	3.9	3.4	5.5	3.8	4.3
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	54.9	52.1	49.6	37.7	34.2	31.6	52.2	38.2	41.7
Real GDP growth	5.6	4.0	3.3	2.8	2.9	2.4	4.3	2.8	3.2
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	54.9	51.5	48.7	37.0	33.7	31.3	51.7	37.6	41.1
Primary balance	2.8	2.5	1.9	1.1	1.0	0.7	2.4	1.2	1.5
Structural primary balance (before CoA)	2.5	2.1	1.8	1.8	1.8	1.8	2.1	1.8	1.9
Real GDP growth	5.6	4.7	4.5	3.3	3.4	2.9	4.9	3.3	3.7
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	54.9	51.6	48.8	35.9	32.2	29.3	51.8	36.5	40.3
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

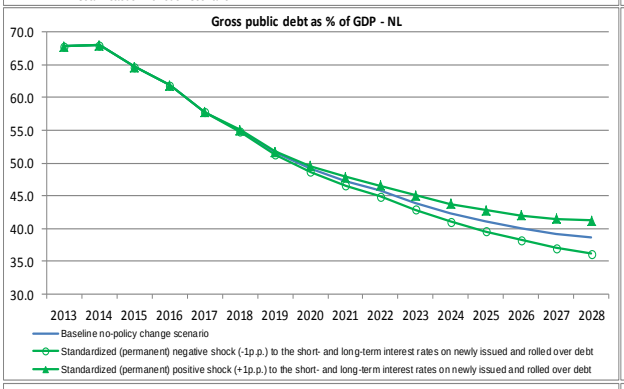
18. Netherlands

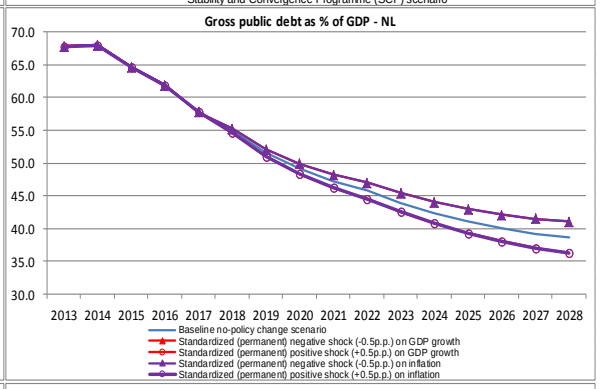
Public debt projections under baseline and alternative scenarios and sensitivity tests

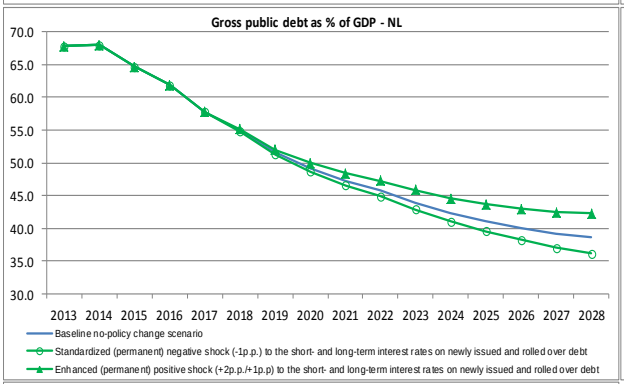
NL - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**64.6**	**61.8**	**57.7**	**54.9**	**51.5**	**49.1**	**47.2**	**45.7**	**44.0**	**42.4**	**41.1**	**40.1**	**39.2**	**38.6**
Changes in the ratio (-1+2+3)	*-3.4*	*-2.8*	*-4.1*	*-2.9*	*-3.4*	*-2.4*	*-1.9*	*-1.5*	*-1.8*	*-1.6*	*-1.2*	*-1.1*	*-0.9*	*-0.6*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-0.8**	**1.4**	**1.7**	**1.4**	**1.7**	**1.4**	**1.2**	**1.0**	**1.2**	**1.1**	**0.9**	**0.9**	**0.8**	**0.6**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***0.4***	***2.0***	***1.3***	***0.6***	***0.6***	***0.7***	***0.9***	***1.0***	***1.2***	***1.1***	***0.9***	***0.9***	***0.8***	***0.6***
(1.1.1) Structural Primary Balance (bef. CoA)	*0.4*	*2.0*	*1.3*	*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						*-0.1*	*-0.2*	*-0.3*	*-0.4*	*-0.2*	*0.0*	*0.1*	*0.3*	*0.5*
(1.1.3) Others (taxes and property incomes)						*0.1*	*0.1*	*0.2*	*0.2*	*0.3*	*0.3*	*0.4*	*0.5*	*0.6*
(1.2) Cyclical component	***-1.2***	***-0.8***	***0.1***	***0.6***	***1.0***	***0.7***	***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***	***0.3***	***0.3***	***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)	**-0.8**	**-0.7**	**-1.6**	**-1.5**	**-1.7**	**-1.0**	**-0.7**	**-0.4**	**-0.6**	**-0.5**	**-0.3**	**-0.2**	**-0.1**	**0.1**
(2.1) Interest expenditure	*1.2*	*1.1*	*1.0*	*0.8*	*0.8*	*0.8*	*0.8*	*0.8*	*0.9*	*0.9*	*1.0*	*1.1*	*1.2*	*1.2*
(2.2) Growth effect	*-1.5*	*-1.4*	*-1.9*	*-1.5*	*-1.3*	*-0.7*	*-0.5*	*-0.3*	*-0.6*	*-0.5*	*-0.5*	*-0.5*	*-0.4*	*-0.4*
(2.3) Inflation effect	*-0.5*	*-0.4*	*-0.7*	*-0.8*	*-1.2*	*-1.1*	*-1.0*	*-0.9*	*-0.9*	*-0.9*	*-0.8*	*-0.8*	*-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	**-3.4**	**-0.7**	**-0.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*-3.5*	*-0.7*	*-0.8*	*0.0*	*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	*0.1*	*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*
Per memo														
Structural balance	-0.8	0.9	0.3	-0.2	-0.1	0.0	0.1	0.2	0.3	0.2	-0.1	-0.2	-0.3	-0.6

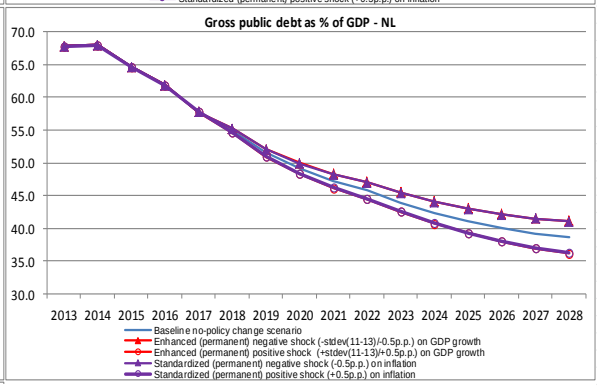


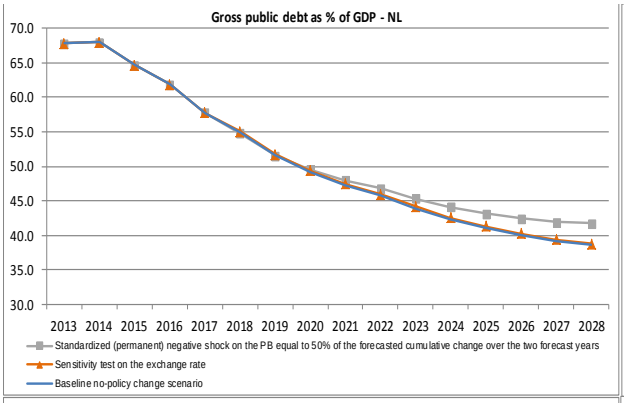


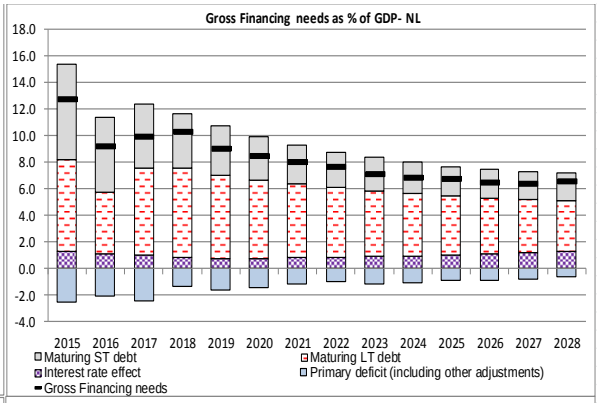


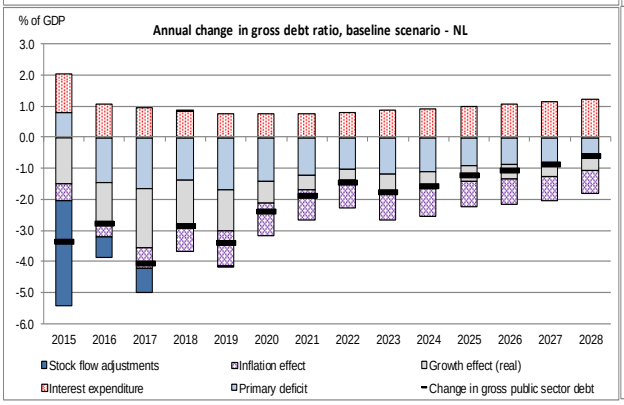


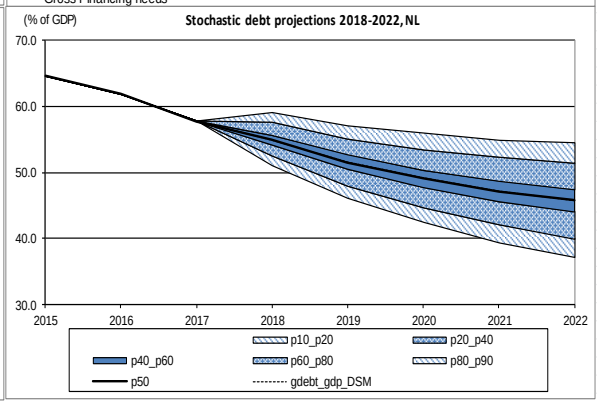












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	25.4	26.2	25.8	25.7	25.4	25.3	25.3	25.2	25.3	26.3
Revenues from pensions taxation	2.8	2.9	3.0	3.0	3.0	3.0	3.0	3.0	3.2	3.7
Property incomes	3.2	2.3	1.6	1.6	1.6	1.6	1.6	1.6	1.7	1.6

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.41**	**0.20**	**0.46**
Fiscal sub-index	0.57	0.00	0.36
Financial competitiveness sub-index	0.33	0.31	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**-1.9**	**-3.1**	**-1.7**	**-3.6**	**-1.1**
of which *Initial Budgetary position*	*-0.9*	*-0.7*	*-0.9*	*-2.0*	*-0.7*
*Cost of delaying adjustment***	*-0.3*	*-0.7*	*-0.3*	*-0.6*	*-0.2*
*Debt requirement****	*-0.6*	*-1.8*	*-0.6*	*-1.0*	*0.0*
Ageing costs	*-0.1*	*0.1*	*0.1*	*0.0*	*-0.2*
Required structural primary balance related to S1	**-1.3**	**-2.5**	**-1.1**	**-1.8**	**-0.3**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**3.0**	**3.1**	**3.7**	**2.0**	**3.1**
of which Initial Budgetary position	0.5	0.5	0.5	-0.7	0.8
Long term component	2.5	2.6	3.2	2.7	2.4
of which Pensions	*0.2*	*0.2*	*0.2*	*0.2*	*0.1*
Health care	*0.6*	*0.6*	*1.0*	*0.6*	*0.6*
Long-term care	*2.6*	*2.8*	*2.9*	*2.7*	*2.6*
Others	*-0.9*	*-0.9*	*-0.9*	*-0.8*	*-1.1*
Required structural primary balance related to S2	**3.6**	**3.8**	**4.3**	**3.8**	**4.0**

Risks related to the structure of public debt financing

Public debt structure - NL (2016)	Share of short-term public debt (p.p.):	Share of public debt in foreign currency (%):	Share of public debt by non-residents (%):
	10.4	1.2	41.4

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		NL	EU
State guarantees (% GDP) (2015)		4.0	8.5
of which One-off guarantees		*3.6*	*8.1*
Standardised guarantees		*0.4*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	0.00	0.92
	Securities issued under liquidity schemes	0.00	0.00
	Special purpose entity	0.00	0.21
	Total	0.00	1.13

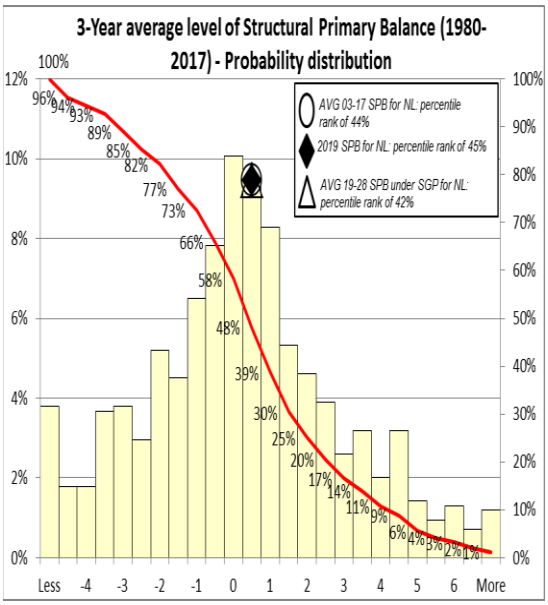
Government's contingent liability risks from banking sector - NL (2016)	Private sector credit flow (% GDP):	Change in nominal house price index:	Bank loans-to-deposits ratio (p.p.):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8%	bank recap. at 10.5%
	1.5	5.3	127.1	2.5	-0.2	35.2	0.00%	0.00%

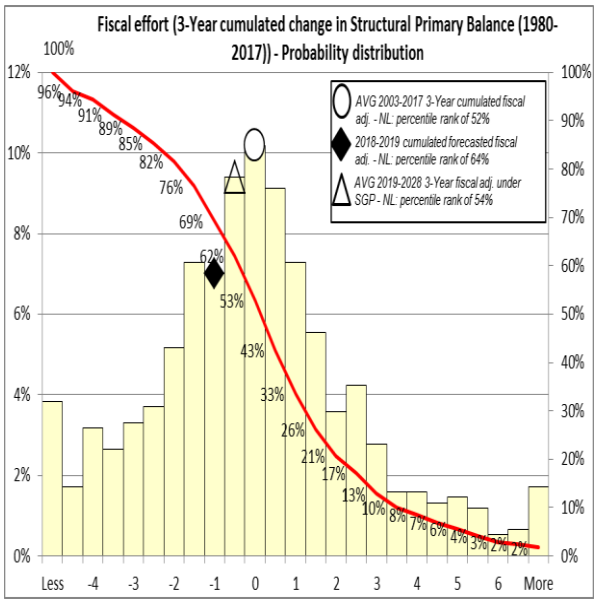
Financial market information

Sovereign Ratings as of Nov 2017, NL	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	Aaa		Aaa	P-1
S&P	AAAu	A-1+u	AAAu	A-1+u
Fitch	AAA		AAA	

Financial market information as of October 2017, NL		
Sovereign yield spreads(bp)*	10-year	17.0
CDS (bp)	5-year	15.9

Realism of baseline assumptions





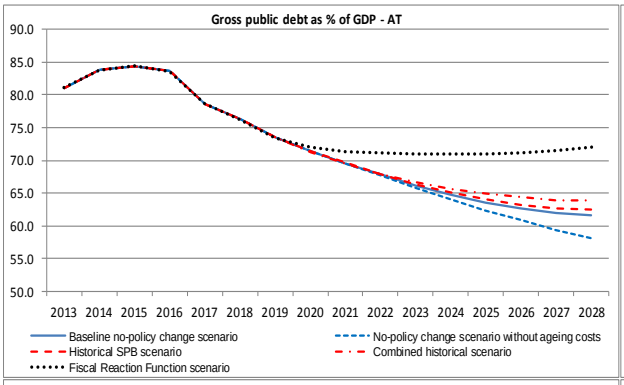
Underlying macro-fiscal assumptions

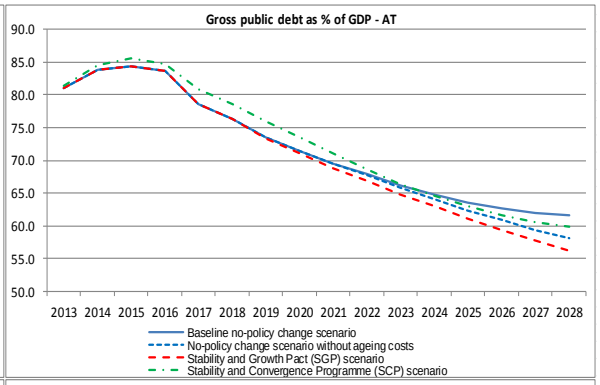
Macro-fiscal assumptions, Netherlands	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	57.7	54.9	51.5	42.4	40.1	38.6	54.7	43.0	46.0
Primary balance	1.7	1.4	1.7	1.1	0.9	0.6	1.6	1.0	1.2
Structural primary balance (before CoA)	1.3	0.6	0.6	0.6	0.6	0.6	0.8	0.6	0.7
Real GDP growth	3.2	2.7	2.5	1.3	1.2	1.1	2.8	1.1	1.6
Potential GDP growth	1.8	1.9	1.9	1.3	1.2	1.1	1.9	1.3	1.4
Inflation rate	1.1	1.4	2.1	2.0	2.0	2.0	1.6	2.0	1.9
Implicit interest rate (nominal)	1.6	1.5	1.4	2.2	2.7	3.2	1.5	2.3	2.1
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	57.7	54.9	51.5	54.1	56.6	59.5	54.7	54.5	54.5
Primary balance	1.7	1.4	1.7	-1.5	-1.3	-1.1	1.6	-1.3	-0.6
Structural primary balance (before CoA)	1.3	0.6	0.6	-2.0	-1.6	-1.2	0.8	-1.7	-1.1
Real GDP growth	3.2	2.7	2.5	1.2	1.1	0.9	2.8	1.3	1.7
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	57.7	54.9	51.5	44.2	42.0	39.9	54.7	44.4	47.0
Primary balance	1.7	1.4	1.6	0.8	0.9	1.1	1.6	0.9	1.1
Structural primary balance (before CoA)	1.3	0.6	0.5	0.8	0.9	1.1	0.8	0.8	0.8
Real GDP growth	3.2	2.7	2.5	1.2	1.1	1.0	2.8	1.1	1.5
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	58.5	55.5	52.2	38.4	34.0	30.3	55.4	39.1	43.1
Primary balance	1.5	1.6	1.8	2.2	1.9	1.7	1.6	2.0	1.9
Structural primary balance (before CoA)	1.3	1.4	1.6	1.8	1.8	1.8	1.4	1.8	1.7
Real GDP growth	2.1	1.8	1.7	1.3	1.2	1.0	1.9	1.2	1.4
Potential GDP growth	1.7	1.6	1.6	1.3	1.2	1.0	1.6	1.2	1.3
Inflation rate	1.2	1.4	1.7	2.0	2.0	2.0	1.4	2.0	1.8
Implicit interest rate (nominal)	1.6	1.5	1.4	2.1	2.6	3.0	1.5	2.1	2.0
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	57.7	54.9	51.5	42.2	39.8	38.3	54.7	42.9	45.8
Primary balance	1.7	1.4	1.7	1.2	0.9	0.7	1.6	1.1	1.2
Structural primary balance (before CoA)	1.3	0.6	0.6	0.6	0.6	0.6	0.8	0.6	0.7
Real GDP growth	3.2	2.7	2.5	1.3	1.2	1.1	2.8	1.1	1.5
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	57.7	54.9	51.5	41.3	38.9	37.2	54.7	42.0	45.2
Primary balance	1.7	1.4	1.7	1.2	0.9	0.7	1.6	1.1	1.2
Structural primary balance (before CoA)	1.3	0.6	0.6	0.6	0.6	0.6	0.8	0.6	0.7
Real GDP growth	3.2	2.7	2.5	1.3	1.3	1.3	2.8	1.5	1.8
Implicit interest rate (nominal)	1.6	1.5	1.4	2.4	2.8	3.1	1.5	2.3	2.1
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	57.7	55.0	51.7	43.7	42.0	41.2	54.8	44.5	47.1
Implicit interest rate (nominal)	1.6	1.7	1.7	2.8	3.5	4.1	1.7	2.9	2.6
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	57.7	54.8	51.3	41.1	38.2	36.2	54.6	41.7	44.9
Implicit interest rate (nominal)	1.6	1.3	1.2	1.6	2.0	2.4	1.4	1.7	1.6
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	57.7	55.1	52.0	44.6	43.0	42.3	54.9	45.3	47.7
Implicit interest rate (nominal)	1.6	1.9	2.0	3.0	3.6	4.2	1.8	3.1	2.8
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	57.7	54.6	51.0	40.8	38.1	36.3	54.4	41.5	44.7
Real GDP growth	3.2	3.2	3.0	1.8	1.7	1.6	3.1	1.6	2.0
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	57.7	55.2	52.0	44.0	42.1	41.1	55.0	44.7	47.3
Real GDP growth	3.2	2.2	2.0	0.8	0.7	0.6	2.5	0.6	1.1
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	57.7	54.6	50.9	40.7	38.0	36.2	54.4	41.4	44.7
Real GDP growth	3.2	3.3	3.0	1.8	1.7	1.6	3.2	1.6	2.0
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	57.7	55.2	52.1	44.1	42.2	41.1	55.0	44.7	47.3
Real GDP growth	3.2	2.2	1.9	0.8	0.7	0.6	2.4	0.6	1.1
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	57.7	54.8	51.6	44.1	42.5	41.7	54.7	44.8	47.3
Primary balance	1.7	1.5	1.4	0.8	0.5	0.3	1.5	0.7	0.9
Structural primary balance (before CoA)	1.3	0.8	0.3	0.3	0.3	0.3	0.8	0.3	0.4
Real GDP growth	3.2	2.6	2.9	1.3	1.2	1.1	2.9	1.1	1.6
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	57.7	55.0	51.7	42.6	40.3	38.8	54.8	43.3	46.1
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

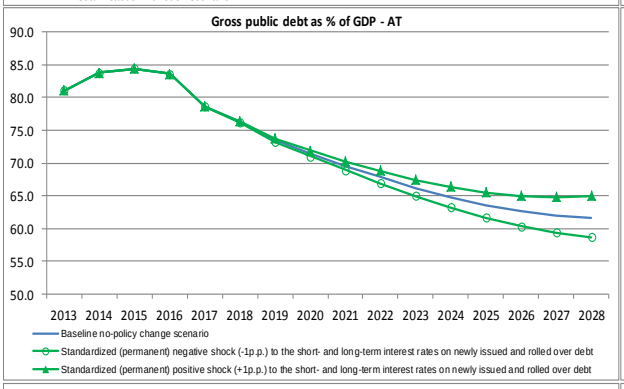
19. Austria

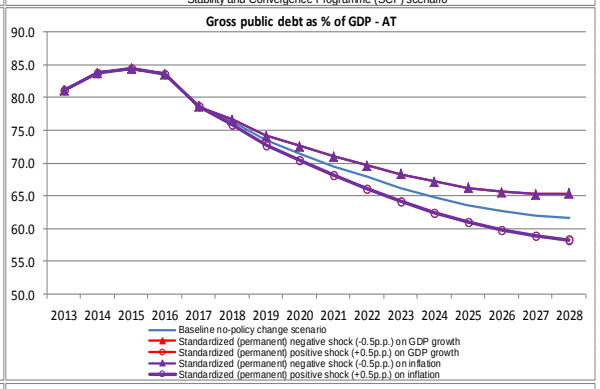
Public debt projections under baseline and alternative scenarios and sensitivity tests

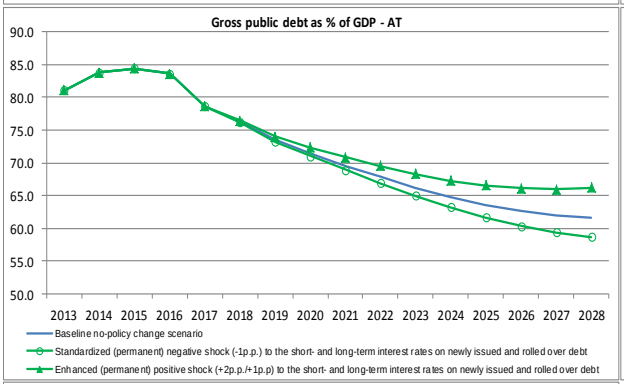
AT - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**84.3**	**83.6**	**78.6**	**76.2**	**73.4**	**71.5**	**69.5**	**67.9**	**66.2**	**64.7**	**63.5**	**62.6**	**62.0**	**61.7**
Changes in the ratio (-1+2+3)	*0.6*	*-0.8*	*-4.9*	*-2.4*	*-2.8*	*-2.0*	*-1.9*	*-1.7*	*-1.7*	*-1.4*	*-1.2*	*-0.9*	*-0.7*	*-0.3*
of which														
(1) Primary balance (1.1+1.2+1.3)	**1.3**	**0.5**	**0.9**	**0.8**	**1.0**	**0.9**	**0.9**	**0.7**	**0.7**	**0.6**	**0.5**	**0.4**	**0.3**	**0.1**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***2.0***	***1.1***	***1.0***	***0.8***	***0.8***	***0.8***	***0.8***	***0.7***	***0.7***	***0.6***	***0.5***	***0.4***	***0.3***	***0.1***
(1.1.1) Structural Primary Balance (bef. CoA)	*2.0*	*1.1*	*1.0*	*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*	*0.0*	*0.1*	*0.2*	*0.3*	*0.5*	*0.6*	*0.8*	*0.9*
(1.1.3) Others (taxes and property incomes)						*0.0*	*0.1*	*0.1*	*0.2*	*0.2*	*0.2*	*0.3*	*0.3*	*0.3*
(1.2) Cyclical component	***-0.4***	***-0.6***	***-0.1***	***0.1***	***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	***-0.3***	***-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)	**-0.4**	**0.0**	**-1.7**	**-1.3**	**-1.3**	**-1.0**	**-1.0**	**-0.9**	**-1.0**	**-0.8**	**-0.7**	**-0.5**	**-0.4**	**-0.2**
(2.1) Interest expenditure	*2.3*	*2.1*	*1.9*	*1.7*	*1.6*	*1.6*	*1.5*	*1.6*	*1.6*	*1.6*	*1.7*	*1.8*	*1.9*	*2.0*
(2.2) Growth effect	*-0.9*	*-1.2*	*-2.1*	*-1.8*	*-1.7*	*-1.3*	*-1.3*	*-1.1*	*-1.2*	*-1.2*	*-1.1*	*-1.1*	*-1.1*	*-1.0*
(2.3) Inflation effect	*-1.9*	*-0.9*	*-1.5*	*-1.2*	*-1.3*	*-1.3*	*-1.3*	*-1.4*	*-1.3*	*-1.3*	*-1.3*	*-1.2*	*-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	**2.3**	**-0.3**	**-2.4**	**-0.3**	**-0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*2.0*	*-0.3*	*-2.3*	*-0.2*	*-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	*0.3*	*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*
Per memo														
Structural balance	0.0	-1.0	-0.9	-1.0	-0.9	-0.8	-0.7	-0.8	-0.9	-1.0	-1.2	-1.4	-1.6	-1.9

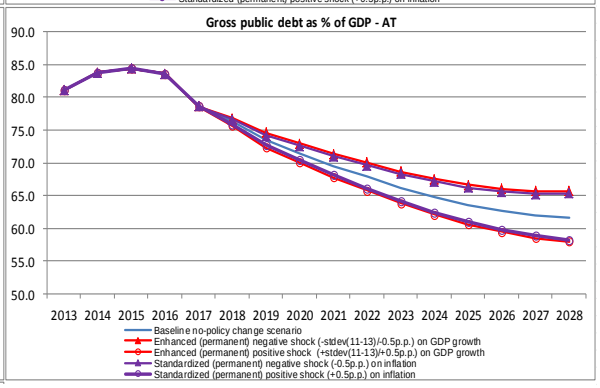


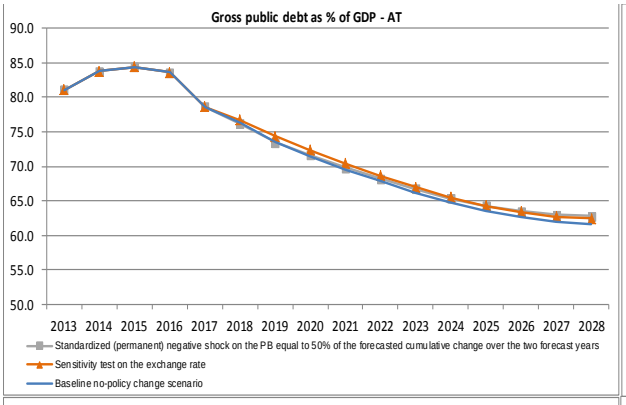


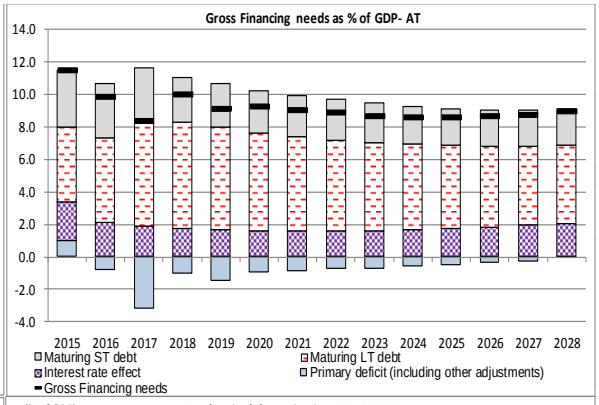


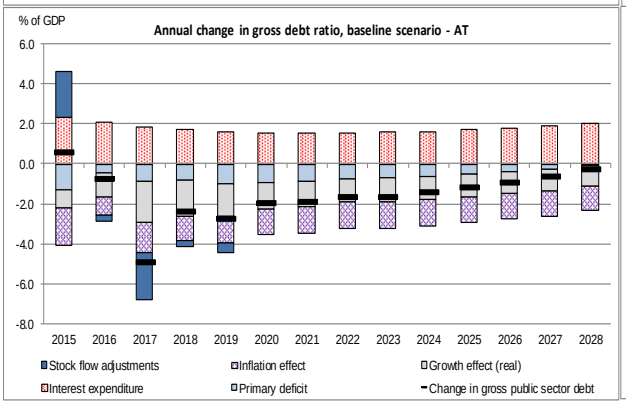


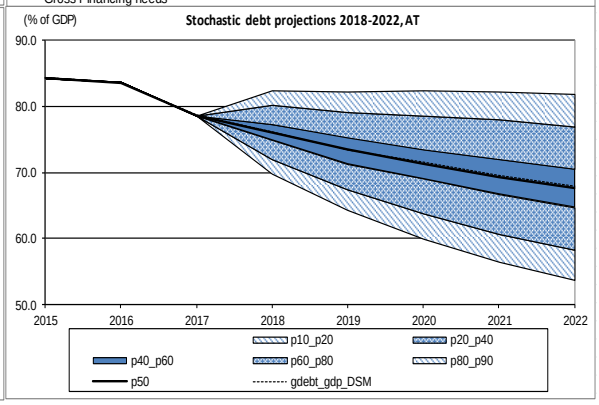












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	27.9	27.9	27.8	27.8	27.8	27.8	27.8	27.8	28.3	29.1
Revenues from pensions taxation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Property incomes	1.0	1.0	0.9	1.0	1.0	1.0	1.1	1.1	1.3	1.3

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.31**	**0.07**	**0.46**
Fiscal sub-index	0.64	0.07	0.36
Financial competitiveness sub-index	0.16	0.07	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**0.4**	**0.8**	**0.7**	**-0.1**	**0.8**
of which *Initial Budgetary position*	*-1.4*	*-1.1*	*-1.4*	*-1.9*	*-1.4*
*Cost of delaying adjustment***	*0.1*	*0.2*	*0.1*	*0.0*	*0.1*
*Debt requirement****	*1.1*	*0.7*	*1.1*	*1.1*	*1.5*
Ageing costs	*0.7*	*1.0*	*1.0*	*0.7*	*0.6*
Required structural primary balance related to S1	**1.1**	**1.4**	**1.4**	**1.3**	**2.0**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**2.7**	**3.0**	**4.2**	**2.2**	**2.4**
of which Initial Budgetary position	0.1	0.3	0.2	-0.4	-0.1
Long term component	2.6	2.7	4.0	2.6	2.5
of which Pensions	*0.5*	*0.6*	*0.5*	*0.6*	*0.5*
Health care	*0.9*	*0.9*	*1.4*	*0.9*	*0.9*
Long-term care	*1.0*	*1.0*	*2.0*	*0.9*	*0.9*
Others	*0.2*	*0.2*	*0.2*	*0.2*	*0.1*
Required structural primary balance related to S2	**3.5**	**3.6**	**5.0**	**3.6**	**3.6**

Risks related to the structure of public debt financing

Public debt structure - AT (2016)	Share of short-term public debt (p.p.): 4.9	Share of public debt in foreign currency (%): 1.1	**Share of public debt by non-residents (%): 71.3**

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		AT	EU
State guarantees (% GDP) (2015)		22.9	8.5
of which One-off guarantees		*22.9*	*8.1*
Standardised guarantees		*0.0*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	0.48	0.92
	Securities issued under liquidity schemes	0.00	0.00
	Special purpose entity	0.00	0.21
	Total	0.48	1.13

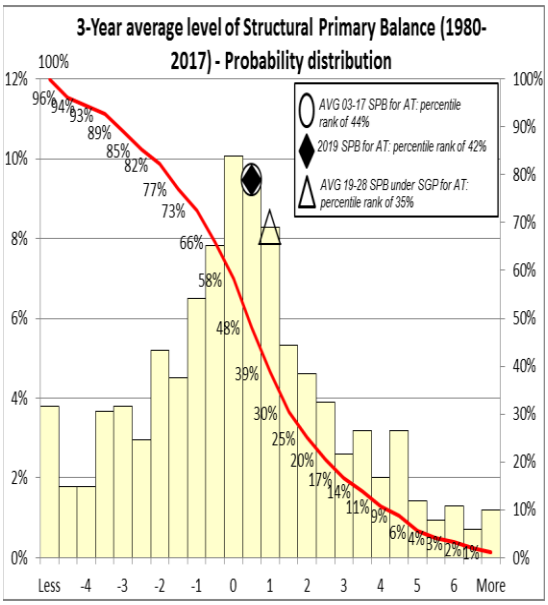
Government's contingent liability risks from banking sector - AT (2016)	Private sector credit flow (% GDP): 3.2	Change in nominal house price index: 8.5	Bank loans-to-deposits ratio (p.p.): 104.5	**Share of non-performing loans (%): 5.3**	Change in share of non-performing loans (p.p): -1.6	NPL coverage ratio 55.1	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8% 0.00%	bank recap. at 10.5% 0.00%

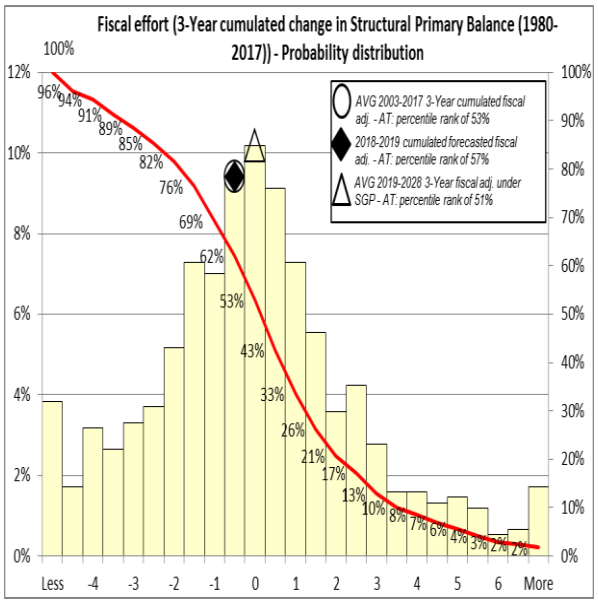
Financial market information

Sovereign Ratings as of Nov 2017, AT	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	Aa1		Aa1	P-1
S&P	AA+	A-1+	AA+	A-1+
Fitch	AA+		AA+	F1+

Financial market information as of October 2017, AT		
Sovereign yield spreads(bp)*	10-year	24.0
CDS (bp)	5-year	14.6

Realism of baseline assumptions





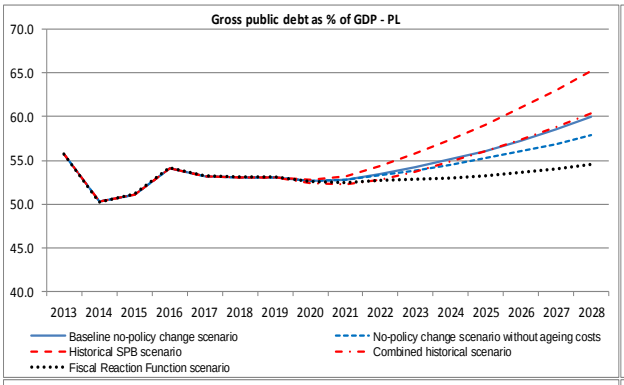
Underlying macro-fiscal assumptions

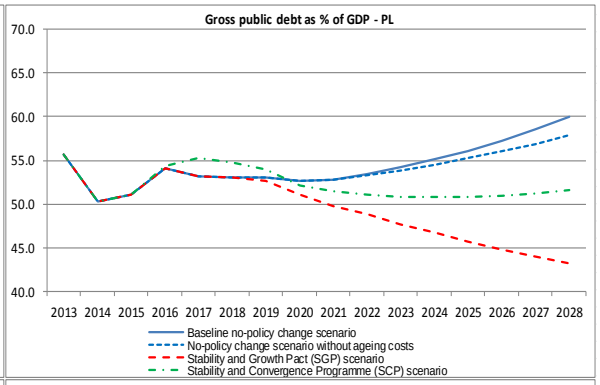
Macro-fiscal assumptions, Austria	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	78.6	76.2	73.4	64.7	62.6	61.7	76.1	65.5	68.2
Primary balance	0.9	0.8	1.0	0.6	0.4	0.1	0.9	0.6	0.7
Structural primary balance (before CoA)	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Real GDP growth	2.6	2.4	2.3	1.9	1.8	1.7	2.4	1.8	1.9
Potential GDP growth	1.8	2.1	2.0	1.9	1.8	1.7	1.9	1.8	1.9
Inflation rate	1.8	1.6	1.7	2.0	2.0	2.0	1.7	2.0	1.9
Implicit interest rate (nominal)	2.3	2.3	2.2	2.6	3.0	3.4	2.3	2.7	2.6
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	78.6	76.2	73.4	70.9	71.1	72.0	76.1	71.3	72.5
Primary balance	0.9	0.8	1.0	-0.7	-0.6	-0.6	0.9	-0.6	-0.2
Structural primary balance (before CoA)	1.0	0.8	0.8	-0.5	-0.3	0.1	0.8	-0.4	-0.1
Real GDP growth	2.6	2.4	2.3	1.7	1.7	1.5	2.4	1.8	2.0
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	78.6	76.2	73.3	62.9	59.4	56.2	76.0	63.2	66.4
Primary balance	0.9	0.8	1.4	1.1	1.2	1.4	1.0	1.2	1.1
Structural primary balance (before CoA)	1.0	0.8	1.1	1.1	1.2	1.4	1.0	1.2	1.1
Real GDP growth	2.6	2.4	2.0	1.8	1.7	1.6	2.3	1.8	1.9
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	80.8	78.5	76.0	64.5	61.6	59.8	78.4	65.4	68.7
Primary balance	1.0	1.0	1.3	1.2	1.0	0.7	1.1	1.1	1.1
Structural primary balance (before CoA)	1.2	1.0	1.2	1.4	1.4	1.4	1.1	1.4	1.3
Real GDP growth	2.0	1.8	1.7	1.8	1.7	1.5	1.8	1.7	1.7
Potential GDP growth	1.4	1.5	1.6	1.8	1.7	1.5	1.5	1.7	1.6
Inflation rate	1.4	1.5	1.6	2.0	2.0	2.0	1.5	1.9	1.8
Implicit interest rate (nominal)	2.4	2.3	2.2	2.7	3.2	3.5	2.3	2.8	2.7
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	78.6	76.2	73.4	65.1	63.2	62.5	76.1	65.9	68.4
Primary balance	0.9	0.8	1.0	0.5	0.3	0.0	0.9	0.5	0.6
Structural primary balance (before CoA)	1.0	0.8	0.8	0.6	0.6	0.6	0.8	0.7	0.7
Real GDP growth	2.6	2.4	2.3	1.9	1.8	1.7	2.4	1.8	2.0
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	78.6	76.2	73.4	65.7	64.4	63.8	76.1	66.5	68.9
Primary balance	0.9	0.8	1.0	0.5	0.3	0.0	0.9	0.5	0.6
Structural primary balance (before CoA)	1.0	0.8	0.8	0.6	0.6	0.6	0.8	0.7	0.7
Real GDP growth	2.6	2.4	2.3	1.5	1.5	1.5	2.4	1.6	1.8
Implicit interest rate (nominal)	2.3	2.3	2.2	2.8	3.1	3.3	2.3	2.8	2.6
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	78.6	76.3	73.7	66.4	65.0	65.0	76.2	67.2	69.5
Implicit interest rate (nominal)	2.3	2.4	2.4	3.1	3.6	4.2	2.4	3.2	3.0
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	78.6	76.1	73.2	63.2	60.4	58.7	76.0	63.9	66.9
Implicit interest rate (nominal)	2.3	2.2	2.0	2.1	2.3	2.7	2.2	2.2	2.2
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	78.6	76.4	73.9	67.3	66.1	66.2	76.3	68.1	70.2
Implicit interest rate (nominal)	2.3	2.5	2.6	3.3	3.8	4.3	2.5	3.4	3.2
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	78.6	75.8	72.7	62.5	59.8	58.3	75.7	63.3	66.4
Real GDP growth	2.6	2.9	2.8	2.4	2.3	2.2	2.7	2.3	2.4
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	78.6	76.6	74.2	67.1	65.6	65.3	76.5	67.9	70.0
Real GDP growth	2.6	1.9	1.8	1.4	1.3	1.2	2.1	1.3	1.5
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	78.6	75.6	72.3	62.1	59.4	58.0	75.5	62.9	66.1
Real GDP growth	2.6	3.2	3.0	2.4	2.3	2.2	2.9	2.3	2.4
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	78.6	76.8	74.6	67.5	66.0	65.7	76.7	68.3	70.4
Real GDP growth	2.6	1.6	1.5	1.4	1.3	1.2	1.9	1.3	1.4
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	78.6	76.2	73.4	65.4	63.5	62.8	76.1	66.1	68.6
Primary balance	0.9	0.9	0.9	0.5	0.3	0.0	0.9	0.5	0.6
Structural primary balance (before CoA)	1.0	0.8	0.6	0.6	0.6	0.6	0.8	0.6	0.7
Real GDP growth	2.6	2.4	2.4	1.9	1.8	1.7	2.4	1.8	2.0
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	78.6	76.7	74.3	65.5	63.4	62.5	76.5	66.3	68.9
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

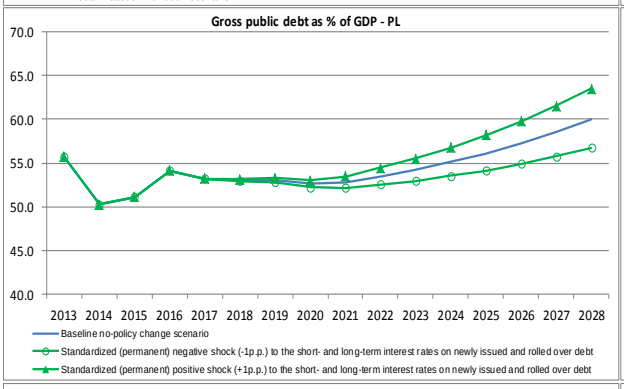
20. Poland

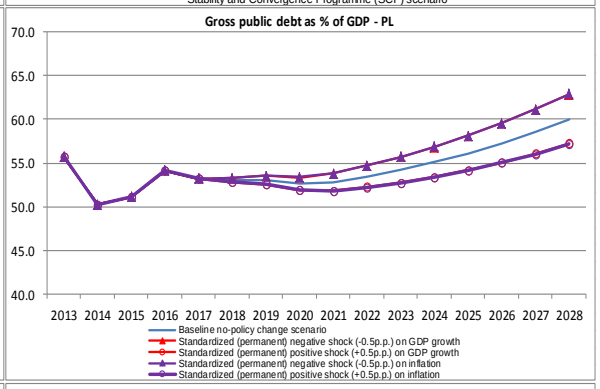
Public debt projections under baseline and alternative scenarios and sensitivity tests

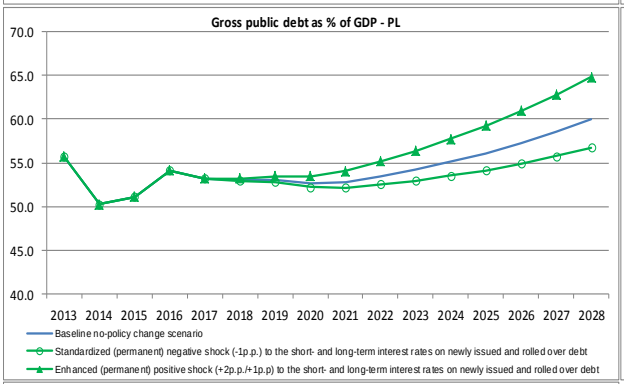
PL - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**51.1**	**54.1**	**53.2**	**53.0**	**53.0**	**52.6**	**52.8**	**53.5**	**54.2**	**55.1**	**56.1**	**57.2**	**58.5**	**60.0**
Changes in the ratio (-1+2+3)	*0.9*	*3.0*	*-0.9*	*-0.2*	*0.0*	*-0.4*	*0.2*	*0.7*	*0.7*	*0.9*	*1.0*	*1.1*	*1.3*	*1.5*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-0.9**	**-0.8**	**-0.2**	**-0.3**	**-0.4**	**-0.6**	**-0.9**	**-1.1**	**-1.2**	**-1.3**	**-1.3**	**-1.4**	**-1.4**	**-1.5**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***-0.6***	***-0.5***	***-0.5***	***-0.8***	***-1.0***	***-1.0***	***-1.1***	***-1.1***	***-1.2***	***-1.3***	***-1.3***	***-1.4***	***-1.4***	***-1.5***
(1.1.1) Structural Primary Balance (bef. CoA)	*-0.6*	*-0.5*	*-0.5*	*-0.8*	*-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*	*0.0*	*0.1*	*0.2*	*0.2*	*0.3*	*0.3*	*0.4*	*0.4*
(1.1.3) Others (taxes and property incomes)						*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*-0.1*	*-0.1*	*-0.1*
(1.2) Cyclical component	***-0.2***	***-0.2***	***0.3***	***0.6***	***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)	**-0.5**	**0.1**	**-1.7**	**-1.5**	**-1.6**	**-1.1**	**-0.7**	**-0.5**	**-0.5**	**-0.4**	**-0.3**	**-0.2**	**-0.2**	**0.0**
(2.1) Interest expenditure	*1.8*	*1.7*	*1.5*	*1.5*	*1.5*	*1.5*	*1.6*	*1.7*	*1.8*	*1.9*	*2.0*	*2.1*	*2.3*	*2.4*
(2.2) Growth effect	*-1.8*	*-1.4*	*-2.1*	*-1.9*	*-1.7*	*-1.4*	*-1.2*	*-1.1*	*-1.2*	*-1.2*	*-1.2*	*-1.3*	*-1.3*	*-1.3*
(2.3) Inflation effect	*-0.4*	*-0.2*	*-1.1*	*-1.1*	*-1.3*	*-1.2*	*-1.1*	*-1.0*	*-1.0*	*-1.1*	*-1.1*	*-1.1*	*-1.1*	*-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	**0.4**	**2.2**	**0.6**	**1.1**	**1.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*0.0*	*1.5*	*1.0*	*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	*0.5*	*0.7*	*-0.4*	*-0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Per memo														
Structural balance	-1.9	-1.5	-2.0	-2.3	-2.5	-2.6	-2.7	-2.8	-3.0	-3.2	-3.3	-3.5	-3.7	-3.8

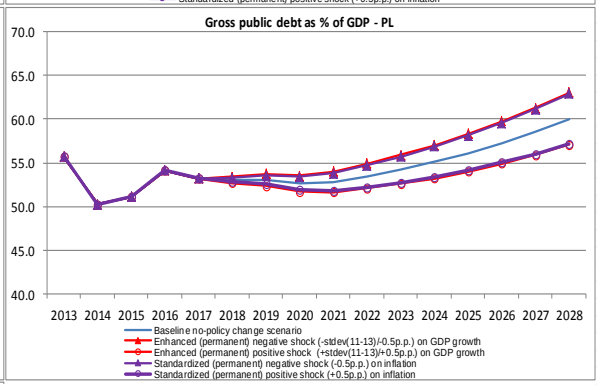


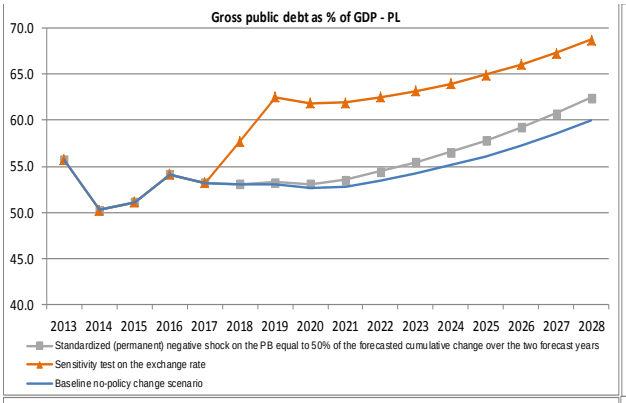


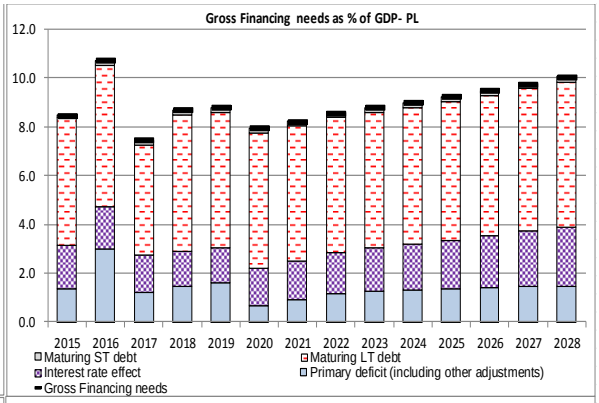


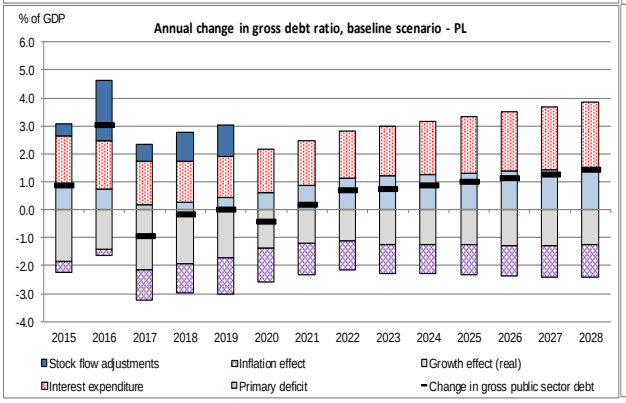


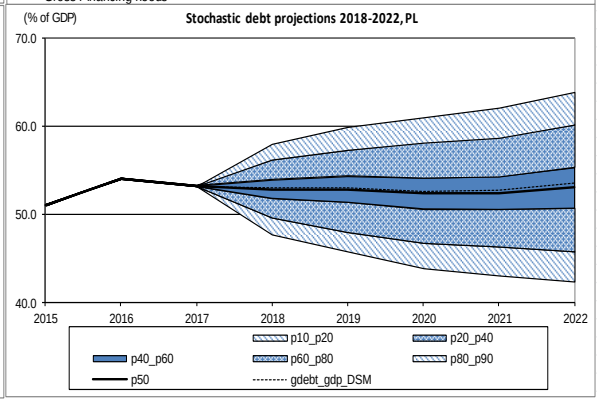












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	20.9	20.6	20.5	20.4	20.3	20.2	20.2	20.2	20.5	20.6
Revenues from pensions taxation	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2
Property incomes	1.0	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.55**	**0.25**	**0.46**
Fiscal sub-index	0.22	0.08	0.36
Financial competitiveness sub-index	0.73	0.34	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**0.6**	**2.3**	**1.0**	**-0.8**	**1.8**
of which *Initial Budgetary position*	*0.8*	*1.9*	*0.8*	*-0.2*	*1.6*
*Cost of delaying adjustment***	*0.1*	*0.5*	*0.2*	*-0.1*	*0.3*
*Debt requirement****	*-0.5*	*-0.5*	*-0.5*	*-0.7*	*-0.3*
Ageing costs	*0.3*	*0.3*	*0.6*	*0.3*	*0.3*
Required structural primary balance related to S1	**-0.4**	**0.5**	**0.0**	**-0.6**	**0.1**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**3.1**	**4.1**	**4.2**	**2.0**	**3.8**
of which Initial Budgetary position	1.9	2.8	1.8	0.7	2.6
Long term component	1.2	1.3	2.4	1.3	1.2
of which Pensions	*-0.1*	*-0.1*	*-0.1*	*-0.1*	*-0.2*
Health care	*0.8*	*0.9*	*1.4*	*0.8*	*0.8*
Long-term care	*0.6*	*0.6*	*1.2*	*0.6*	*0.6*
Others	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Required structural primary balance related to S2	**2.1**	**2.3**	**3.2**	**2.2**	**2.1**

Risks related to the structure of public debt financing

Public debt structure - PL (2016)	Share of short-term public debt (p.p.): 0.8	**Share of public debt in foreign currency (%): 35.1**	**Share of public debt by non-residents (%): 54.5**

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		PL	EU
State guarantees (% GDP) (2015)		6.6	8.5
of which One-off guarantees		*6.0*	*8.1*
Standardised guarantees		*0.6*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	:	0.92
	Securities issued under liquidity schemes	:	0.00
	Special purpose entity	:	0.21
	Total	0.00	1.13

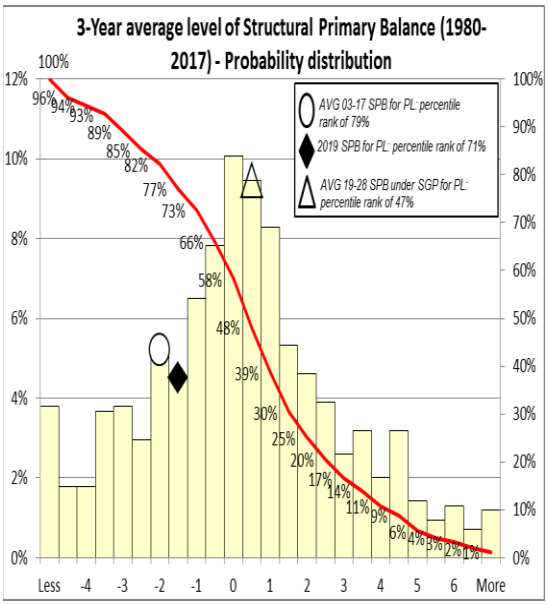
Government's contingent liability risks from banking sector - PL (2016)	Private sector credit flow (% GDP): 4.7	Change in nominal house price index: 1.9	Bank loans-to-deposits ratio (p.p.): 95.7	**Share of non-performing loans (%): 6.1**	Change in share of non-performing loans (p.p): -0.6	NPL coverage ratio 58.8	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8% 0.00%	bank recap. at 10.5% 0.00%

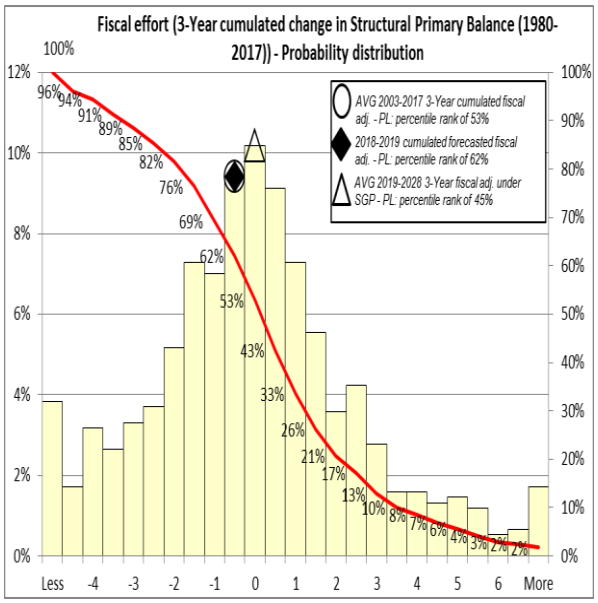
Financial market information

Sovereign Ratings as of Nov 2017, PL	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	A2	P-1	A2	P-1
S&P	A-	A-2	BBB+	A-2
Fitch	A-		A-	

Financial market information as of October 2017, PL		
Sovereign yield spreads(bp)*	10-year	301.0
CDS (bp)	5-year	70.5

Realism of baseline assumptions





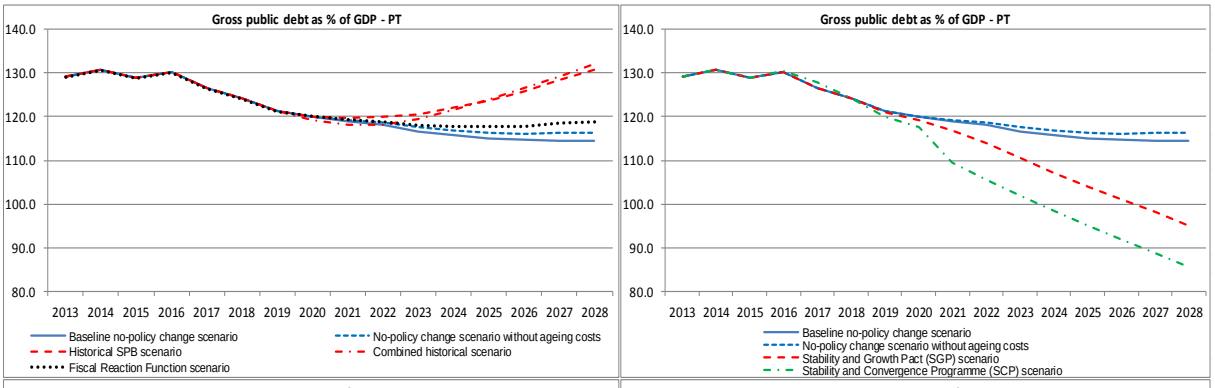
Underlying macro-fiscal assumptions

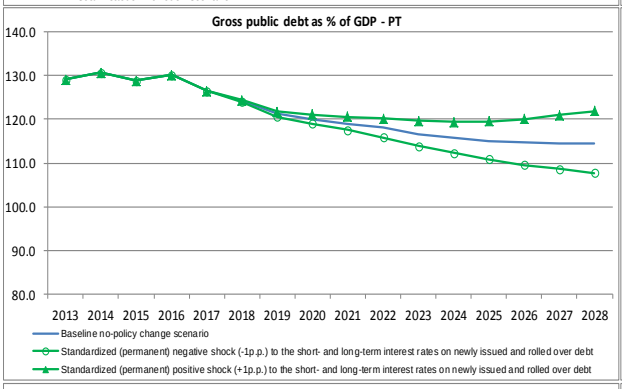
Macro-fiscal assumptions, Poland	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	53.2	53.0	53.0	55.1	57.2	60.0	53.1	55.6	54.9
Primary balance	-0.2	-0.3	-0.4	-1.3	-1.4	-1.5	-0.3	-1.2	-1.0
Structural primary balance (before CoA)	-0.5	-0.8	-1.0	-1.0	-1.0	-1.0	-0.8	-1.0	-1.0
Real GDP growth	4.2	3.8	3.4	2.3	2.4	2.2	3.8	2.4	2.7
Potential GDP growth	3.1	3.3	3.4	2.3	2.4	2.2	3.3	2.5	2.7
Inflation rate	2.1	2.0	2.5	2.0	2.0	2.0	2.2	2.1	2.1
Implicit interest rate (nominal)	3.0	2.9	2.9	3.6	4.0	4.3	3.0	3.7	3.5
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	53.2	53.0	53.0	53.0	53.6	54.5	53.1	53.2	53.2
Primary balance	-0.2	-0.3	-0.4	-0.6	-0.5	-0.5	-0.3	-0.5	-0.5
Structural primary balance (before CoA)	-0.5	-0.8	-1.0	-0.3	-0.2	0.0	-0.8	-0.4	-0.5
Real GDP growth	4.2	3.8	3.4	2.3	2.3	2.2	3.8	2.3	2.7
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	53.2	53.0	52.6	46.7	44.8	43.2	53.0	46.9	48.4
Primary balance	-0.2	-0.3	0.3	0.6	0.7	0.7	-0.1	0.7	0.5
Structural primary balance (before CoA)	-0.5	-0.8	-0.3	0.6	0.7	0.7	-0.5	0.6	0.3
Real GDP growth	4.2	3.8	2.9	2.3	2.3	2.2	3.6	2.3	2.6
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	55.3	54.8	54.0	50.8	51.0	51.6	54.7	51.2	52.1
Primary balance	-1.2	-0.7	-0.2	-0.1	-0.2	-0.2	-0.7	0.0	-0.2
Structural primary balance (before CoA)	-1.2	-0.8	-0.5	0.2	0.2	0.2	-0.8	0.2	-0.1
Real GDP growth	3.6	3.8	3.9	2.2	2.2	2.1	3.8	2.4	2.7
Potential GDP growth	3.3	3.8	3.8	2.2	2.2	2.1	3.6	2.4	2.7
Inflation rate	1.0	2.3	2.3	2.0	2.0	2.0	1.9	2.1	2.0
Implicit interest rate (nominal)	3.2	3.5	3.5	3.9	4.2	4.4	3.4	3.9	3.8
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	53.2	53.0	53.0	57.4	61.0	65.2	53.1	58.0	56.7
Primary balance	-0.2	-0.3	-0.4	-2.0	-2.1	-2.2	-0.3	-1.8	-1.4
Structural primary balance (before CoA)	-0.5	-0.8	-1.0	-1.7	-1.7	-1.7	-0.8	-1.6	-1.4
Real GDP growth	4.2	3.8	3.4	2.3	2.4	2.2	3.8	2.4	2.8
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	53.2	53.0	53.0	54.9	57.4	60.3	53.1	55.4	54.8
Primary balance	-0.2	-0.3	-0.4	-2.0	-2.1	-2.2	-0.3	-1.8	-1.4
Structural primary balance (before CoA)	-0.5	-0.8	-1.0	-1.7	-1.7	-1.7	-0.8	-1.6	-1.4
Real GDP growth	4.2	3.8	3.4	3.5	3.5	3.5	3.8	3.6	3.6
Implicit interest rate (nominal)	3.0	2.9	2.9	3.8	4.1	4.4	3.0	3.8	3.6
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	53.2	53.1	53.3	56.7	59.7	63.5	53.2	57.3	56.3
Implicit interest rate (nominal)	3.0	3.1	3.2	4.3	4.8	5.2	3.1	4.3	4.0
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	53.2	53.0	52.8	53.5	54.9	56.7	53.0	53.9	53.7
Implicit interest rate (nominal)	3.0	2.8	2.6	2.9	3.2	3.4	2.8	3.0	2.9
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	53.2	53.2	53.5	57.7	60.9	64.8	53.3	58.3	57.0
Implicit interest rate (nominal)	3.0	3.2	3.5	4.6	4.9	5.3	3.2	4.6	4.2
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	53.2	52.8	52.6	53.4	55.1	57.2	52.9	53.9	53.6
Real GDP growth	4.2	4.3	3.9	2.8	2.9	2.7	4.1	2.9	3.2
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	53.2	53.3	53.5	56.8	59.5	62.9	53.3	57.3	56.3
Real GDP growth	4.2	3.3	2.9	1.8	1.9	1.7	3.5	1.9	2.3
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	53.2	52.7	52.4	53.2	54.9	57.1	52.8	53.7	53.5
Real GDP growth	4.2	4.5	4.1	2.8	2.9	2.7	4.3	2.9	3.2
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	53.2	53.4	53.7	57.0	59.7	63.0	53.4	57.5	56.5
Real GDP growth	4.2	3.1	2.7	1.8	1.9	1.7	3.4	1.9	2.2
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	53.2	53.1	53.3	56.5	59.2	62.4	53.2	57.0	56.1
Primary balance	-0.2	-0.3	-0.7	-1.5	-1.6	-1.7	-0.4	-1.4	-1.2
Structural primary balance (before CoA)	-0.5	-0.9	-1.3	-1.3	-1.3	-1.3	-0.9	-1.3	-1.2
Real GDP growth	4.2	3.9	3.6	2.3	2.4	2.2	3.9	2.4	2.7
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	53.2	57.7	62.5	64.0	66.0	68.7	57.8	64.5	62.8
Exchange rate depreciation	0.0%	23.2%	23.2%	0.0%	0.0%	0.0%	15.5%	0.0%	3.9%

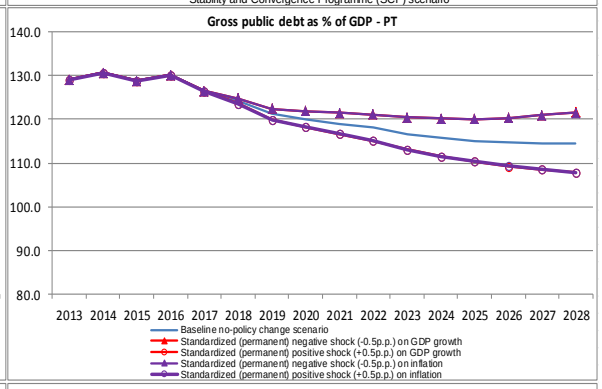
21. Portugal

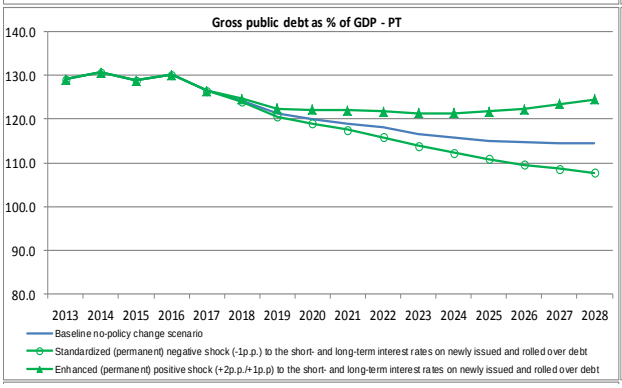
Public debt projections under baseline and alternative scenarios and sensitivity tests

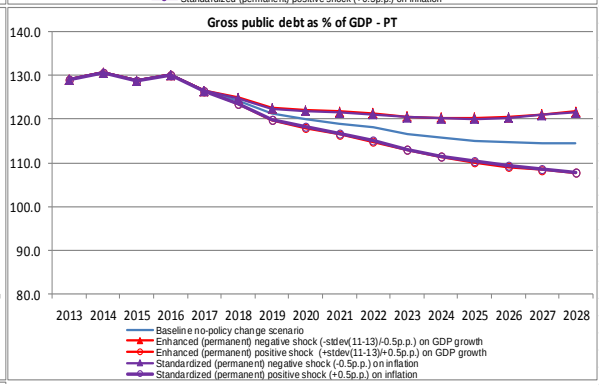
PT - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**128.8**	**130.1**	**126.4**	**124.1**	**121.1**	**120.0**	**119.0**	**118.0**	**116.7**	**115.7**	**115.1**	**114.6**	**114.6**	**114.5**
Changes in the ratio (-1+2+3)	*-1.8*	*1.4*	*-3.7*	*-2.3*	*-3.0*	*-1.2*	*-0.9*	*-1.0*	*-1.3*	*-0.9*	*-0.7*	*-0.5*	*0.0*	*-0.1*
of which														
(1) Primary balance (1.1+1.2+1.3)	**0.2**	**2.2**	**2.5**	**2.2**	**2.3**	**2.1**	**2.0**	**1.9**	**1.9**	**1.7**	**1.7**	**1.6**	**1.6**	**1.6**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***2.3***	***2.2***	***2.1***	***1.8***	***1.6***	***1.6***	***1.7***	***1.9***	***1.9***	***1.7***	***1.7***	***1.6***	***1.6***	***1.6***
(1.1.1) Structural Primary Balance (bef. CoA)	*2.3*	*2.2*	*2.1*	*1.8*	*1.6*	*1.6*	*1.6*	*1.6*	*1.6*	*1.6*	*1.6*	*1.6*	*1.6*	*1.6*
(1.1.2) Cost of ageing						*0.0*	*-0.2*	*-0.3*	*-0.4*	*-0.2*	*-0.1*	*-0.1*	*-0.1*	*-0.1*
(1.1.3) Others (taxes and property incomes)						*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*-0.1*	*-0.1*
(1.2) Cyclical component	***-0.9***	***-0.5***	***0.2***	***0.5***	***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	***-1.2***	***0.4***	***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)	**-0.3**	**0.5**	**-1.1**	**-0.7**	**-0.4**	**0.9**	**1.0**	**0.9**	**0.6**	**0.8**	**1.0**	**1.2**	**1.6**	**1.5**
(2.1) Interest expenditure	*4.6*	*4.2*	*3.9*	*3.6*	*3.5*	*3.6*	*3.7*	*3.8*	*3.9*	*4.0*	*4.2*	*4.4*	*4.6*	*4.7*
(2.2) Growth effect	*-2.3*	*-1.9*	*-3.3*	*-2.5*	*-2.2*	*-0.8*	*-0.5*	*-0.6*	*-1.0*	*-0.9*	*-0.9*	*-0.9*	*-0.7*	*-0.9*
(2.3) Inflation effect	*-2.6*	*-1.8*	*-1.7*	*-1.8*	*-1.7*	*-1.9*	*-2.1*	*-2.3*	*-2.3*	*-2.3*	*-2.3*	*-2.3*	*-2.2*	*-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	**-1.4**	**3.1**	**-0.1**	**0.6**	**-0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*-1.8*	*3.1*	*-0.1*	*0.7*	*-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	*0.5*	*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*
Per memo														
Structural balance	-1.8	-2.0	-1.8	-1.8	-1.9	-1.9	-1.9	-1.9	-2.0	-2.3	-2.5	-2.7	-2.9	-3.1

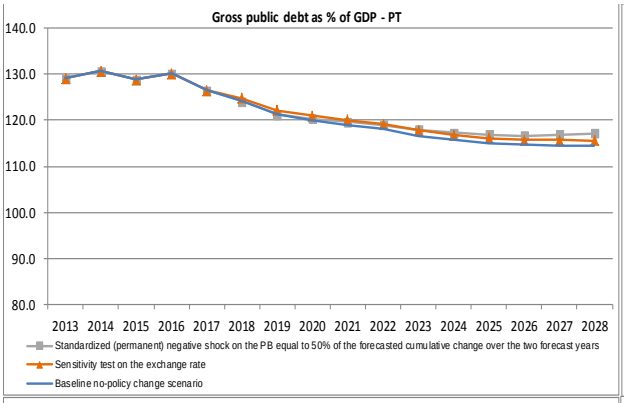


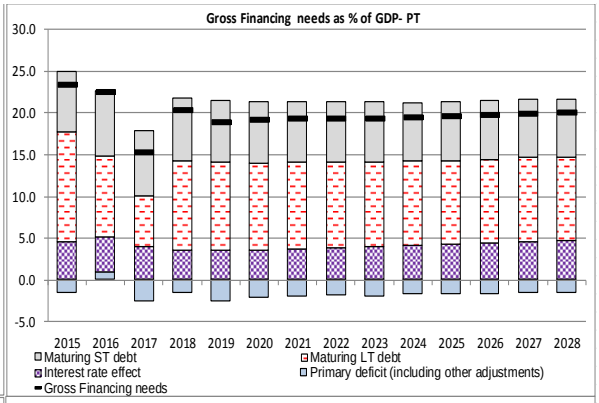


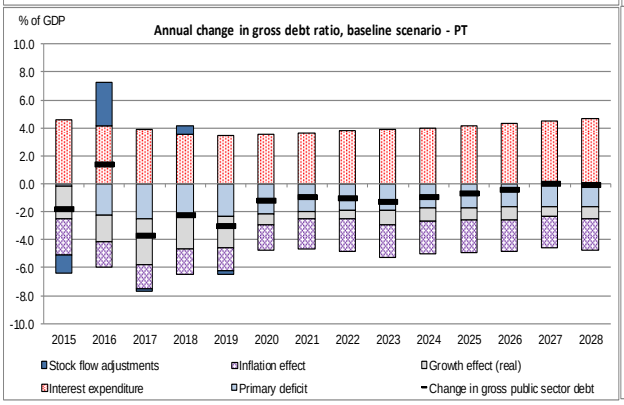


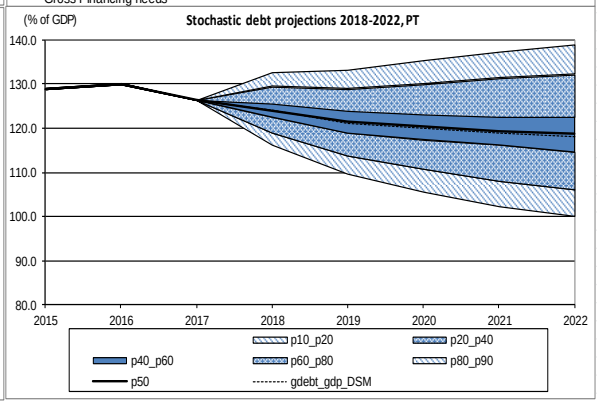












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	27.0	26.8	26.6	26.8	27.0	27.2	27.2	27.2	27.1	27.3
Revenues from pensions taxation	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2
Property incomes	1.2	1.0	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.82**	**0.36**	**0.46**
Fiscal sub-index	1.00	0.31	0.36
Financial competitiveness sub-index	0.72	0.39	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**5.0**	**12.7**	**5.4**	**2.3**	**6.1**
of which *Initial Budgetary position*	*-0.1*	*3.5*	*-0.1*	*-3.0*	*0.2*
*Cost of delaying adjustment***	*0.8*	*3.0*	*0.9*	*0.5*	*1.0*
*Debt requirement****	*4.4*	*6.3*	*4.4*	*4.7*	*4.9*
Ageing costs	*-0.1*	*-0.1*	*0.2*	*0.0*	*-0.1*
Required structural primary balance related to S1	**6.6**	**12.0**	**7.0**	**6.3**	**7.6**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**1.0**	**3.5**	**2.6**	**-1.4**	**1.3**
of which Initial Budgetary position	0.7	3.1	0.6	-1.9	1.0
Long term component	0.3	0.4	2.0	0.5	0.4
of which Pensions	*-0.5*	*-0.5*	*-0.5*	*-0.6*	*-0.3*
Health care	*1.7*	*1.8*	*2.3*	*1.6*	*1.7*
Long-term care	*0.2*	*0.3*	*1.2*	*0.2*	*0.2*
Others	*-1.1*	*-1.1*	*-1.1*	*-0.7*	*-1.2*
Required structural primary balance related to S2	**2.6**	**2.7**	**4.2**	**2.6**	**2.9**

Risks related to the structure of public debt financing

Public debt structure - PT (2016)	Share of short-term public debt (p.p.): 16.7	Share of public debt in foreign currency (%): 8.6	Share of public debt by non-residents (%): 58.2

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		PT	EU
State guarantees (% GDP) (2015)		6.7	8.5
of which One-off guarantees		*6.7*	*8.1*
Standardised guarantees		*0.0*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	2.48	0.92
	Securities issued under liquidity schemes	0.00	0.00
	Special purpose entity	0.00	0.21
	Total	2.48	1.13

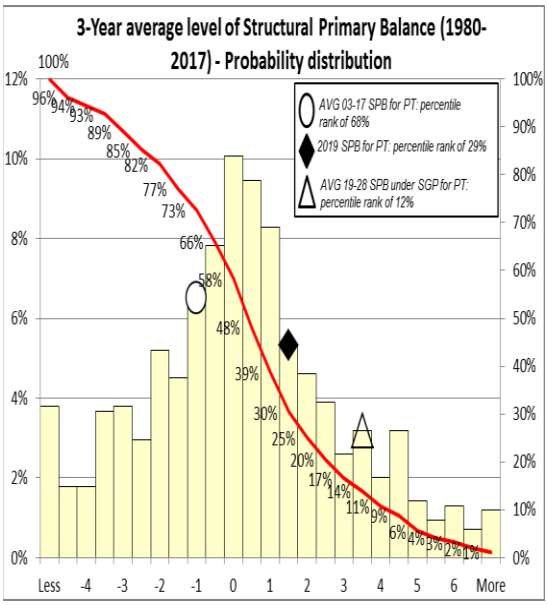
Government's contingent liability risks from banking sector - PT (2016)	Private sector credit flow (% GDP): -2.2	Change in nominal house price index: 7.1	Bank loans-to-deposits ratio (p.p.): 93.2	Share of non-performing loans (%): 19.5	Change in share of non-performing loans (p.p): 0.5	NPL coverage ratio 43.6	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8% 0.01%	bank recap. at 10.5% 0.03%

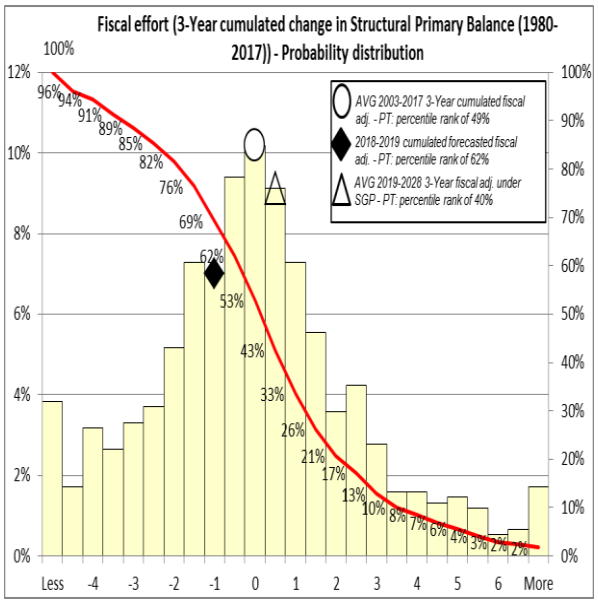
Financial market information

Sovereign Ratings as of Nov 2017, PT	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	Ba1	(P)NP	Ba1	
S&P	BBB-u	A-3u	BBB-u	A-3u
Fitch	BB+		BB+	WD

Financial market information as of October 2017, PT		
Sovereign yield spreads(bp)*	10-year	195.0
CDS (bp)	5-year	110.4

Realism of baseline assumptions





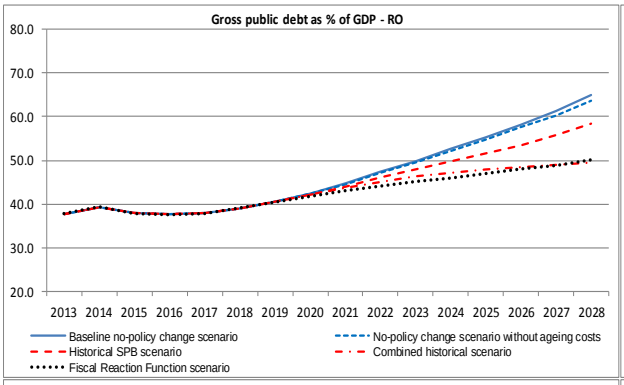
Underlying macro-fiscal assumptions

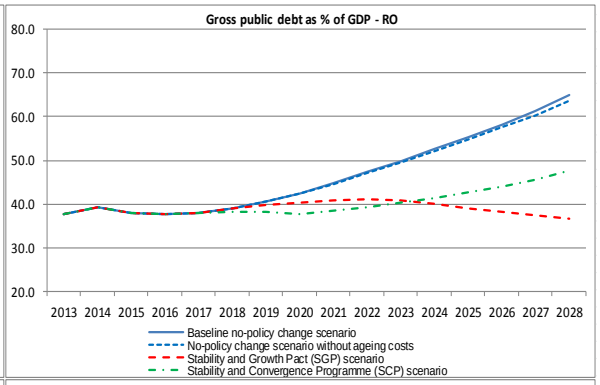
Macro-fiscal assumptions, Portugal	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	126.4	124.1	121.1	115.7	114.6	114.5	123.9	116.5	118.3
Primary balance	2.5	2.2	2.3	1.7	1.6	1.6	2.3	1.8	1.9
Structural primary balance (before CoA)	2.1	1.8	1.6	1.6	1.6	1.6	1.8	1.6	1.6
Real GDP growth	2.6	2.1	1.8	0.8	0.8	0.8	2.2	0.7	1.1
Potential GDP growth	1.3	1.4	1.5	0.8	0.8	0.8	1.4	0.9	1.0
Inflation rate	1.3	1.4	1.4	2.0	2.0	2.0	1.4	1.9	1.8
Implicit interest rate (nominal)	3.1	2.9	2.9	3.6	3.9	4.2	3.0	3.6	3.4
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	126.4	124.1	121.1	117.7	117.8	118.9	123.9	118.5	119.8
Primary balance	2.5	2.2	2.3	1.2	1.1	1.1	2.3	1.3	1.5
Structural primary balance (before CoA)	2.1	1.8	1.6	1.0	1.0	1.1	1.8	1.1	1.3
Real GDP growth	2.6	2.1	1.8	0.8	0.8	0.8	2.2	0.7	1.1
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	126.4	124.1	121.1	107.2	101.0	95.2	123.9	107.3	111.5
Primary balance	2.5	2.2	3.1	4.0	4.1	4.2	2.6	4.0	3.6
Structural primary balance (before CoA)	2.1	1.8	2.4	4.0	4.1	4.2	2.1	3.9	3.5
Real GDP growth	2.6	2.1	1.3	0.8	0.8	0.8	2.0	0.6	0.9
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	127.9	124.2	120.0	98.4	91.9	85.7	124.0	99.4	105.5
Primary balance	2.7	3.1	3.6	4.0	3.9	3.9	3.1	4.1	3.8
Structural primary balance (before CoA)	2.5	3.0	3.4	4.0	4.0	4.0	3.0	4.0	3.7
Real GDP growth	1.8	1.9	2.0	1.1	1.2	1.2	1.9	1.4	1.5
Potential GDP growth	1.1	1.6	1.7	1.1	1.2	1.2	1.5	1.3	1.3
Inflation rate	1.4	1.5	1.6	2.0	2.0	2.0	1.5	1.9	1.8
Implicit interest rate (nominal)	3.3	3.3	3.2	3.7	4.0	4.2	3.3	3.7	3.6
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	126.4	124.1	121.1	121.9	125.7	130.8	123.9	123.4	123.5
Primary balance	2.5	2.2	2.3	-0.6	-0.7	-0.7	2.3	-0.2	0.5
Structural primary balance (before CoA)	2.1	1.8	1.6	-0.8	-0.8	-0.8	1.8	-0.4	0.2
Real GDP growth	2.6	2.1	1.8	0.8	0.8	0.8	2.2	0.9	1.2
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	126.4	124.1	121.1	121.5	126.4	132.1	123.9	123.1	123.3
Primary balance	2.5	2.2	2.3	-0.6	-0.7	-0.7	2.3	-0.2	0.5
Structural primary balance (before CoA)	2.1	1.8	1.6	-0.8	-0.8	-0.8	1.8	-0.4	0.2
Real GDP growth	2.6	2.1	1.8	0.3	0.3	0.3	2.2	0.8	1.1
Implicit interest rate (nominal)	3.1	2.9	2.9	3.6	3.9	4.0	3.0	3.6	3.4
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	126.4	124.4	121.7	119.4	120.0	121.9	124.2	120.3	121.3
Implicit interest rate (nominal)	3.1	3.1	3.2	4.2	4.6	5.0	3.2	4.2	3.9
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	126.4	123.9	120.6	112.3	109.6	107.7	123.6	112.8	115.5
Implicit interest rate (nominal)	3.1	2.7	2.6	2.9	3.2	3.4	2.8	3.0	2.9
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	126.4	124.6	122.3	121.4	122.3	124.5	124.5	122.3	122.8
Implicit interest rate (nominal)	3.1	3.3	3.5	4.3	4.7	5.1	3.3	4.4	4.1
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	126.4	123.5	119.9	111.5	109.2	107.8	123.3	112.2	115.0
Real GDP growth	2.6	2.6	2.3	1.3	1.3	1.3	2.5	1.2	1.5
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	126.4	124.8	122.4	120.1	120.3	121.5	124.5	120.9	121.8
Real GDP growth	2.6	1.6	1.3	0.3	0.3	0.3	1.8	0.2	0.6
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	126.4	123.4	119.8	111.4	109.0	107.7	123.2	112.1	114.9
Real GDP growth	2.6	2.6	2.4	1.3	1.3	1.3	2.6	1.2	1.5
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	126.4	124.8	122.5	120.3	120.4	121.7	124.6	121.0	121.9
Real GDP growth	2.6	1.5	1.3	0.3	0.3	0.3	1.8	0.2	0.6
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	126.4	124.1	121.3	117.2	116.6	117.1	123.9	118.0	119.5
Primary balance	2.5	2.1	2.0	1.5	1.4	1.3	2.2	1.5	1.7
Structural primary balance (before CoA)	2.1	1.7	1.3	1.3	1.3	1.3	1.7	1.3	1.4
Real GDP growth	2.6	2.1	2.0	0.8	0.8	0.8	2.2	0.7	1.1
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	126.4	124.7	122.2	116.8	115.7	115.6	124.4	117.5	119.3
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

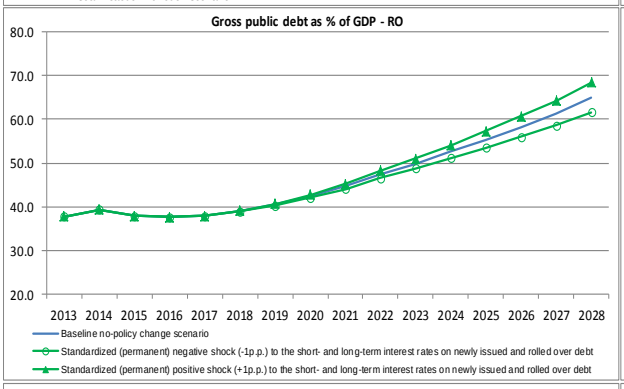
22. Romania

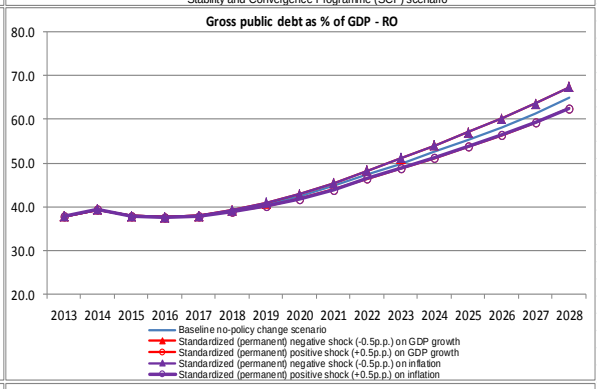
Public debt projections under baseline and alternative scenarios and sensitivity tests

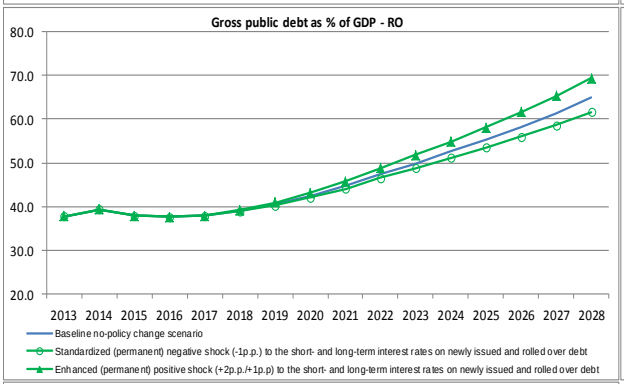
RO - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**37.9**	**37.6**	**37.9**	**39.1**	**40.5**	**42.4**	**44.7**	**47.3**	**49.9**	**52.5**	**55.3**	**58.2**	**61.3**	**64.9**
Changes in the ratio (-1+2+3)	*-1.5*	*-0.3*	*0.3*	*1.1*	*1.4*	*1.9*	*2.3*	*2.7*	*2.5*	*2.7*	*2.8*	*2.9*	*3.1*	*3.5*
of which														
(1) Primary balance (1.1+1.2+1.3)	**0.9**	**-1.5**	**-1.6**	**-2.3**	**-2.5**	**-2.7**	**-2.9**	**-3.1**	**-3.1**	**-3.1**	**-3.2**	**-3.2**	**-3.3**	**-3.4**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***1.3***	***-0.7***	***-1.8***	***-2.7***	***-2.9***	***-3.0***	***-3.0***	***-3.1***	***-3.1***	***-3.1***	***-3.2***	***-3.2***	***-3.3***	***-3.4***
(1.1.1) Structural Primary Balance (bef. CoA)	*1.3*	*-0.7*	*-1.8*	*-2.7*	*-2.9*	*-2.9*	*-2.9*	*-2.9*	*-2.9*	*-2.9*	*-2.9*	*-2.9*	*-2.9*	*-2.9*
(1.1.2) Cost of ageing						*0.0*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	*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*	*-0.1*
(1.2) Cyclical component	***-0.7***	***-0.4***	***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	***0.3***	***-0.4***	***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)	**-0.8**	**-0.9**	**-1.2**	**-1.2**	**-1.1**	**-0.8**	**-0.6**	**-0.4**	**-0.6**	**-0.5**	**-0.4**	**-0.3**	**-0.2**	**0.1**
(2.1) Interest expenditure	*1.6*	*1.5*	*1.5*	*1.6*	*1.6*	*1.6*	*1.7*	*1.8*	*1.9*	*2.0*	*2.2*	*2.4*	*2.6*	*2.8*
(2.2) Growth effect	*-1.5*	*-1.6*	*-2.0*	*-1.6*	*-1.5*	*-1.3*	*-1.3*	*-1.3*	*-1.6*	*-1.6*	*-1.6*	*-1.6*	*-1.6*	*-1.4*
(2.3) Inflation effect	*-1.0*	*-0.8*	*-0.7*	*-1.2*	*-1.2*	*-1.1*	*-1.0*	*-0.9*	*-0.9*	*-1.0*	*-1.0*	*-1.1*	*-1.1*	*-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	**0.2**	**-0.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*-0.6*	*-1.1*	*-0.2*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.7*	*0.2*	*0.2*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Per memo														
Structural balance	0.4	-2.0	-3.3	-4.3	-4.6	-4.6	-4.7	-4.9	-5.0	-5.2	-5.4	-5.6	-5.9	-6.2

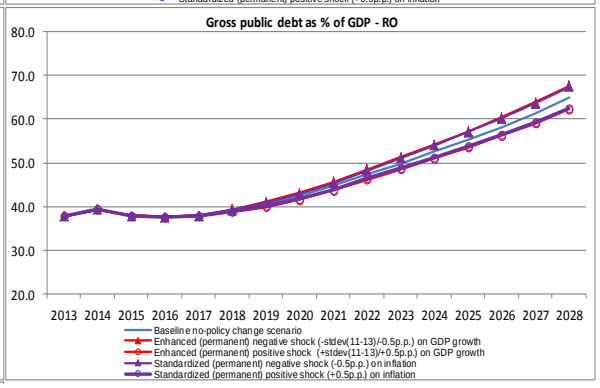


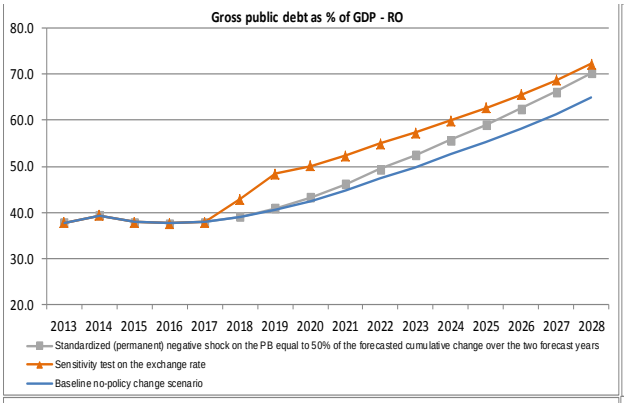


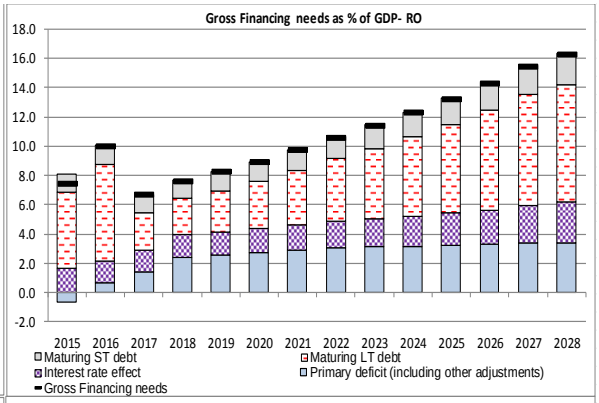


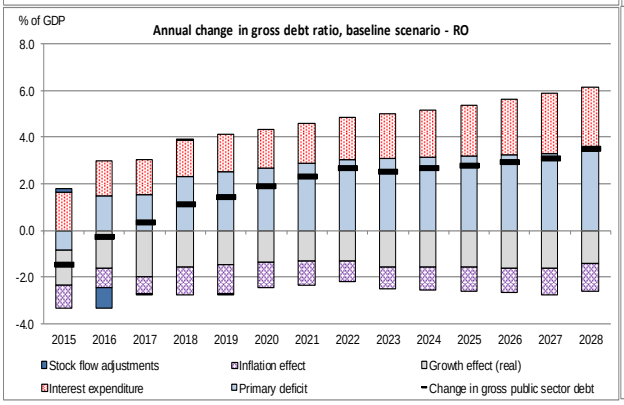


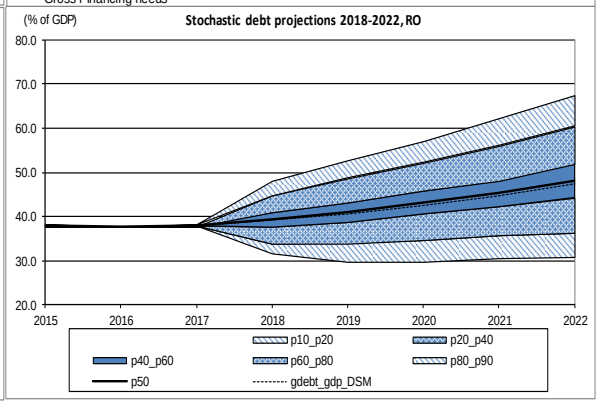












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	15.5	15.5	15.7	15.6	15.7	15.7	15.7	15.8	15.9	16.2
Revenues from pensions taxation	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Property incomes	0.8	0.9	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.8

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.70**	**0.20**	**0.46**
Fiscal sub-index	0.46	0.22	0.36
Financial competitiveness sub-index	0.81	0.18	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**2.1**	**1.8**	**2.4**	**-0.5**	**0.7**
of which *Initial Budgetary position*	*3.0*	*2.3*	*3.0*	*1.3*	*1.7*
*Cost of delaying adjustment***	*0.3*	*0.4*	*0.4*	*-0.1*	*0.1*
*Debt requirement****	*-1.5*	*-1.3*	*-1.5*	*-2.0*	*-1.4*
Ageing costs	*0.3*	*0.4*	*0.5*	*0.2*	*0.3*
Required structural primary balance related to S1	**-0.9**	**-0.2**	**-0.6**	**-1.7**	**-1.0**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**5.1**	**4.4**	**7.0**	**3.4**	**3.7**
of which Initial Budgetary position	3.7	2.9	3.7	1.9	2.3
Long term component	1.4	1.5	3.4	1.5	1.5
of which Pensions	*0.0*	*0.0*	*0.0*	*0.0*	*0.1*
Health care	*0.5*	*0.6*	*1.0*	*0.5*	*0.6*
Long-term care	*0.5*	*0.6*	*2.0*	*0.5*	*0.5*
Others	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*
Required structural primary balance related to S2	**2.1**	**2.4**	**4.1**	**2.2**	**2.1**

Risks related to the structure of public debt financing

Public debt structure - RO (2016)	Share of short-term public debt (p.p.): 6.9	Share of public debt in foreign currency (%): 52.4	Share of public debt by non-residents (%): 48.4

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		RO	EU
State guarantees (% GDP) (2015)		2.2	8.5
of which One-off guarantees		*0.5*	*8.1*
Standardised guarantees		*1.8*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	:	0.92
	Securities issued under liquidity schemes	:	0.00
	Special purpose entity	:	0.21
	Total	0.00	1.13

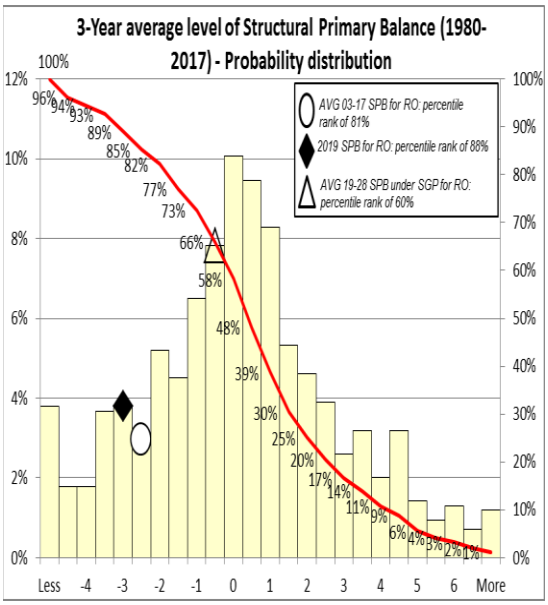
Government's contingent liability risks from banking sector - RO (2016)	Private sector credit flow (% GDP):	Change in nominal house price index:	Bank loans-to-deposits ratio (p.p.):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8%	bank recap. at 10.5%
	0.6	6.0	67.4	10.1	-4.5	65.8	0.00%	0.00%

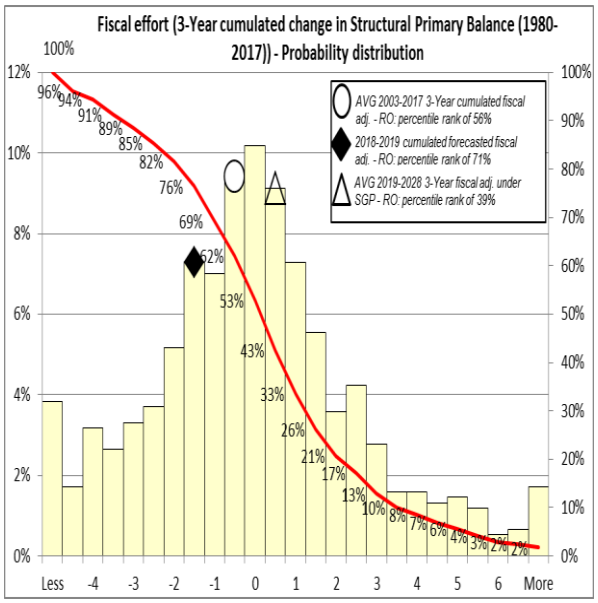
Financial market information

Sovereign Ratings as of Nov 2017, RO	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's			Baa3	
S&P	BBB-	A-3	BBB-	A-3
Fitch	BBB-		BBB-	F3

Financial market information as of October 2017, RO		
Sovereign yield spreads(bp)*	10-year	380.0
CDS (bp)	5-year	111.8

Realism of baseline assumptions





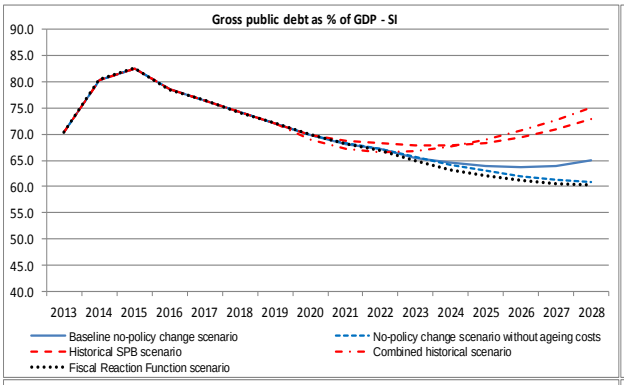
Underlying macro-fiscal assumptions

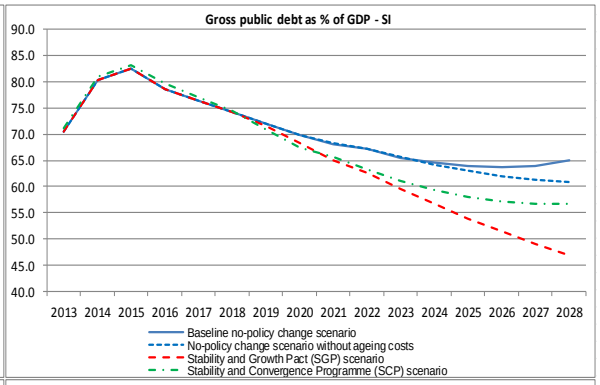
Macro-fiscal assumptions, Romania				Levels				Averages	
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	37.9	39.1	40.5	52.5	58.2	64.9	39.2	52.9	49.5
Primary balance	-1.6	-2.3	-2.5	-3.1	-3.2	-3.4	-2.1	-3.1	-2.9
Structural primary balance (before CoA)	-1.8	-2.7	-2.9	-2.9	-2.9	-2.9	-2.5	-2.9	-2.8
Real GDP growth	5.7	4.4	4.1	3.3	3.0	2.4	4.7	3.1	3.5
Potential GDP growth	3.7	4.0	4.0	3.3	3.0	2.4	3.9	3.3	3.4
Inflation rate	2.0	3.2	3.3	2.0	2.0	2.0	2.8	2.1	2.3
Implicit interest rate (nominal)	4.2	4.4	4.4	4.3	4.5	4.7	4.3	4.4	4.4
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	37.9	39.1	40.5	46.1	47.9	50.0	39.2	46.0	44.3
Primary balance	-1.6	-2.3	-2.5	-1.3	-1.2	-1.0	-2.1	-1.4	-1.6
Structural primary balance (before CoA)	-1.8	-2.7	-2.9	-1.1	-0.9	-0.5	-2.5	-1.2	-1.5
Real GDP growth	5.7	4.4	4.1	3.2	2.9	2.3	4.7	2.9	3.4
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	37.9	39.1	39.8	40.0	38.2	36.8	38.9	39.4	39.3
Primary balance	-1.6	-2.3	-1.6	0.5	0.7	0.7	-1.8	0.1	-0.4
Structural primary balance (before CoA)	-1.8	-2.7	-2.0	0.5	0.7	0.7	-2.2	0.0	-0.5
Real GDP growth	5.7	4.4	3.4	2.9	3.0	2.4	4.5	2.9	3.3
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	38.0	38.3	38.1	41.3	44.0	47.6	38.1	41.9	40.9
Primary balance	-1.4	-1.4	-1.0	-1.4	-1.5	-1.6	-1.3	-1.3	-1.3
Structural primary balance (before CoA)	-1.5	-1.5	-1.4	-1.2	-1.2	-1.2	-1.5	-1.2	-1.3
Real GDP growth	5.2	5.5	5.7	3.0	2.7	1.9	5.5	3.1	3.7
Potential GDP growth	4.5	5.0	5.3	3.0	2.7	1.9	4.9	3.1	3.6
Inflation rate	2.0	2.1	1.9	2.0	2.0	2.0	2.0	1.9	2.0
Implicit interest rate (nominal)	4.0	4.3	4.2	4.4	4.6	4.7	4.2	4.4	4.3
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	37.9	39.1	40.5	49.6	53.5	58.3	39.2	49.9	47.2
Primary balance	-1.6	-2.3	-2.5	-2.2	-2.3	-2.5	-2.1	-2.3	-2.3
Structural primary balance (before CoA)	-1.8	-2.7	-2.9	-2.0	-2.0	-2.0	-2.5	-2.2	-2.3
Real GDP growth	5.7	4.4	4.1	3.3	3.0	2.4	4.7	3.1	3.5
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	37.9	39.1	40.5	47.1	48.4	49.5	39.2	46.5	44.7
Primary balance	-1.6	-2.3	-2.5	-2.2	-2.3	-2.5	-2.1	-2.3	-2.3
Structural primary balance (before CoA)	-1.8	-2.7	-2.9	-2.0	-2.0	-2.0	-2.5	-2.2	-2.3
Real GDP growth	5.7	4.4	4.1	3.6	3.6	3.6	4.7	3.6	3.9
Implicit interest rate (nominal)	4.2	4.4	4.4	2.6	2.0	1.5	4.3	2.8	3.2
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	37.9	39.1	40.7	54.1	60.6	68.3	39.2	54.6	50.8
Implicit interest rate (nominal)	4.2	4.6	4.8	5.1	5.4	5.6	4.5	5.1	5.0
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	37.9	39.0	40.3	51.1	56.0	61.6	39.1	51.3	48.3
Implicit interest rate (nominal)	4.2	4.2	4.1	3.6	3.6	3.8	4.2	3.7	3.8
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	37.9	39.2	40.9	54.8	61.5	69.3	39.3	55.4	51.4
Implicit interest rate (nominal)	4.2	4.8	5.1	5.3	5.5	5.7	4.7	5.3	5.2
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	37.9	38.9	40.1	51.2	56.4	62.5	39.0	51.5	48.4
Real GDP growth	5.7	4.9	4.6	3.8	3.5	2.9	5.1	3.6	4.0
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	37.9	39.2	40.8	53.9	60.2	67.4	39.3	54.4	50.6
Real GDP growth	5.7	3.9	3.6	2.8	2.5	1.9	4.4	2.6	3.1
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	37.9	38.8	39.9	50.9	56.2	62.3	38.9	51.3	48.2
Real GDP growth	5.7	5.3	5.0	3.8	3.5	2.9	5.3	3.6	4.1
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	37.9	39.4	41.1	54.2	60.4	67.6	39.5	54.7	50.9
Real GDP growth	5.7	3.6	3.2	2.8	2.5	1.9	4.2	2.6	3.0
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	37.9	39.0	40.9	55.7	62.5	70.2	39.3	56.1	51.9
Primary balance	-1.6	-2.3	-3.1	-3.7	-3.8	-4.0	-2.3	-3.7	-3.3
Structural primary balance (before CoA)	-1.8	-2.7	-3.5	-3.5	-3.5	-3.5	-2.7	-3.5	-3.3
Real GDP growth	5.7	4.4	4.6	3.3	3.0	2.4	4.9	3.1	3.6
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	37.9	42.9	48.4	59.9	65.5	72.2	43.1	60.4	56.1
Exchange rate depreciation	0.0%	15.1%	15.1%	0.0%	0.0%	0.0%	10.1%	0.0%	2.5%

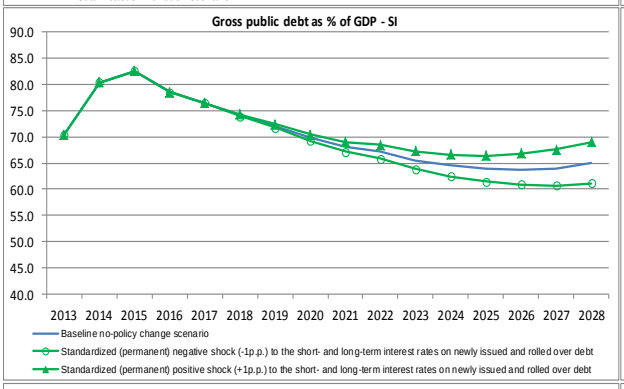
23. Slovenia

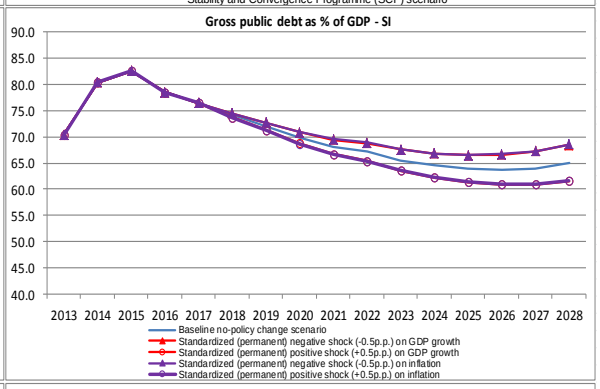
Public debt projections under baseline and alternative scenarios and sensitivity tests

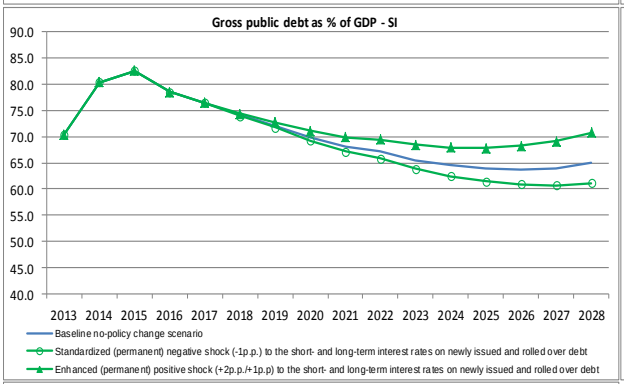
SI - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**82.6**	**78.5**	**76.4**	**74.1**	**72.0**	**69.8**	**68.1**	**67.1**	**65.5**	**64.5**	**63.9**	**63.7**	**64.0**	**64.9**
Changes in the ratio (-1+2+3)	*2.3*	*-4.1*	*-2.1*	*-2.3*	*-2.0*	*-2.3*	*-1.7*	*-1.0*	*-1.5*	*-1.1*	*-0.6*	*-0.1*	*0.3*	*0.9*
of which														
(1) Primary balance (1.1+1.2+1.3)	**0.3**	**1.1**	**1.8**	**1.9**	**2.2**	**1.6**	**1.1**	**0.4**	**0.3**	**0.0**	**-0.2**	**-0.5**	**-0.7**	**-1.1**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***1.7***	***1.6***	***1.0***	***0.4***	***0.4***	***0.4***	***0.5***	***0.4***	***0.3***	***0.0***	***-0.2***	***-0.5***	***-0.7***	***-1.1***
(1.1.1) Structural Primary Balance (bef. CoA)	*1.7*	*1.6*	*1.0*	*0.4*	*0.4*	*0.4*	*0.4*	*0.4*	*0.4*	*0.4*	*0.4*	*0.4*	*0.4*	*0.4*
(1.1.2) Cost of ageing						*0.0*	*-0.1*	*-0.1*	*0.1*	*0.4*	*0.6*	*0.8*	*1.1*	*1.4*
(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*
(1.2) Cyclical component	***-1.3***	***-0.4***	***0.8***	***1.6***	***1.8***	***1.2***	***0.6***	***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***	***-0.1***	***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)	**0.7**	**-0.2**	**-2.2**	**-2.2**	**-1.7**	**-0.6**	**-0.6**	**-0.6**	**-1.3**	**-1.1**	**-0.8**	**-0.6**	**-0.4**	**-0.1**
(2.1) Interest expenditure	*3.2*	*3.0*	*2.6*	*1.9*	*1.8*	*1.8*	*1.7*	*1.8*	*1.8*	*1.9*	*2.0*	*2.1*	*2.2*	*2.4*
(2.2) Growth effect	*-1.8*	*-2.5*	*-3.5*	*-2.9*	*-2.3*	*-1.1*	*-1.1*	*-1.0*	*-1.7*	*-1.6*	*-1.5*	*-1.4*	*-1.4*	*-1.2*
(2.3) Inflation effect	*-0.8*	*-0.7*	*-1.3*	*-1.2*	*-1.2*	*-1.3*	*-1.3*	*-1.3*	*-1.3*	*-1.3*	*-1.3*	*-1.3*	*-1.2*	*-1.3*
(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	**1.9**	**-2.7**	**1.9**	**1.8**	**1.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*1.9*	*-2.7*	*1.9*	*1.8*	*1.9*	*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*
Per memo														
Structural balance	-1.6	-1.5	-1.6	-1.6	-1.4	-1.3	-1.3	-1.3	-1.5	-1.9	-2.2	-2.5	-2.9	-3.4

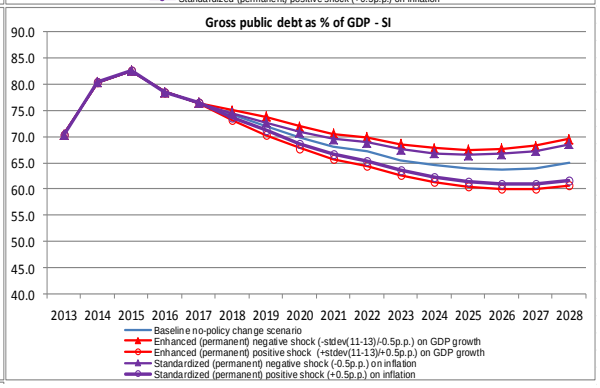


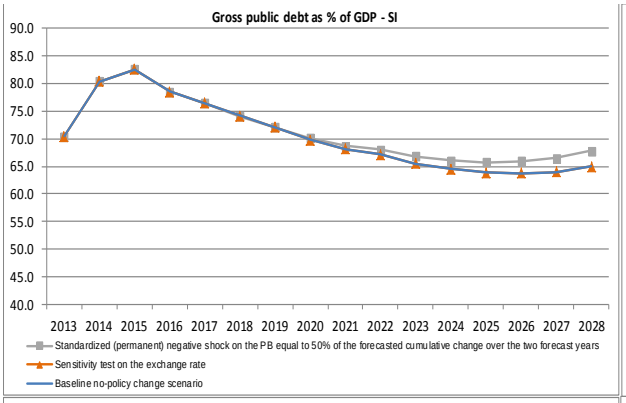


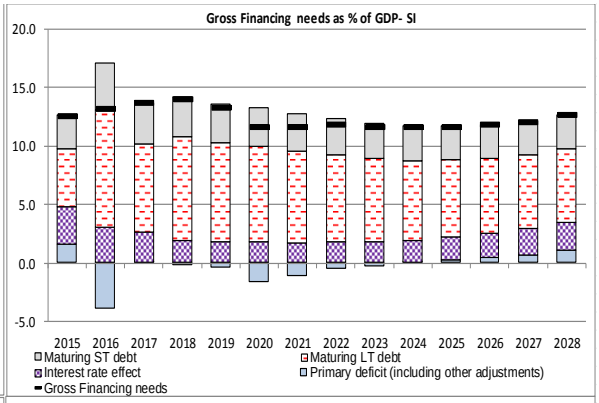


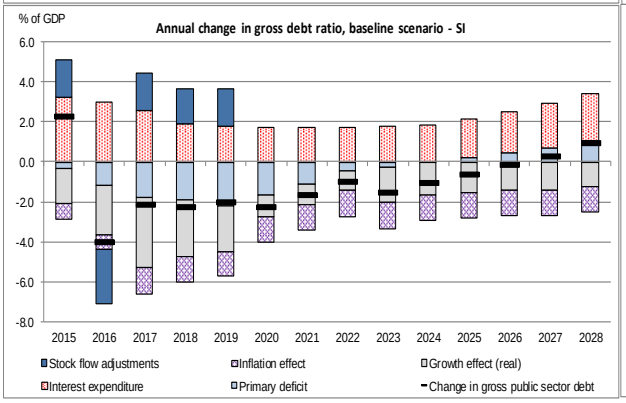


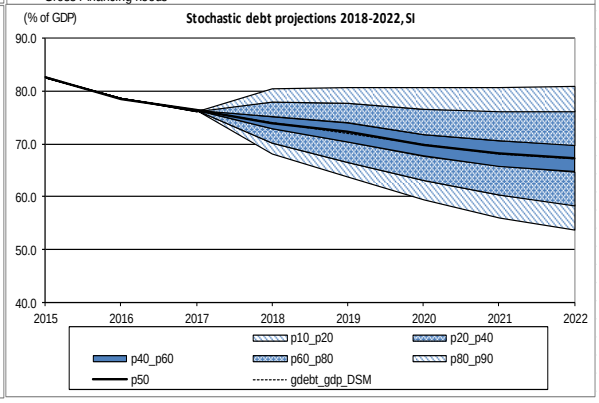












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	24.7	24.6	24.6	24.6	24.6	24.6	24.7	24.6	25.3	26.7
Revenues from pensions taxation	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Property incomes	1.4	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.64**	**0.13**	**0.46**
Fiscal sub-index	0.56	0.07	0.36
Financial competitiveness sub-index	0.68	0.16	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**1.3**	**4.0**	**1.6**	**-0.1**	**2.4**
of which *Initial Budgetary position*	*-0.8*	*0.9*	*-0.8*	*-1.7*	*-0.1*
*Cost of delaying adjustment***	*0.2*	*0.9*	*0.2*	*0.0*	*0.4*
*Debt requirement****	*0.9*	*0.9*	*0.9*	*0.7*	*1.3*
Ageing costs	*1.0*	*1.4*	*1.3*	*0.9*	*0.9*
Required structural primary balance related to S1	**1.7**	**3.3**	**2.0**	**1.5**	**2.7**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**6.1**	**7.6**	**7.5**	**5.1**	**6.5**
of which Initial Budgetary position	0.5	1.7	0.6	-0.7	0.9
Long term component	5.6	5.9	6.9	5.7	5.6
of which Pensions	*3.4*	*3.6*	*3.4*	*3.5*	*3.4*
Health care	*0.8*	*0.9*	*1.3*	*0.8*	*0.9*
Long-term care	*1.0*	*1.1*	*1.9*	*1.0*	*1.0*
Others	*0.4*	*0.4*	*0.4*	*0.4*	*0.3*
Required structural primary balance related to S2	**6.5**	**6.8**	**7.9**	**6.7**	**6.7**

Risks related to the structure of public debt financing

Public debt structure - SI (2016)	Share of short-term public debt (p.p.): 4.8	Share of public debt in foreign currency (%): 0.1	**Share of public debt by non-residents (%): 67.1**

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		SI	EU
State guarantees (% GDP) (2015)		10.7	8.5
of which One-off guarantees		*10.7*	*8.1*
Standardised guarantees		*0.0*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	0.00	0.92
	Securities issued under liquidity schemes	:	0.00
	Special purpose entity	:	0.21
	Total	0.00	1.13

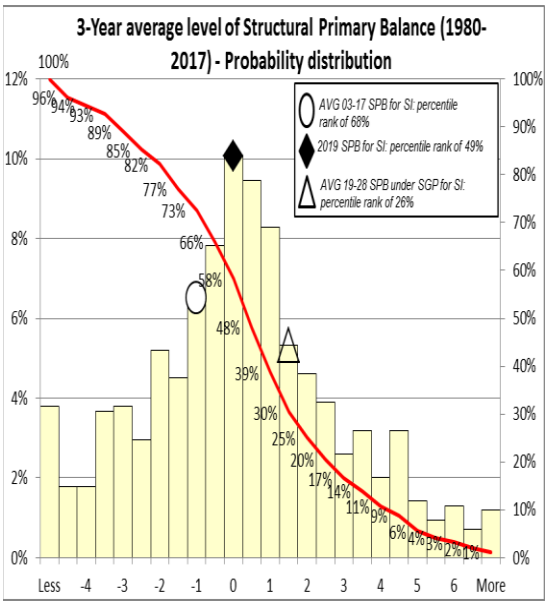
Government's contingent liability risks from banking sector - SI (2016)	Private sector credit flow (% GDP): -0.8	Change in nominal house price index: 3.3	Bank loans-to-deposits ratio (p.p.): 68.4	**Share of non-performing loans (%): 14.4**	Change in share of non-performing loans (p.p): -7.1	NPL coverage ratio 63.9	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8% 0.00%	bank recap. at 10.5% 0.00%

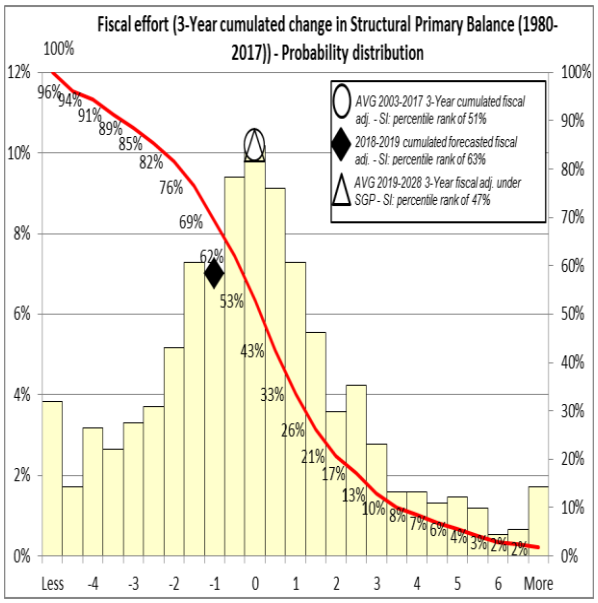
Financial market information

Sovereign Ratings as of Nov 2017, SI	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	Baa1		Baa1	
S&P	A+	A-1	A+	A-1
Fitch	A-		A-	

Financial market information as of October 2017, SI		
Sovereign yield spreads(bp)*	10-year	60.0
CDS (bp)	5-year	65.9

Realism of baseline assumptions





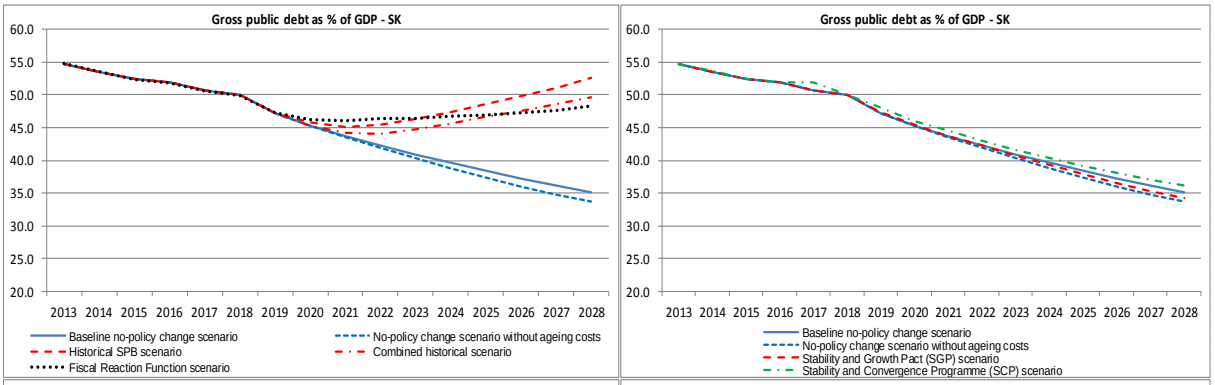
Underlying macro-fiscal assumptions

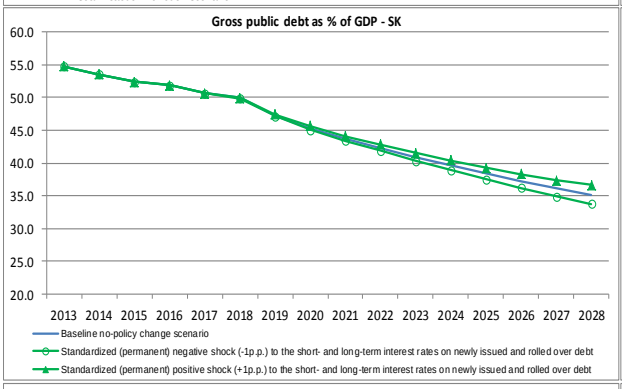
Macro-fiscal assumptions, Slovenia	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	76.4	74.1	72.0	64.5	63.7	64.9	74.2	65.7	67.8
Primary balance	1.8	1.9	2.2	0.0	-0.5	-1.1	2.0	0.1	0.6
Structural primary balance (before CoA)	1.0	0.4	0.4	0.4	0.4	0.4	0.6	0.4	0.4
Real GDP growth	4.7	4.0	3.3	2.6	2.3	2.0	4.0	2.1	2.6
Potential GDP growth	2.0	2.4	2.7	2.6	2.3	2.0	2.4	2.6	2.5
Inflation rate	1.7	1.6	1.7	2.0	2.0	2.0	1.7	2.0	1.9
Implicit interest rate (nominal)	3.5	2.7	2.5	3.0	3.4	3.8	2.9	3.1	3.0
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	76.4	74.1	72.0	63.3	61.1	60.3	74.2	64.1	66.6
Primary balance	1.8	1.9	2.2	0.6	0.3	0.2	2.0	0.7	1.0
Structural primary balance (before CoA)	1.0	0.4	0.4	1.0	1.2	1.6	0.6	1.0	0.9
Real GDP growth	4.7	4.0	3.3	2.6	2.2	1.8	4.0	2.0	2.5
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	76.4	74.1	71.6	56.6	51.4	46.9	74.0	57.0	61.3
Primary balance	1.8	1.9	3.0	1.9	1.9	2.0	2.2	2.1	2.2
Structural primary balance (before CoA)	1.0	0.4	1.2	1.9	1.9	2.0	0.9	1.9	1.7
Real GDP growth	4.7	4.0	2.6	2.6	2.3	2.0	3.8	2.1	2.5
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	77.0	74.3	70.9	59.3	57.2	56.8	74.1	60.6	64.0
Primary balance	1.8	2.3	2.5	1.2	0.7	0.1	2.2	1.2	1.4
Structural primary balance (before CoA)	1.5	1.4	1.6	1.6	1.6	1.6	1.5	1.6	1.6
Real GDP growth	3.6	3.2	2.6	2.0	1.9	1.6	3.1	1.9	2.2
Potential GDP growth	2.1	2.4	2.4	2.0	1.9	1.6	2.3	2.0	2.1
Inflation rate	1.0	1.7	1.7	2.0	2.0	2.0	1.5	2.0	1.8
Implicit interest rate (nominal)	3.1	2.9	2.7	3.2	3.6	4.0	2.9	3.3	3.2
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	76.4	74.1	72.0	67.9	69.4	72.9	74.2	69.3	70.5
Primary balance	1.8	1.9	2.2	-1.1	-1.6	-2.2	2.0	-0.8	-0.1
Structural primary balance (before CoA)	1.0	0.4	0.4	-0.8	-0.8	-0.8	0.6	-0.6	-0.3
Real GDP growth	4.7	4.0	3.3	2.6	2.3	2.0	4.0	2.2	2.7
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	76.4	74.1	72.0	67.7	70.6	75.1	74.2	69.4	70.6
Primary balance	1.8	1.9	2.2	-1.1	-1.6	-2.2	2.0	-0.8	-0.1
Structural primary balance (before CoA)	1.0	0.4	0.4	-0.8	-0.8	-0.8	0.6	-0.6	-0.3
Real GDP growth	4.7	4.0	3.3	1.9	1.9	1.9	4.0	2.2	2.7
Implicit interest rate (nominal)	3.5	2.7	2.5	3.5	4.0	4.3	2.9	3.5	3.3
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	76.4	74.2	72.4	66.6	66.8	69.0	74.3	67.9	69.5
Implicit interest rate (nominal)	3.5	2.9	2.8	3.7	4.2	4.7	3.1	3.7	3.6
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	76.4	73.9	71.7	62.5	60.9	61.2	74.0	63.6	66.2
Implicit interest rate (nominal)	3.5	2.5	2.2	2.3	2.6	3.0	2.7	2.4	2.5
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	76.4	74.3	72.7	67.9	68.3	70.7	74.5	69.2	70.5
Implicit interest rate (nominal)	3.5	3.0	3.1	3.9	4.3	4.8	3.2	4.0	3.8
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	76.4	73.7	71.3	62.2	61.0	61.6	73.8	63.5	66.1
Real GDP growth	4.7	4.5	3.8	3.1	2.8	2.5	4.3	2.6	3.0
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	76.4	74.4	72.7	66.8	66.6	68.5	74.5	68.0	69.6
Real GDP growth	4.7	3.5	2.8	2.1	1.8	1.5	3.6	1.6	2.1
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	76.4	73.2	70.3	61.3	60.1	60.7	73.3	62.6	65.2
Real GDP growth	4.7	5.2	4.5	3.1	2.8	2.5	4.8	2.6	3.2
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	76.4	75.0	73.8	67.8	67.7	69.5	75.0	69.1	70.6
Real GDP growth	4.7	2.7	2.0	2.1	1.8	1.5	3.1	1.6	2.0
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	76.4	74.0	72.0	66.0	65.9	67.8	74.1	67.3	69.0
Primary balance	1.8	2.1	1.9	-0.3	-0.8	-1.4	1.9	-0.2	0.3
Structural primary balance (before CoA)	1.0	0.6	0.1	0.1	0.1	0.1	0.6	0.1	0.2
Real GDP growth	4.7	3.8	3.6	2.6	2.3	2.0	4.1	2.1	2.6
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	76.4	74.1	72.0	64.5	63.7	64.9	74.2	65.7	67.8
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

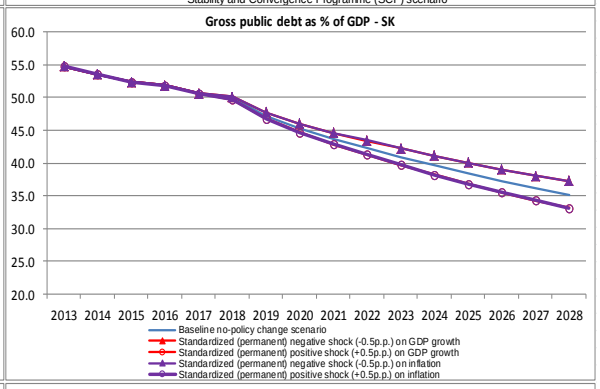
24. Slovakia

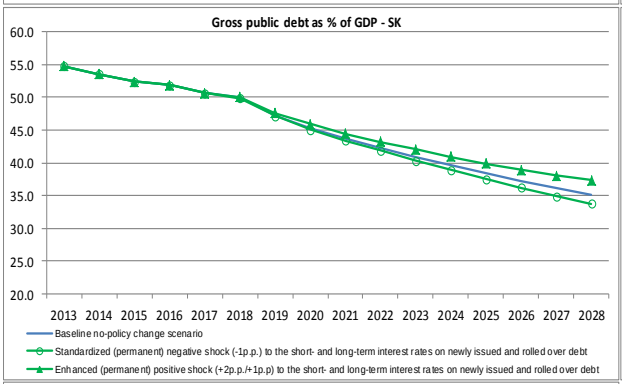
Public debt projections under baseline and alternative scenarios and sensitivity tests

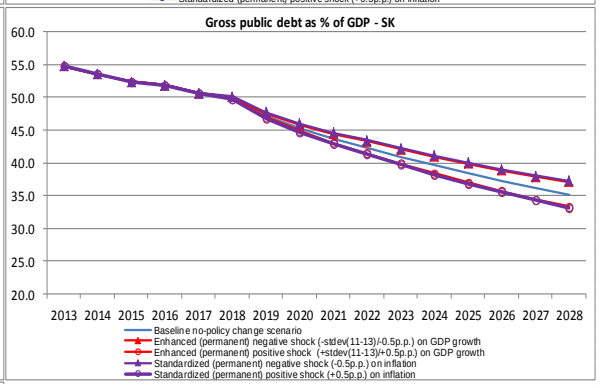
SK - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**52.3**	**51.8**	**50.6**	**49.9**	**47.2**	**45.3**	**43.7**	**42.3**	**40.9**	**39.6**	**38.4**	**37.2**	**36.1**	**35.1**
Changes in the ratio (-1+2+3)	*-1.2*	*-0.5*	*-1.2*	*-0.7*	*-2.6*	*-1.9*	*-1.6*	*-1.4*	*-1.4*	*-1.3*	*-1.2*	*-1.2*	*-1.1*	*-1.0*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-1.0**	**-0.5**	**-0.3**	**0.2**	**1.0**	**0.8**	**0.7**	**0.5**	**0.4**	**0.4**	**0.4**	**0.5**	**0.5**	**0.5**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***-0.5***	***-0.3***	***-0.3***	***0.0***	***0.6***	***0.6***	***0.5***	***0.5***	***0.4***	***0.4***	***0.4***	***0.5***	***0.5***	***0.5***
(1.1.1) Structural Primary Balance (bef. CoA)	*-0.5*	*-0.3*	*-0.3*	*0.0*	*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						*0.1*	*0.1*	*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*
(1.2) Cyclical component	***-0.5***	***-0.2***	***0.0***	***0.2***	***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)	**-0.1**	**0.2**	**-1.3**	**-1.3**	**-1.6**	**-1.1**	**-0.9**	**-0.9**	**-1.0**	**-0.9**	**-0.8**	**-0.7**	**-0.6**	**-0.5**
(2.1) Interest expenditure	*1.7*	*1.6*	*1.3*	*1.3*	*1.2*	*1.2*	*1.1*	*1.1*	*1.1*	*1.1*	*1.1*	*1.1*	*1.1*	*1.2*
(2.2) Growth effect	*-2.0*	*-1.7*	*-1.6*	*-1.8*	*-1.9*	*-1.4*	*-1.2*	*-1.1*	*-1.2*	*-1.2*	*-1.1*	*-1.1*	*-1.0*	*-1.0*
(2.3) Inflation effect	*0.1*	*0.2*	*-1.0*	*-0.7*	*-0.9*	*-0.9*	*-0.9*	*-0.9*	*-0.8*	*-0.8*	*-0.8*	*-0.8*	*-0.7*	*-0.7*
(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	**-2.0**	**-1.3**	**-0.2**	**0.8**	**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*	*-1.3*	*-0.2*	*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	*0.3*	*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*
Per memo														
Structural balance	-2.0	-2.0	-1.6	-1.2	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.7	-0.6	-0.7	-0.7

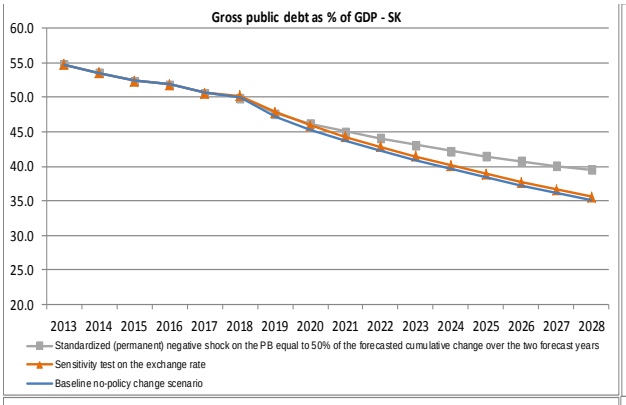


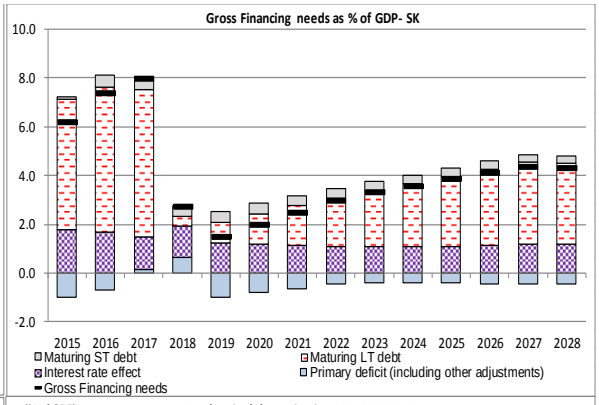


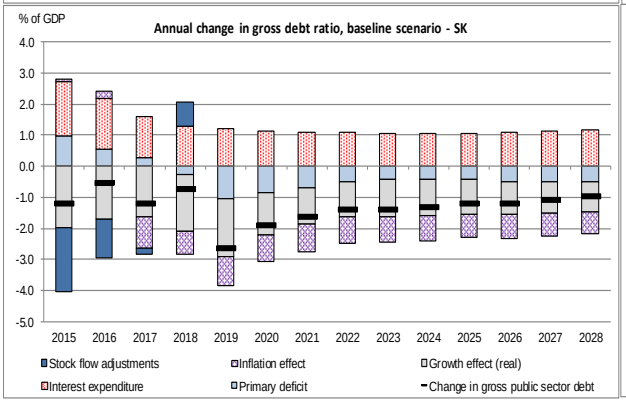


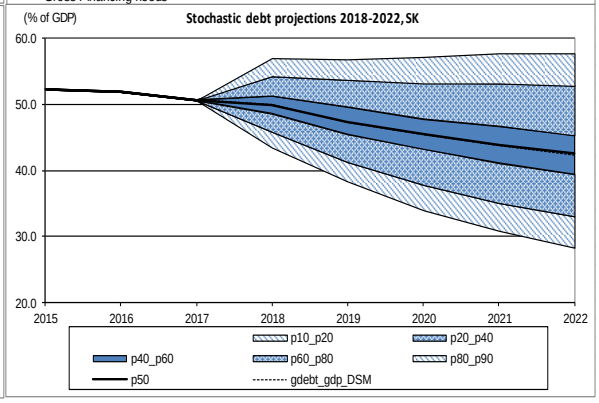












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	18.1	18.2	18.3	18.3	18.3	18.3	18.2	18.3	18.4	18.3
Revenues from pensions taxation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Property incomes	0.9	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.50**	**0.30**	**0.46**
Fiscal sub-index	0.47	0.09	0.36
Financial competitiveness sub-index	0.52	0.40	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**-2.6**	**1.8**	**-2.0**	**-3.0**	**-2.1**
of which *Initial Budgetary position*	*-1.4*	*15.5*	*-1.3*	*-1.2*	*-1.2*
*Cost of delaying adjustment***	*-0.4*	*0.0*	*-0.3*	*-0.5*	*-0.3*
*Debt requirement****	*-1.0*	*-13.7*	*-1.0*	*-1.3*	*-0.7*
Ageing costs	*0.2*	*0.1*	*0.7*	*0.1*	*0.1*
Required structural primary balance related to S1	**-2.0**	**0.0**	**-1.3**	**-2.4**	**-1.4**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**2.4**	**5.1**	**5.5**	**2.5**	**2.4**
of which Initial Budgetary position	0.1	2.7	0.2	0.1	0.1
Long term component	2.3	2.5	5.4	2.3	2.2
of which Pensions	*1.2*	*1.3*	*1.1*	*1.2*	*1.0*
Health care	*1.3*	*1.3*	*2.1*	*1.3*	*1.3*
Long-term care	*0.2*	*0.2*	*2.5*	*0.2*	*0.2*
Others	*-0.3*	*-0.4*	*-0.3*	*-0.4*	*-0.3*
Required structural primary balance related to S2	**3.0**	**3.3**	**6.2**	**3.1**	**3.0**

Risks related to the structure of public debt financing

Public debt structure - SK (2016)	Share of short-term public debt (p.p.): 2.0	Share of public debt in foreign currency (%): 6.0	**Share of public debt by non-residents (%): 52.8**

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016			
		SK	EU
State guarantees (% GDP) (2015)		0.0	8.5
of which One-off guarantees		*0.0*	*8.1*
Standardised guarantees		*0.0*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	:	0.92
	Securities issued under liquidity schemes	:	0.00
	Special purpose entity	:	0.21
	Total	0.00	1.13

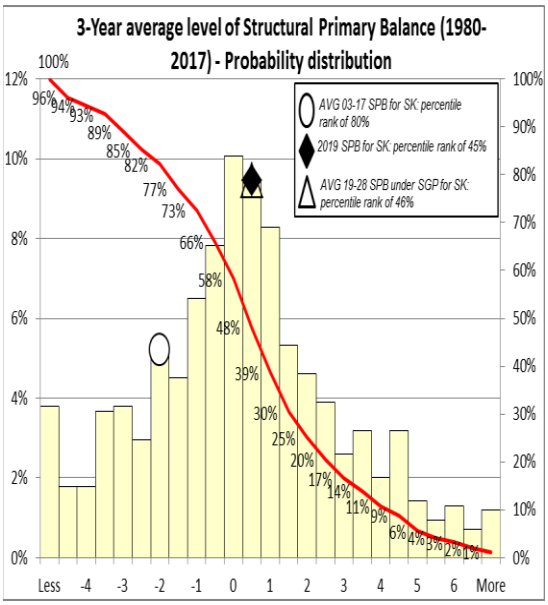
Government's contingent liability risks from banking sector - SK (2016)	Private sector credit flow (% GDP): 9.2	Change in nominal house price index: 6.7	Bank loans-to-deposits ratio (p.p.): 104.6	**Share of non-performing loans (%): 4.2**	Change in share of non-performing loans (p.p): 0.1	NPL coverage ratio 55.0	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8% 0.00%	bank recap. at 10.5% 0.00%

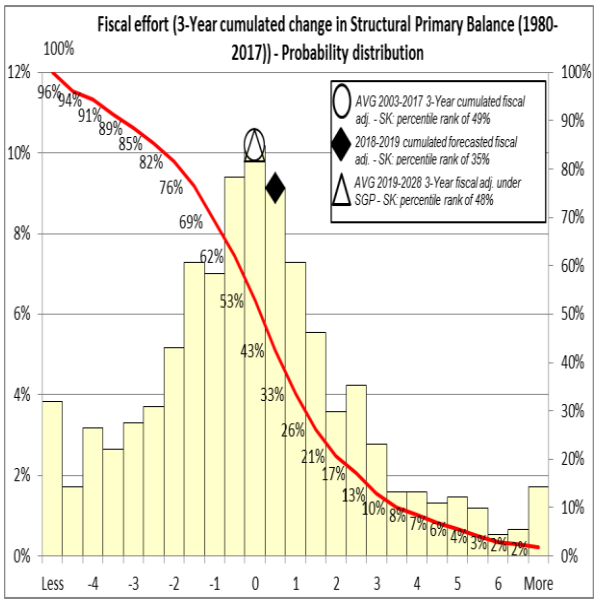
Financial market information

Sovereign Ratings as of Nov 2017, SK	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	A2		A2	
S&P	A+	A-1	A+	A-1
Fitch	A+		A+	

Financial market information as of October 2017, SK		
Sovereign yield spreads(bp)*	10-year	46.0
CDS (bp)	5-year	43.7

Realism of baseline assumptions





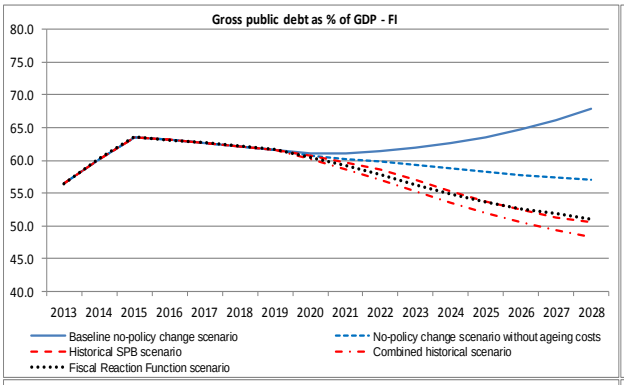
Underlying macro-fiscal assumptions

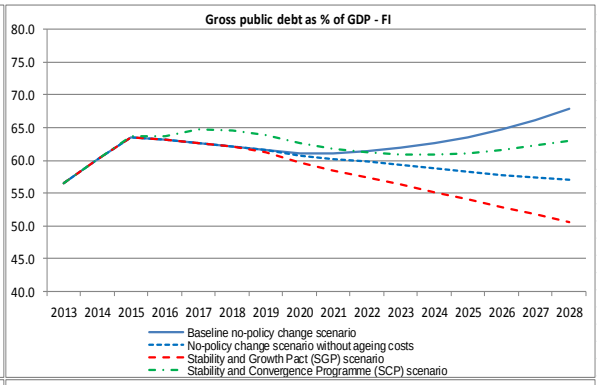
Macro-fiscal assumptions, Slovakia	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	50.6	49.9	47.2	39.6	37.2	35.1	49.2	39.9	42.2
Primary balance	-0.3	0.2	1.0	0.4	0.5	0.5	0.3	0.5	0.5
Structural primary balance (before CoA)	-0.3	0.0	0.6	0.6	0.6	0.6	0.1	0.6	0.5
Real GDP growth	3.3	3.8	4.0	3.0	2.9	2.8	3.7	2.9	3.1
Potential GDP growth	2.8	3.3	3.5	3.0	2.9	2.8	3.2	3.0	3.0
Inflation rate	2.0	1.5	1.9	2.0	2.0	2.0	1.8	2.0	1.9
Implicit interest rate (nominal)	2.7	2.7	2.6	2.7	3.0	3.4	2.6	2.9	2.8
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	50.6	49.9	47.2	46.6	47.2	48.2	49.2	46.9	47.5
Primary balance	-0.3	0.2	1.0	-1.2	-1.1	-1.1	0.3	-1.0	-0.7
Structural primary balance (before CoA)	-0.3	0.0	0.6	-1.0	-1.0	-0.9	0.1	-0.9	-0.7
Real GDP growth	3.3	3.8	4.0	3.0	3.0	2.8	3.7	3.0	3.2
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	50.6	49.9	47.4	39.2	36.6	34.2	49.3	39.5	41.9
Primary balance	-0.3	0.2	0.9	0.6	0.6	0.7	0.3	0.6	0.6
Structural primary balance (before CoA)	-0.3	0.0	0.5	0.6	0.6	0.7	0.1	0.6	0.5
Real GDP growth	3.3	3.8	4.1	3.0	2.9	2.8	3.7	2.9	3.1
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	51.8	49.9	48.0	40.3	38.0	36.1	49.9	40.6	42.9
Primary balance	0.0	0.8	1.2	0.5	0.5	0.5	0.7	0.6	0.6
Structural primary balance (before CoA)	0.2	0.8	0.8	0.6	0.6	0.6	0.6	0.6	0.6
Real GDP growth	3.3	4.0	4.4	2.9	2.9	2.8	3.9	2.9	3.2
Potential GDP growth	2.9	3.5	3.7	2.9	2.9	2.8	3.4	3.0	3.1
Inflation rate	1.0	1.6	2.0	2.0	2.0	2.0	1.5	2.0	1.9
Implicit interest rate (nominal)	2.6	2.6	2.5	2.9	3.4	3.8	2.6	3.0	2.9
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	50.6	49.9	47.2	47.4	49.7	52.5	49.2	48.0	48.3
Primary balance	-0.3	0.2	1.0	-2.1	-2.0	-2.0	0.3	-1.5	-1.1
Structural primary balance (before CoA)	-0.3	0.0	0.6	-1.8	-1.8	-1.8	0.1	-1.4	-1.0
Real GDP growth	3.3	3.8	4.0	3.0	2.9	2.8	3.7	3.1	3.2
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	50.6	49.9	47.2	45.6	47.6	49.7	49.2	46.3	47.0
Primary balance	-0.3	0.2	1.0	-2.1	-2.0	-2.0	0.3	-1.5	-1.1
Structural primary balance (before CoA)	-0.3	0.0	0.6	-1.8	-1.8	-1.8	0.1	-1.4	-1.0
Real GDP growth	3.3	3.8	4.0	3.8	3.8	3.8	3.7	4.0	4.0
Implicit interest rate (nominal)	2.7	2.7	2.6	3.1	3.5	3.9	2.6	3.1	3.0
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	50.6	49.9	47.4	40.4	38.3	36.6	49.3	40.7	42.8
Implicit interest rate (nominal)	2.7	2.8	2.8	3.1	3.5	4.1	2.8	3.3	3.1
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	50.6	49.8	47.1	38.9	36.2	33.8	49.2	39.1	41.6
Implicit interest rate (nominal)	2.7	2.5	2.4	2.4	2.5	2.8	2.5	2.5	2.5
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	50.6	50.0	47.6	40.9	38.9	37.3	49.4	41.2	43.2
Implicit interest rate (nominal)	2.7	3.0	3.0	3.3	3.7	4.2	2.9	3.4	3.3
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	50.6	49.6	46.8	38.2	35.5	33.2	49.0	38.5	41.1
Real GDP growth	3.3	4.3	4.5	3.5	3.4	3.3	4.0	3.4	3.5
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	50.6	50.1	47.7	41.1	39.0	37.2	49.5	41.3	43.3
Real GDP growth	3.3	3.3	3.5	2.5	2.4	2.3	3.4	2.4	2.6
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	50.6	49.7	47.0	38.4	35.7	33.3	49.1	38.6	41.3
Real GDP growth	3.3	4.1	4.3	3.5	3.4	3.3	3.9	3.4	3.5
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	50.6	50.0	47.5	40.9	38.8	37.1	49.4	41.1	43.2
Real GDP growth	3.3	3.5	3.7	2.5	2.4	2.3	3.5	2.4	2.7
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	50.6	49.9	47.7	42.3	40.7	39.5	49.4	42.5	44.2
Primary balance	-0.3	0.1	0.6	0.0	0.0	0.0	0.1	0.1	0.1
Structural primary balance (before CoA)	-0.3	-0.1	0.2	0.2	0.2	0.2	-0.1	0.2	0.1
Real GDP growth	3.3	3.9	4.3	3.0	2.9	2.8	3.8	2.9	3.1
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	50.6	50.2	47.8	40.1	37.7	35.6	49.5	40.4	42.7
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

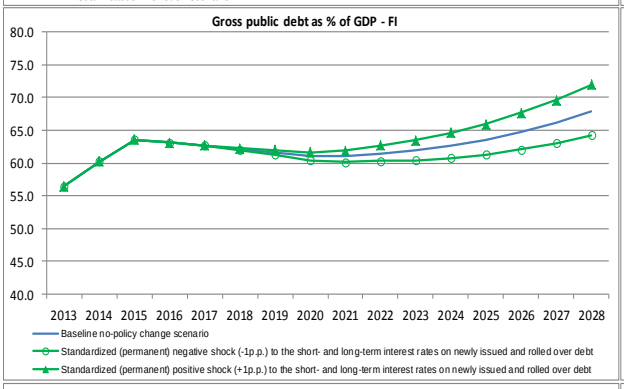
25. Finland

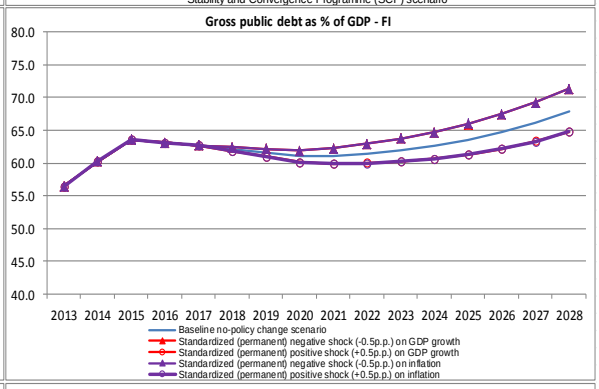
Public debt projections under baseline and alternative scenarios and sensitivity tests

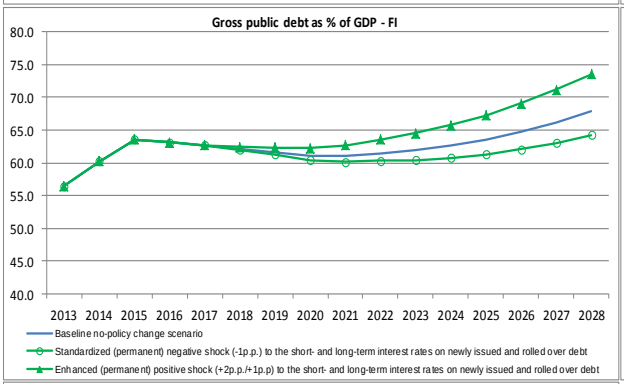
FI - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**63.6**	**63.1**	**62.7**	**62.1**	**61.6**	**61.0**	**61.0**	**61.4**	**61.9**	**62.6**	**63.6**	**64.7**	**66.2**	**67.9**
Changes in the ratio (-1+2+3)	*3.4*	*-0.5*	*-0.4*	*-0.6*	*-0.5*	*-0.6*	*0.0*	*0.4*	*0.5*	*0.7*	*0.9*	*1.2*	*1.5*	*1.7*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-1.6**	**-0.7**	**-0.4**	**-0.3**	**0.1**	**-0.2**	**-0.6**	**-0.9**	**-1.0**	**-1.2**	**-1.3**	**-1.4**	**-1.4**	**-1.7**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***0.4***	***0.7***	***-0.1***	***-0.4***	***-0.5***	***-0.6***	***-0.8***	***-0.9***	***-1.0***	***-1.2***	***-1.3***	***-1.4***	***-1.4***	***-1.7***
(1.1.1) Structural Primary Balance (bef. CoA)	*0.4*	*0.7*	*-0.1*	*-0.4*	*-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						*0.3*	*0.6*	*0.8*	*1.0*	*1.2*	*1.4*	*1.6*	*1.8*	*2.0*
(1.1.3) Others (taxes and property incomes)						*0.1*	*0.2*	*0.3*	*0.4*	*0.5*	*0.6*	*0.7*	*0.8*	*0.8*
(1.2) Cyclical component	***-2.0***	***-1.4***	***-0.4***	***0.2***	***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	***0.0***	***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***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**0.0**	**-0.7**	**-1.3**	**-1.7**	**-1.5**	**-0.8**	**-0.6**	**-0.5**	**-0.6**	**-0.5**	**-0.3**	**-0.2**	**0.0**	**0.1**
(2.1) Interest expenditure	*1.1*	*1.1*	*1.0*	*0.9*	*0.9*	*1.0*	*1.0*	*1.1*	*1.2*	*1.4*	*1.6*	*1.8*	*2.0*	*2.2*
(2.2) Growth effect	*0.0*	*-1.2*	*-2.0*	*-1.6*	*-1.4*	*-0.7*	*-0.5*	*-0.4*	*-0.6*	*-0.6*	*-0.7*	*-0.7*	*-0.7*	*-0.8*
(2.3) Inflation effect	*-1.2*	*-0.6*	*-0.3*	*-1.1*	*-1.0*	*-1.1*	*-1.1*	*-1.2*	*-1.2*	*-1.2*	*-1.2*	*-1.2*	*-1.3*	*-1.3*
(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	**1.8**	**-0.5**	**0.5**	**0.9**	**1.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*0.7*	*-0.5*	*0.6*	*1.0*	*1.2*	*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	*1.1*	*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*
Per memo														
Structural balance	0.4	-0.3	-1.0	-1.4	-1.4	-1.6	-1.8	-2.0	-2.3	-2.5	-2.8	-3.1	-3.5	-3.9

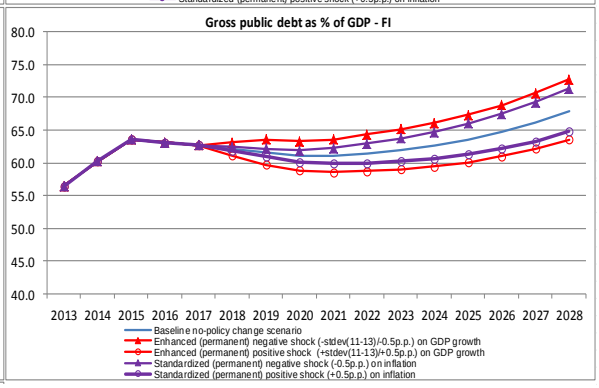


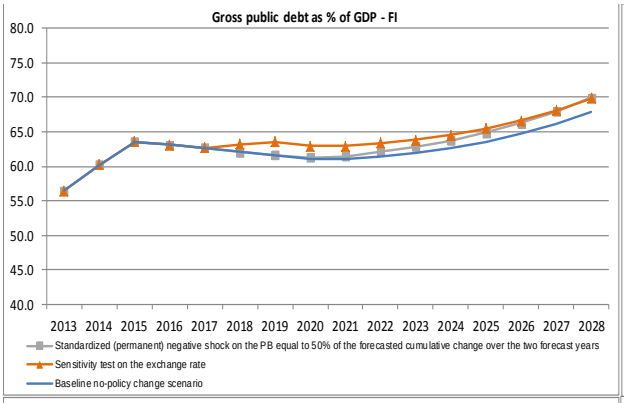


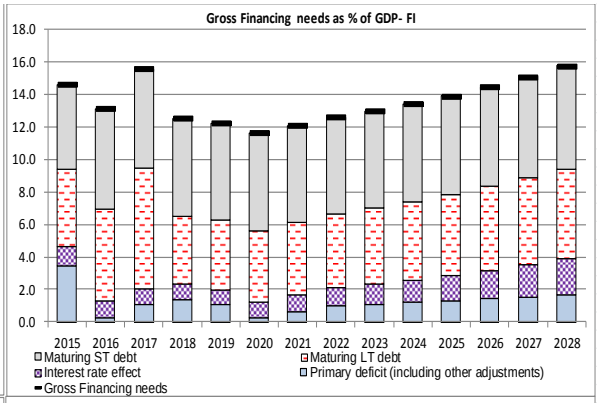


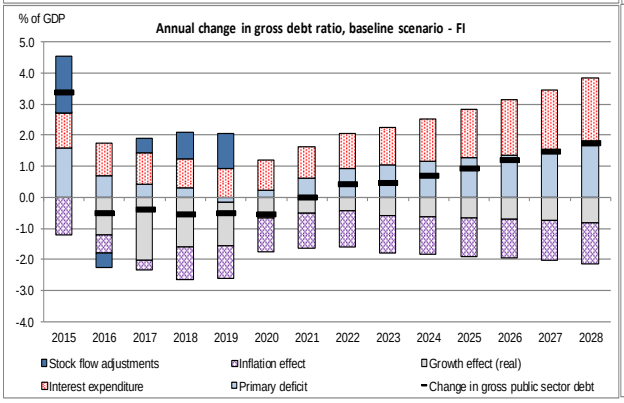


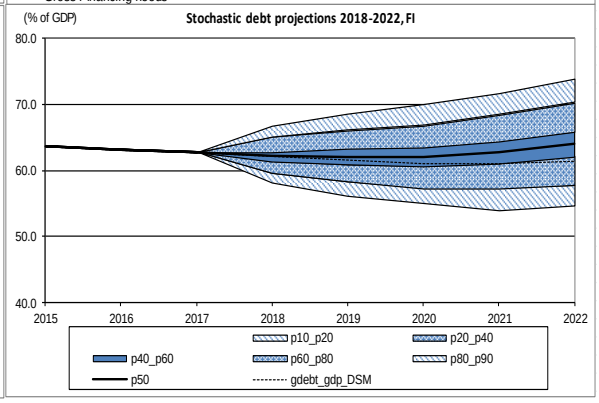












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	31.2	31.6	31.8	32.0	32.2	32.3	32.6	32.9	34.0	34.7
Revenues from pensions taxation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Property incomes	2.7	2.6	2.6	2.7	2.8	2.9	3.0	3.1	3.7	3.7

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.33**	**0.10**	**0.46**
Fiscal sub-index	0.35	0.08	0.36
Financial competitiveness sub-index	0.31	0.11	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**1.5**	**-1.6**	**1.8**	**0.7**	**2.8**
of which *Initial Budgetary position*	*-0.3*	*-2.8*	*-0.3*	*-0.9*	*0.2*
*Cost of delaying adjustment***	*0.2*	*-0.4*	*0.3*	*0.1*	*0.4*
*Debt requirement****	*0.1*	*-0.3*	*0.1*	*0.2*	*0.6*
Ageing costs	*1.5*	*1.9*	*1.7*	*1.3*	*1.6*
Required structural primary balance related to S1	**1.1**	**0.3**	**1.3**	**1.1**	**2.5**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**2.8**	**0.4**	**4.1**	**1.8**	**3.2**
of which Initial Budgetary position	1.4	-0.9	1.4	0.8	1.6
Long term component	1.3	1.4	2.7	1.1	1.6
of which Pensions	*-0.8*	*-0.8*	*-0.8*	*-1.0*	*-0.5*
Health care	*0.5*	*0.5*	*0.9*	*0.4*	*0.5*
Long-term care	*1.5*	*1.6*	*2.4*	*1.5*	*1.6*
Others	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Required structural primary balance related to S2	**2.3**	**2.4**	**3.6**	**2.2**	**2.8**

Risks related to the structure of public debt financing

Public debt structure - FI (2016)	Share of short-term public debt (p.p.):	Share of public debt in foreign currency (%):	Share of public debt by non-residents (%):
	8.8	1.7	69.8

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016			
		FI	EU
State guarantees (% GDP) (2015)		28.3	8.5
of which One-off guarantees		*27.4*	*8.1*
Standardised guarantees		*1.0*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	0.00	0.92
	Securities issued under liquidity schemes	0.00	0.00
	Special purpose entity	0.00	0.21
	Total	0.00	1.13

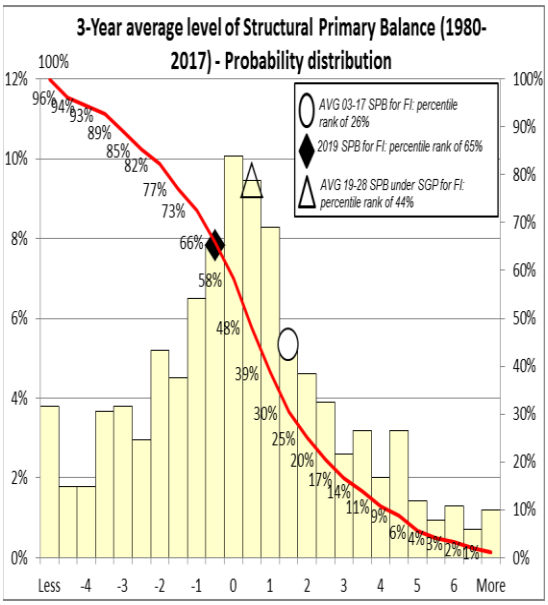
Government's contingent liability risks from banking sector - FI (2016)	Private sector credit flow (% GDP):	Change in nominal house price index:	Bank loans-to-deposits ratio (p.p.):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8%	bank recap. at 10.5%
	2.2	0.6	148.0	1.6	0.0	29.5	0.00%	0.00%

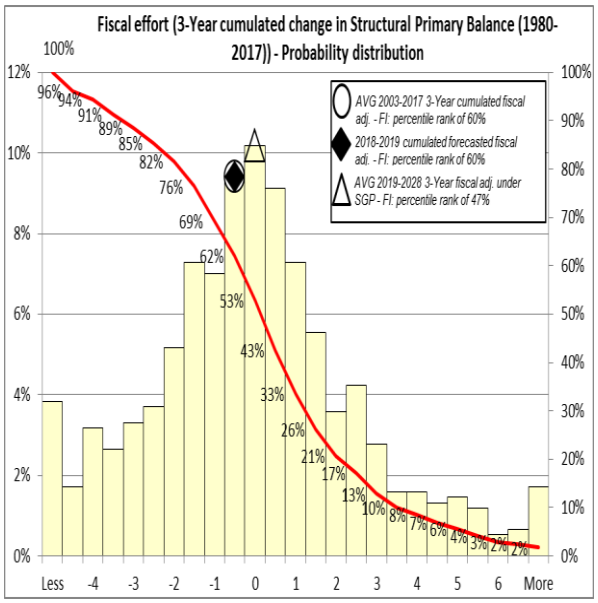
Financial market information

Sovereign Ratings as of Nov 2017, FI	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	Aa1		Aa1	
S&P	AA+	A-1+	AA+	A-1+
Fitch	AA+		AA+	F1+

Financial market information as of October 2017, FI		
Sovereign yield spreads(bp)*	10-year	23.0
CDS (bp)	5-year	24.0

Realism of baseline assumptions





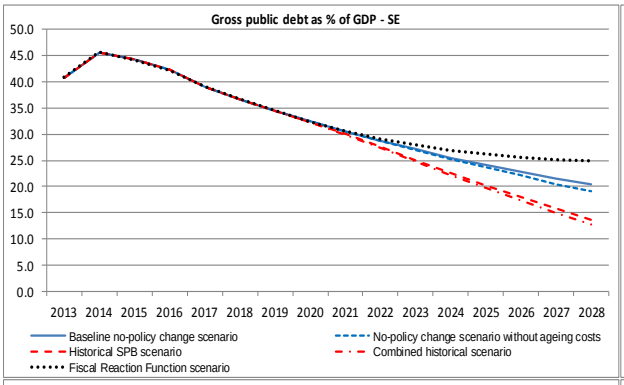
Underlying macro-fiscal assumptions

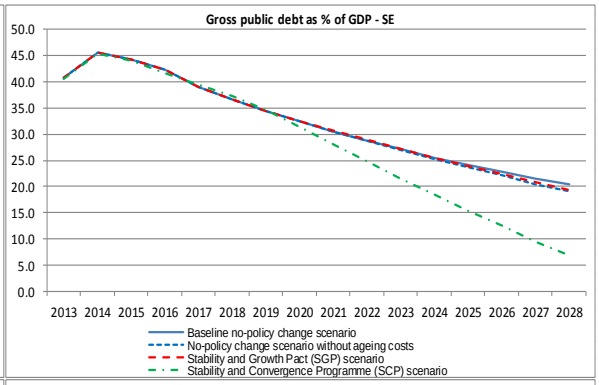
Macro-fiscal assumptions, Finland	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	62.7	62.1	61.6	62.6	64.7	67.9	62.1	63.4	63.1
Primary balance	-0.4	-0.3	0.1	-1.2	-1.4	-1.7	-0.2	-1.1	-0.9
Structural primary balance (before CoA)	-0.1	-0.4	-0.5	-0.5	-0.5	-0.5	-0.3	-0.5	-0.4
Real GDP growth	3.3	2.7	2.4	1.0	1.1	1.3	2.8	1.0	1.5
Potential GDP growth	1.5	1.6	1.6	1.0	1.1	1.3	1.6	1.2	1.3
Inflation rate	0.5	1.7	1.7	2.0	2.0	2.0	1.3	2.0	1.8
Implicit interest rate (nominal)	1.6	1.6	1.5	2.3	2.9	3.5	1.6	2.4	2.2
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	62.7	62.1	61.6	54.9	52.6	51.1	62.1	55.3	57.0
Primary balance	-0.4	-0.3	0.1	0.9	0.8	0.8	-0.2	0.9	0.6
Structural primary balance (before CoA)	-0.1	-0.4	-0.5	1.6	1.7	1.9	-0.3	1.5	1.0
Real GDP growth	3.3	2.7	2.4	1.0	1.1	1.1	2.8	0.8	1.3
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	62.7	62.1	61.2	55.1	52.9	50.7	62.0	55.1	56.9
Primary balance	-0.4	-0.3	0.8	0.7	0.9	1.1	0.0	0.8	0.6
Structural primary balance (before CoA)	-0.1	-0.4	0.2	0.7	0.9	1.1	-0.1	0.7	0.5
Real GDP growth	3.3	2.7	1.9	1.0	1.1	1.3	2.6	1.0	1.4
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	64.7	64.5	63.8	60.8	61.6	63.1	64.3	61.7	62.3
Primary balance	-1.4	-0.6	0.0	-0.1	-0.3	-0.6	-0.7	-0.1	-0.2
Structural primary balance (before CoA)	-0.5	-0.1	-0.1	0.4	0.4	0.4	-0.2	0.4	0.2
Real GDP growth	1.2	1.8	2.0	0.7	0.8	1.2	1.7	0.8	1.0
Potential GDP growth	0.9	0.8	0.8	0.7	0.8	1.2	0.8	0.8	0.8
Inflation rate	1.2	1.6	1.8	2.0	2.0	2.0	1.5	2.0	1.9
Implicit interest rate (nominal)	1.5	1.4	1.3	2.4	3.1	3.6	1.4	2.4	2.2
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	62.7	62.1	61.6	55.2	52.4	50.5	62.1	55.5	57.1
Primary balance	-0.4	-0.3	0.1	1.2	1.0	0.7	-0.2	0.9	0.6
Structural primary balance (before CoA)	-0.1	-0.4	-0.5	1.9	1.9	1.9	-0.3	1.5	1.1
Real GDP growth	3.3	2.7	2.4	1.0	1.1	1.3	2.8	0.8	1.3
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	62.7	62.1	61.6	53.6	50.6	48.4	62.1	53.9	56.0
Primary balance	-0.4	-0.3	0.1	1.2	1.0	0.7	-0.2	0.9	0.6
Structural primary balance (before CoA)	-0.1	-0.4	-0.5	1.9	1.9	1.9	-0.3	1.5	1.1
Real GDP growth	3.3	2.7	2.4	1.2	1.2	1.2	2.8	1.2	1.6
Implicit interest rate (nominal)	1.6	1.6	1.5	2.2	2.5	2.7	1.6	2.2	2.1
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	62.7	62.3	61.9	64.6	67.6	71.9	62.3	65.5	64.7
Implicit interest rate (nominal)	1.6	1.8	1.9	2.9	3.6	4.3	1.8	3.0	2.7
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	62.7	62.0	61.2	60.8	62.1	64.3	61.9	61.4	61.5
Implicit interest rate (nominal)	1.6	1.3	1.2	1.6	2.1	2.6	1.4	1.8	1.7
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	62.7	62.4	62.3	65.8	69.0	73.5	62.5	66.6	65.6
Implicit interest rate (nominal)	1.6	2.1	2.2	3.1	3.8	4.4	2.0	3.3	2.9
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	62.7	61.8	61.0	60.6	62.2	64.8	61.8	61.4	61.5
Real GDP growth	3.3	3.2	2.9	1.5	1.6	1.8	3.1	1.5	1.9
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	62.7	62.4	62.2	64.7	67.4	71.3	62.4	65.5	64.7
Real GDP growth	3.3	2.2	1.9	0.5	0.6	0.8	2.4	0.5	1.0
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	62.7	61.1	59.7	59.4	61.0	63.6	61.2	60.1	60.4
Real GDP growth	3.3	4.3	4.0	1.5	1.6	1.8	3.9	1.5	2.1
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	62.7	63.1	63.6	66.1	68.8	72.7	63.1	66.9	65.9
Real GDP growth	3.3	1.0	0.7	0.5	0.6	0.8	1.7	0.5	0.8
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	62.7	62.1	61.6	63.7	66.2	69.9	62.1	64.5	63.9
Primary balance	-0.4	-0.2	-0.1	-1.4	-1.6	-1.9	-0.2	-1.3	-1.0
Structural primary balance (before CoA)	-0.1	-0.4	-0.7	-0.7	-0.7	-0.7	-0.4	-0.7	-0.6
Real GDP growth	3.3	2.6	2.5	1.0	1.1	1.3	2.8	1.0	1.5
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	62.7	63.2	63.6	64.5	66.6	69.8	63.1	65.3	64.7
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

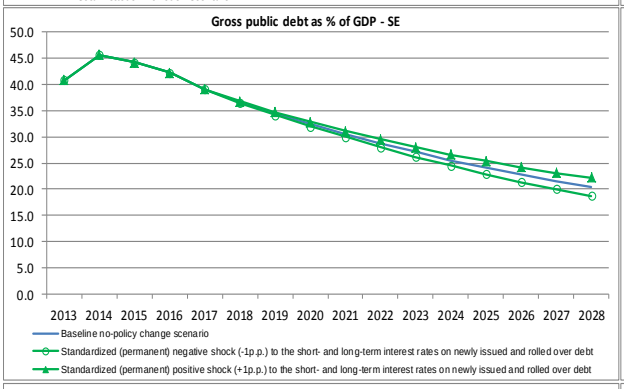
26. Sweden

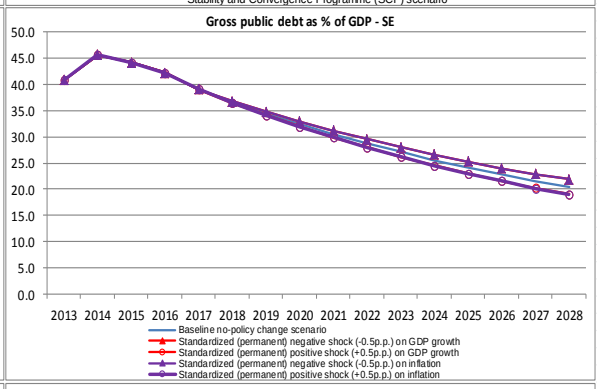
Public debt projections under baseline and alternative scenarios and sensitivity tests

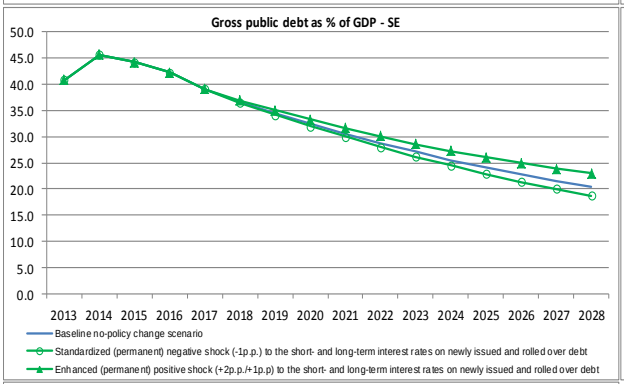
SE - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**44.2**	**42.2**	**39.0**	**36.6**	**34.4**	**32.4**	**30.5**	**28.7**	**27.1**	**25.5**	**24.1**	**22.8**	**21.5**	**20.4**
Changes in the ratio (-1+2+3)	*-1.4*	*-2.0*	*-3.2*	*-2.4*	*-2.1*	*-2.1*	*-1.9*	*-1.8*	*-1.7*	*-1.5*	*-1.4*	*-1.3*	*-1.2*	*-1.1*
of which														
(1) Primary balance (1.1+1.2+1.3)	**0.6**	**1.6**	**1.2**	**1.0**	**0.8**	**0.9**	**1.0**	**1.0**	**1.1**	**1.1**	**1.0**	**1.0**	**1.0**	**0.9**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***0.8***	***1.5***	***1.1***	***0.9***	***0.9***	***1.0***	***1.0***	***1.0***	***1.1***	***1.1***	***1.0***	***1.0***	***1.0***	***0.9***
(1.1.1) Structural Primary Balance (bef. CoA)	*0.8*	*1.5*	*1.1*	*0.9*	*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*	*0.0*	*0.1*	*0.1*	*0.2*	*0.2*	*0.3*	*0.3*
(1.1.3) Others (taxes and property incomes)						*0.0*	*0.1*	*0.1*	*0.2*	*0.2*	*0.3*	*0.3*	*0.4*	*0.3*
(1.2) Cyclical component	***-0.2***	***0.0***	***0.1***	***0.1***	***-0.1***	***-0.1***	***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)	**-2.4**	**-1.6**	**-1.8**	**-1.5**	**-1.3**	**-1.2**	**-0.9**	**-0.7**	**-0.6**	**-0.5**	**-0.4**	**-0.3**	**-0.2**	**-0.2**
(2.1) Interest expenditure	*0.5*	*0.4*	*0.4*	*0.3*	*0.2*	*0.3*	*0.3*	*0.4*	*0.5*	*0.5*	*0.6*	*0.6*	*0.6*	*0.7*
(2.2) Growth effect	*-1.9*	*-1.4*	*-1.3*	*-1.0*	*-0.8*	*-0.7*	*-0.6*	*-0.5*	*-0.5*	*-0.5*	*-0.5*	*-0.4*	*-0.4*	*-0.4*
(2.3) Inflation effect	*-0.9*	*-0.7*	*-0.9*	*-0.8*	*-0.8*	*-0.7*	*-0.6*	*-0.6*	*-0.6*	*-0.5*	*-0.5*	*-0.5*	*-0.4*	*-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	**1.6**	**1.2**	**-0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*-0.3*	*1.1*	*-0.1*	*0.4*	*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	*2.0*	*0.1*	*0.0*	*-0.3*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Per memo														
Structural balance	2.3	1.3	0.8	0.7	0.7	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.3

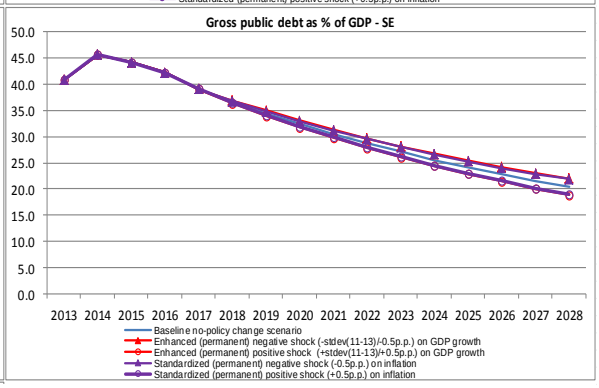


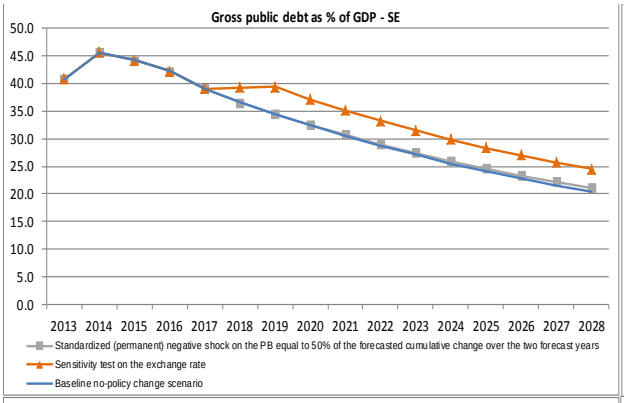


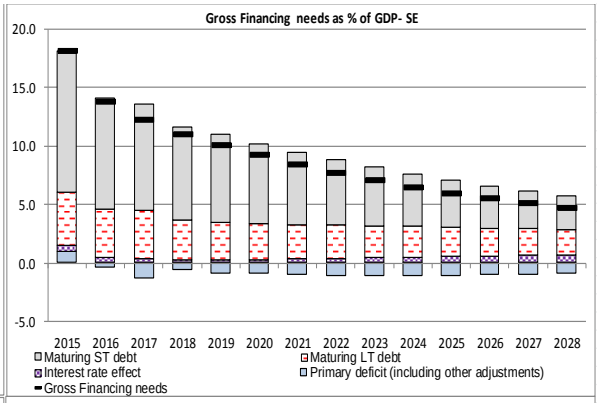


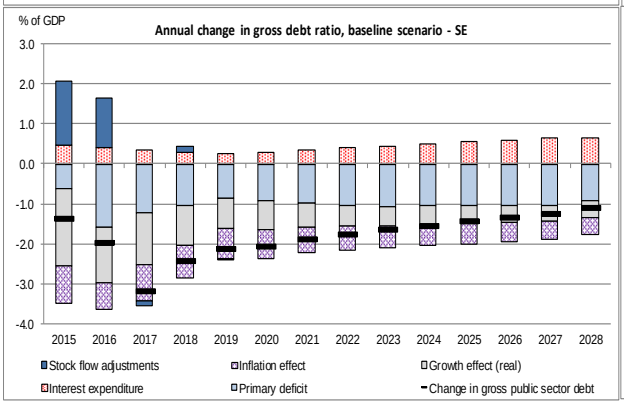


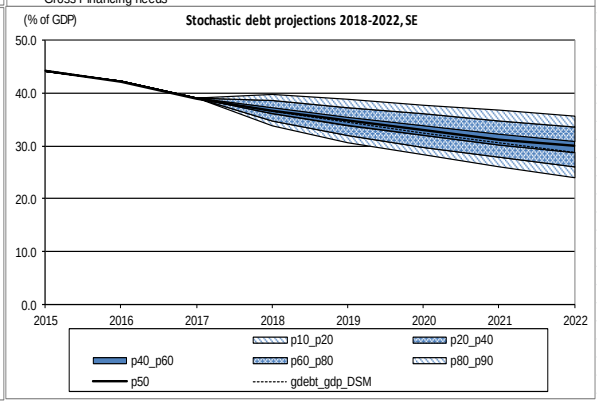












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	25.5	25.1	24.8	24.9	25.0	25.1	25.1	25.1	25.3	25.6
Revenues from pensions taxation	2.8	2.6	2.6	2.7	2.7	2.7	2.8	2.8	2.7	2.8
Property incomes	2.0	1.6	1.5	1.5	1.6	1.6	1.7	1.7	2.0	1.9

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.31**	**0.12**	**0.46**
Fiscal sub-index	0.15	0.00	0.36
Financial competitiveness sub-index	0.40	0.19	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**-3.9**	**-7.7**	**-3.4**	**-6.8**	**-2.9**
of which *Initial Budgetary position*	*-1.6*	*-2.4*	*-1.6*	*-3.3*	*-1.0*
*Cost of delaying adjustment***	*-0.6*	*-1.6*	*-0.5*	*-1.2*	*-0.4*
*Debt requirement****	*-2.0*	*-4.0*	*-2.0*	*-2.6*	*-1.7*
Ageing costs	*0.3*	*0.4*	*0.7*	*0.2*	*0.2*
Required structural primary balance related to S1	**-3.0**	**-5.8**	**-2.5**	**-4.0**	**-2.3**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**0.5**	**-0.4**	**2.8**	**-1.3**	**1.0**
of which Initial Budgetary position	-0.4	-1.4	-0.4	-2.2	0.1
Long term component	0.9	1.0	3.1	0.9	0.9
of which Pensions	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.7*
Health care	*0.3*	*0.3*	*0.8*	*0.3*	*0.3*
Long-term care	*1.1*	*1.1*	*2.8*	*1.0*	*1.1*
Others	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*
Required structural primary balance related to S2	**1.5**	**1.5**	**3.7**	**1.5**	**1.6**

Risks related to the structure of public debt financing

Public debt structure - SE (2016)	Share of short-term public debt (p.p.): 21.6	Share of public debt in foreign currency (%): 26.4	Share of public debt by non-residents (%): 29.4

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		SE	EU
State guarantees (% GDP) (2015)		11.1	8.5
of which One-off guarantees		*11.1*	*8.1*
Standardised guarantees		*0.0*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	0.00	0.92
	Securities issued under liquidity schemes	0.00	0.00
	Special purpose entity	0.00	0.21
	Total	0.00	1.13

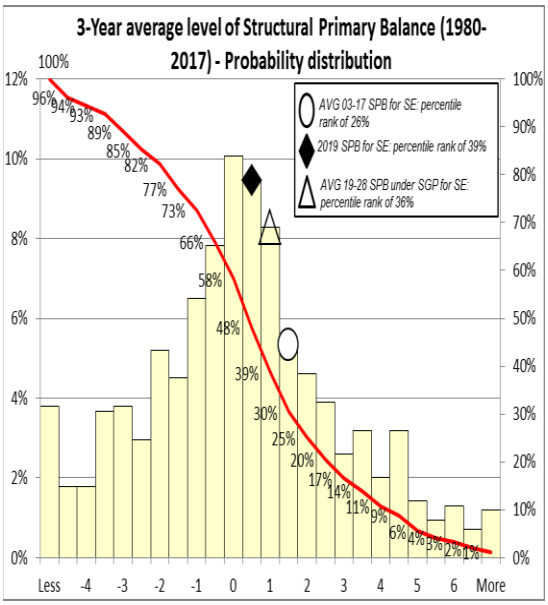
Government's contingent liability risks from banking sector - SE (2016)	Private sector credit flow (% GDP):	Change in nominal house price index:	Bank loans-to-deposits ratio (p.p.):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8%	bank recap. at 10.5%
	7.6	8.6	219.5	1.0	-0.2	28.8	0.00%	0.00%

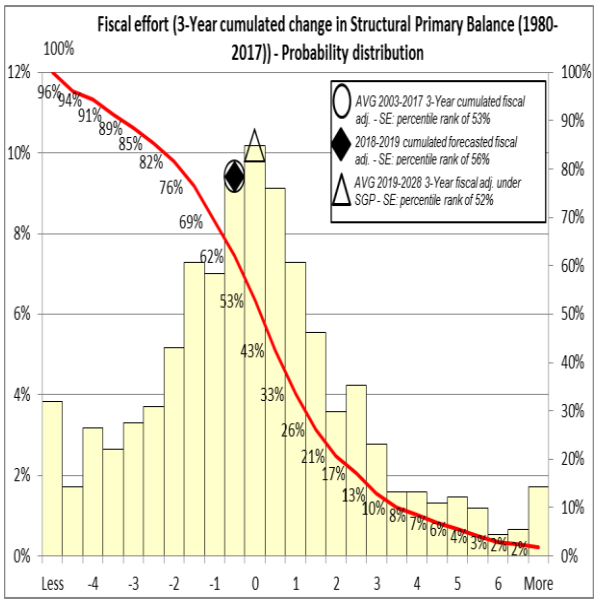
Financial market information

Sovereign Ratings as of Nov 2017, SE	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	Aaa		Aaa	P-1
S&P	AAAu	A-1+u	AAAu	A-1+u
Fitch	AAA		AAA	F1+

Financial market information as of October 2017, SE		
Sovereign yield spreads(bp)*	10-year	46.0
CDS (bp)	5-year	20.8

Realism of baseline assumptions





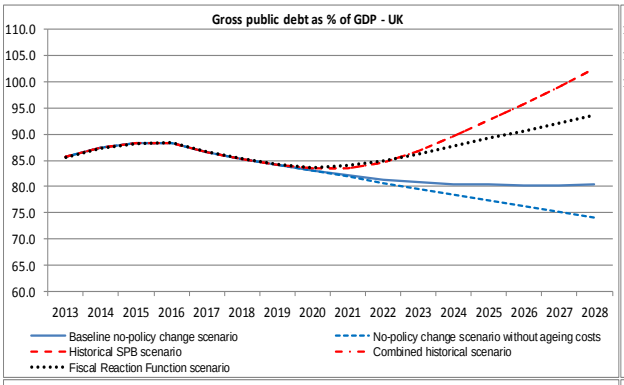
Underlying macro-fiscal assumptions

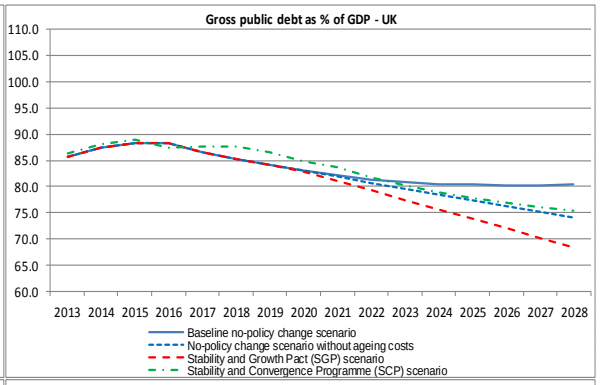
Macro-fiscal assumptions, Sweden	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	36.6	34.4	25.5	22.8	20.4	36.7	25.9	28.6
Primary balance	1.2	1.0	0.8	1.1	1.0	0.9	1.0	1.0	1.0
Structural primary balance (before CoA)	1.1	0.9	0.9	0.9	0.9	0.9	1.0	0.9	1.0
Real GDP growth	3.2	2.7	2.2	1.8	1.9	2.0	2.7	1.9	2.1
Potential GDP growth	3.0	2.7	2.5	1.8	1.9	2.0	2.8	1.9	2.1
Inflation rate	2.2	2.2	2.1	2.0	2.0	2.0	2.2	2.0	2.1
Implicit interest rate (nominal)	0.9	0.8	0.7	1.9	2.6	3.2	0.8	2.0	1.7
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	36.6	34.4	26.9	25.5	24.8	36.7	27.6	29.9
Primary balance	1.2	1.0	0.8	0.5	0.3	0.1	1.0	0.5	0.6
Structural primary balance (before CoA)	1.1	0.9	0.9	0.4	0.2	0.1	1.0	0.4	0.6
Real GDP growth	3.2	2.7	2.2	1.9	2.0	2.0	2.7	2.0	2.1
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	36.6	34.5	25.5	22.4	19.4	36.7	25.7	28.4
Primary balance	1.2	1.0	0.8	1.2	1.2	1.3	1.0	1.1	1.1
Structural primary balance (before CoA)	1.1	0.9	0.9	1.2	1.2	1.3	1.0	1.1	1.1
Real GDP growth	3.2	2.7	2.2	1.7	1.9	2.0	2.7	1.9	2.1
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.5	37.3	34.7	18.5	12.5	6.8	37.2	18.7	23.3
Primary balance	0.9	1.1	1.9	2.9	2.9	2.8	1.3	2.8	2.4
Structural primary balance (before CoA)	0.8	1.2	2.2	2.8	2.8	2.8	1.4	2.8	2.5
Real GDP growth	2.6	2.1	2.0	2.0	2.0	2.1	2.2	2.0	2.1
Potential GDP growth	2.3	2.3	2.3	2.0	2.0	2.1	2.3	2.0	2.1
Inflation rate	2.0	1.8	2.0	2.0	2.0	2.0	1.9	2.0	2.0
Implicit interest rate (nominal)	1.1	1.4	1.5	3.0	3.5	3.5	1.3	2.8	2.5
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	36.6	34.4	22.6	17.9	13.7	36.7	22.8	26.2
Primary balance	1.2	1.0	0.8	2.0	2.0	1.9	1.0	1.8	1.6
Structural primary balance (before CoA)	1.1	0.9	0.9	1.9	1.9	1.9	1.0	1.7	1.5
Real GDP growth	3.2	2.7	2.2	1.8	1.9	2.0	2.7	1.8	2.0
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	36.6	34.4	22.1	17.3	12.8	36.7	22.3	25.9
Primary balance	1.2	1.0	0.8	2.0	2.0	1.9	1.0	1.8	1.6
Structural primary balance (before CoA)	1.1	0.9	0.9	1.9	1.9	1.9	1.0	1.7	1.5
Real GDP growth	3.2	2.7	2.2	2.2	2.2	2.2	2.7	2.1	2.3
Implicit interest rate (nominal)	0.9	0.8	0.7	1.8	2.0	2.2	0.8	1.7	1.4
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	36.7	34.7	26.6	24.2	22.2	36.8	27.0	29.4
Implicit interest rate (nominal)	0.9	1.1	1.1	2.6	3.4	4.0	1.1	2.7	2.3
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	36.5	34.2	24.5	21.4	18.7	36.5	24.8	27.8
Implicit interest rate (nominal)	0.9	0.4	0.3	1.3	1.8	2.3	0.5	1.3	1.1
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	36.8	35.0	27.3	24.9	23.0	36.9	27.6	29.9
Implicit interest rate (nominal)	0.9	1.5	1.6	2.8	3.5	4.2	1.3	2.9	2.5
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	36.4	34.1	24.5	21.6	19.0	36.5	24.9	27.8
Real GDP growth	3.2	3.2	2.7	2.3	2.4	2.5	3.0	2.4	2.6
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	36.8	34.8	26.6	24.0	21.9	36.9	26.9	29.4
Real GDP growth	3.2	2.2	1.7	1.3	1.4	1.5	2.3	1.4	1.6
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	36.3	33.9	24.4	21.4	18.9	36.4	24.8	27.7
Real GDP growth	3.2	3.4	2.9	2.3	2.4	2.5	3.2	2.4	2.6
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	36.9	35.0	26.7	24.2	22.0	36.9	27.1	29.5
Real GDP growth	3.2	1.9	1.4	1.3	1.4	1.5	2.2	1.4	1.6
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	36.6	34.5	26.0	23.3	21.1	36.7	26.3	28.9
Primary balance	1.2	1.1	0.8	1.0	1.0	0.8	1.0	0.9	1.0
Structural primary balance (before CoA)	1.1	1.0	0.9	0.9	0.9	0.9	1.0	0.9	0.9
Real GDP growth	3.2	2.7	2.2	1.8	1.9	2.0	2.7	1.9	2.1
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	39.0	39.2	39.3	29.9	27.0	24.6	39.2	30.3	32.5
Exchange rate depreciation	0.0%	10.4%	10.4%	0.0%	0.0%	0.0%	7.0%	0.0%	1.7%

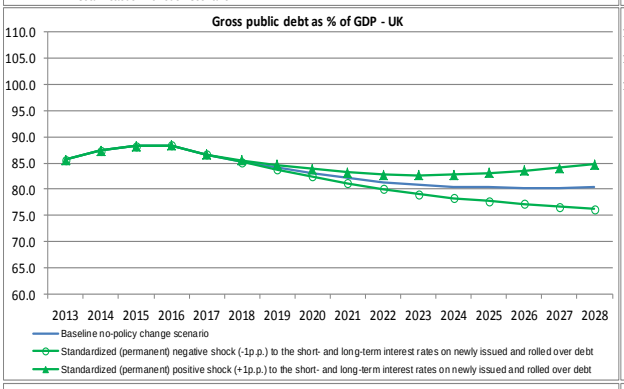
27. United-Kingdom

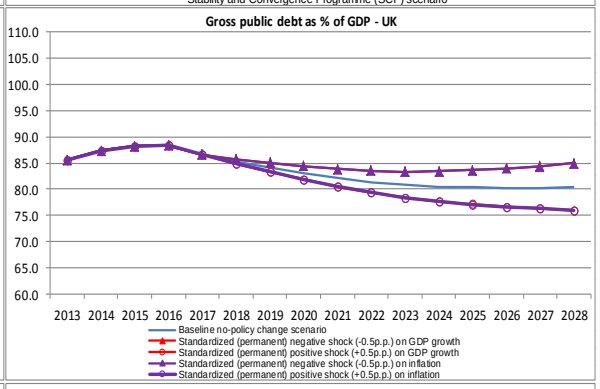
Public debt projections under baseline and alternative scenarios and sensitivity tests

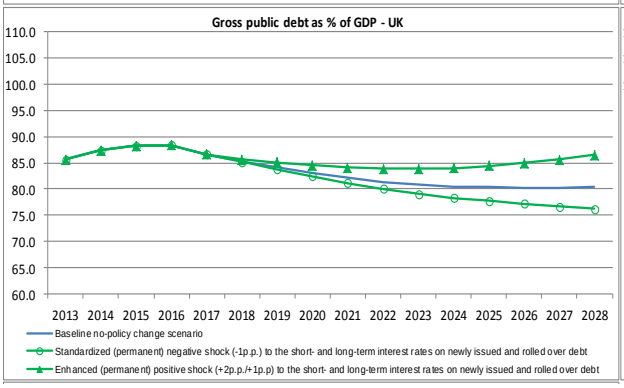
UK - Debt projections baseline scenario	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Gross debt ratio	**88.2**	**88.3**	**86.6**	**85.3**	**84.2**	**83.1**	**82.2**	**81.4**	**80.9**	**80.5**	**80.3**	**80.2**	**80.2**	**80.4**
Changes in the ratio (-1+2+3)	*0.8*	*0.1*	*-1.7*	*-1.3*	*-1.1*	*-1.1*	*-1.0*	*-0.8*	*-0.5*	*-0.4*	*-0.2*	*-0.1*	*0.0*	*0.1*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-1.9**	**-0.5**	**0.5**	**0.6**	**1.0**	**0.9**	**0.7**	**0.5**	**0.3**	**0.2**	**0.1**	**0.0**	**0.0**	**-0.1**
(1.1) Structural Primary Balance *(1.1.1-1.1.2+1.1.3)*	***-2.1***	***-0.8***	***0.2***	***0.3***	***0.9***	***0.8***	***0.7***	***0.5***	***0.3***	***0.2***	***0.1***	***0.0***	***0.0***	***-0.1***
(1.1.1) Structural Primary Balance (bef. CoA)	*-2.1*	*-0.8*	*0.2*	*0.3*	*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						*0.1*	*0.2*	*0.4*	*0.6*	*0.8*	*0.9*	*1.0*	*1.0*	*1.1*
(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*
(1.2) Cyclical component	***0.2***	***0.4***	***0.4***	***0.3***	***0.1***	***0.1***	***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)	**-0.1**	**-0.8**	**-0.5**	**-0.4**	**0.1**	**-0.2**	**-0.2**	**-0.2**	**-0.2**	**-0.2**	**-0.1**	**-0.1**	**0.0**	**0.1**
(2.1) Interest expenditure	*2.3*	*2.4*	*2.7*	*2.5*	*2.5*	*2.4*	*2.4*	*2.4*	*2.4*	*2.5*	*2.6*	*2.7*	*2.9*	*3.0*
(2.2) Growth effect	*-2.0*	*-1.5*	*-1.2*	*-1.1*	*-1.0*	*-1.1*	*-1.1*	*-1.0*	*-1.0*	*-1.1*	*-1.1*	*-1.3*	*-1.3*	*-1.3*
(2.3) Inflation effect	*-0.4*	*-1.7*	*-2.0*	*-1.8*	*-1.4*	*-1.5*	*-1.6*	*-1.6*	*-1.6*	*-1.6*	*-1.6*	*-1.6*	*-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	**-1.0**	**0.4**	**-0.7**	**-0.3**	**-0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*-1.0*	*0.4*	*-0.7*	*-0.3*	*-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*
Per memo														
Structural balance	-4.4	-3.3	-2.5	-2.2	-1.6	-1.6	-1.7	-1.9	-2.1	-2.3	-2.6	-2.7	-2.9	-3.0

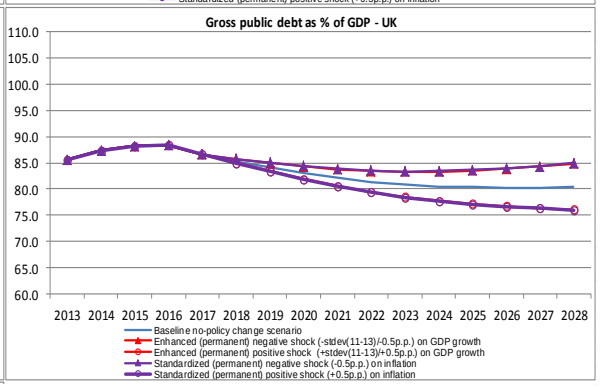


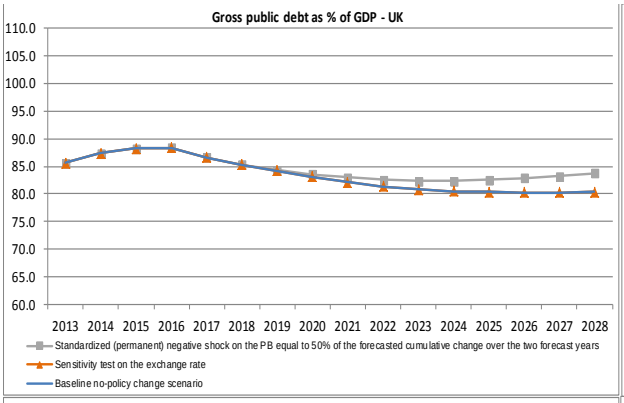


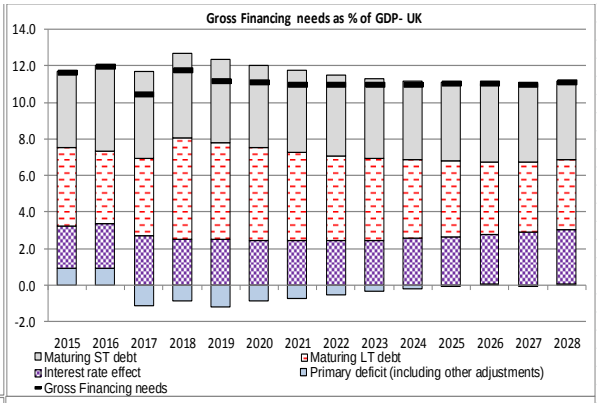


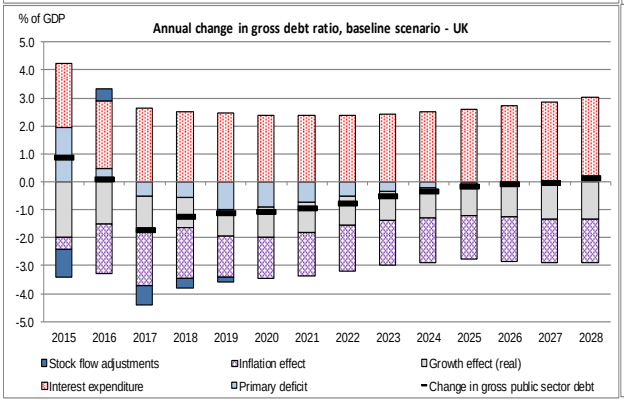


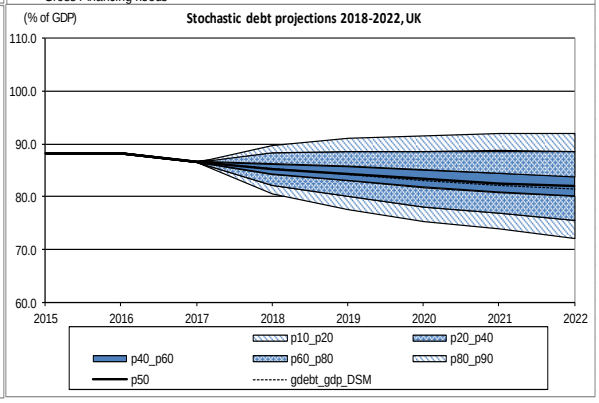












Sustainability indicators summary table

Long-term projections

	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030
Budgetary projections										
Total cost of ageing (gross)	22.1	21.7	21.6	21.7	21.8	21.8	21.9	22.0	22.9	23.3
Revenues from pensions taxation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Property incomes	1.5	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.1	1.1

Sustainability indicators

S0 indicator	2009	2017	Critical threshold
Overall index	**0.51**	**0.42**	**0.46**
Fiscal sub-index	0.53	0.45	0.36
Financial competitiveness sub-index	0.49	0.40	0.49

S1 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**2.1**	**9.0**	**2.3**	**1.9**	**3.3**
of which *Initial Budgetary position*	*-1.0*	*2.8*	*-0.9*	*-1.6*	*-0.2*
*Cost of delaying adjustment***	*0.3*	*2.0*	*0.4*	*0.4*	*0.5*
*Debt requirement****	*1.9*	*2.9*	*1.9*	*2.4*	*2.1*
Ageing costs	*0.9*	*1.1*	*1.1*	*0.8*	*0.9*
Required structural primary balance related to S1	**3.0**	**6.7**	**3.2**	**3.4**	**3.4**

S2 indicator	COM no-policy change scenario	Historical SPB scenario	AWG risk scenario	SCP scenario	2016 DSM
Overall index	**2.1**	**5.4**	**3.2**	**1.3**	**3.0**
of which Initial Budgetary position	-0.1	3.1	-0.1	-0.7	0.7
Long term component	2.2	2.3	3.3	2.0	2.3
of which Pensions	*0.9*	*0.9*	*0.9*	*0.9*	*0.9*
Health care	*0.9*	*1.0*	*1.5*	*0.9*	*1.0*
Long-term care	*0.3*	*0.3*	*0.9*	*0.3*	*0.3*
Others	*0.1*	*0.1*	*0.1*	*0.0*	*0.1*
Required structural primary balance related to S2	**3.0**	**3.1**	**4.1**	**2.8**	**3.1**

Risks related to the structure of public debt financing

Public debt structure - UK (2016)	Share of short-term public debt (p.p.):	Share of public debt in foreign currency (%):	Share of public debt by non-residents (%):
	16.0	0.0	n.a.

Risks related to government's contingent liabilities

Government's contingent liabilities - 2016		UK	EU
State guarantees (% GDP) (2015)		8.7	8.5
of which One-off guarantees		*8.6*	*8.1*
Standardised guarantees		*0.1*	*0.4*
Contingent liabilities of gen. govt related to support to financial institutions (% GDP)	Liabilities and assets outside gen. govt under guarantee	0.00	0.92
	Securities issued under liquidity schemes	0.00	0.00
	Special purpose entity	0.00	0.21
	Total	0.00	1.13

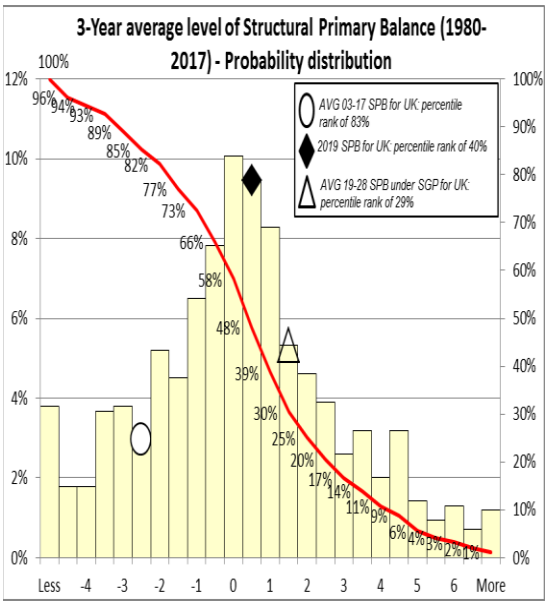
Government's contingent liability risks from banking sector - UK (2016)	Private sector credit flow (% GDP):	Change in nominal house price index:	Bank loans-to-deposits ratio (p.p.):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio	Probability of govt cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							bank recap. at 8%	bank recap. at 10.5%
	8.2	7.0	91.0	1.9	-0.5	30.5	0.00%	0.00%

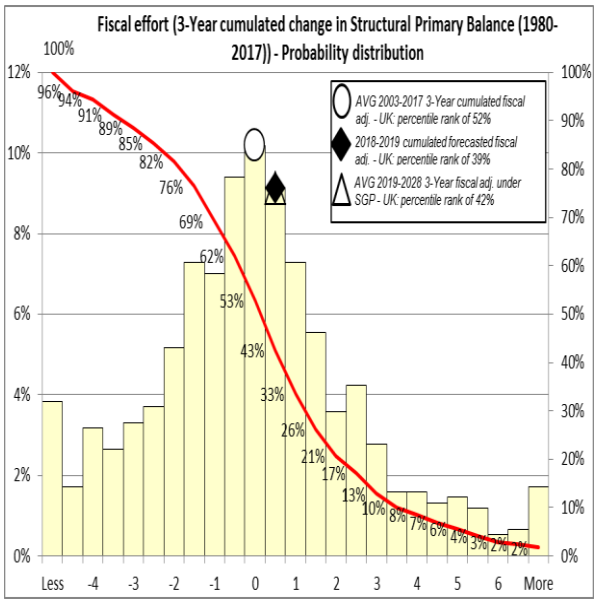
Financial market information

Sovereign Ratings as of Nov 2017, UK	Local currency		Foreign currency	
	long term	short term	long term	short term
Moody's	Aa2		Aa2	
S&P	AAu	A-1+u	AAu	A-1+u
Fitch	AA		AA	F1+

Financial market information as of October 2017, UK		
Sovereign yield spreads(bp)*	10-year	73.0
CDS (bp)	5-year	22.5

Realism of baseline assumptions





Underlying macro-fiscal assumptions

Macro-fiscal assumptions, United-Kingdom	Levels						Averages		
1. Baseline no-policy change scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	86.6	85.3	84.2	80.5	80.2	80.4	85.4	81.0	82.1
Primary balance	0.5	0.6	1.0	0.2	0.0	-0.1	0.7	0.3	0.4
Structural primary balance (before CoA)	0.2	0.3	0.9	0.9	0.9	0.9	0.4	0.9	0.8
Real GDP growth	1.5	1.3	1.1	1.4	1.6	1.7	1.3	1.5	1.4
Potential GDP growth	1.5	1.4	1.4	1.4	1.6	1.7	1.4	1.5	1.5
Inflation rate	2.3	2.1	1.7	2.0	2.0	2.0	2.0	2.0	2.0
Implicit interest rate (nominal)	3.1	3.0	3.0	3.2	3.5	3.8	3.0	3.3	3.2
2. Fiscal reaction function scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	86.6	85.3	84.2	87.7	90.7	93.5	85.4	88.0	87.3
Primary balance	0.5	0.6	1.0	-1.6	-1.4	-1.2	0.7	-1.2	-0.7
Structural primary balance (before CoA)	0.2	0.3	0.9	-0.9	-0.5	-0.2	0.4	-0.6	-0.4
Real GDP growth	1.5	1.3	1.1	1.3	1.5	1.5	1.3	1.6	1.5
3. SGP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	86.6	85.3	84.2	75.6	72.0	68.4	85.4	75.7	78.1
Primary balance	0.5	0.6	1.0	1.7	1.7	1.8	0.7	1.7	1.4
Structural primary balance (before CoA)	0.2	0.3	0.8	1.7	1.7	1.8	0.4	1.7	1.4
Real GDP growth	1.5	1.3	1.2	1.4	1.6	1.7	1.3	1.4	1.4
4. SCP scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	87.7	87.7	86.5	78.9	76.9	75.3	87.3	79.5	81.4
Primary balance	0.0	0.7	1.4	1.0	0.8	0.7	0.7	1.1	1.0
Structural primary balance (before CoA)	-0.4	0.5	1.3	1.5	1.5	1.5	0.5	1.5	1.2
Real GDP growth	2.0	1.6	1.7	1.6	1.7	1.6	1.8	1.7	1.7
Potential GDP growth	1.9	1.8	1.9	1.6	1.7	1.6	1.9	1.7	1.7
Inflation rate	1.8	1.6	1.6	2.0	2.0	2.0	1.7	2.0	1.9
Implicit interest rate (nominal)	3.3	3.0	2.9	3.2	3.6	3.7	3.1	3.2	3.2
5. Historical SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	86.6	85.3	84.2	89.6	95.8	102.5	85.4	90.9	89.5
Primary balance	0.5	0.6	1.0	-3.0	-3.2	-3.2	0.7	-2.3	-1.6
Structural primary balance (before CoA)	0.2	0.3	0.9	-2.3	-2.3	-2.3	0.4	-1.8	-1.2
Real GDP growth	1.5	1.3	1.1	1.4	1.6	1.7	1.3	1.7	1.6
6. Combined historical scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	86.6	85.3	84.2	89.5	95.8	102.4	85.4	90.9	89.5
Primary balance	0.5	0.6	1.0	-3.0	-3.2	-3.2	0.7	-2.3	-1.6
Structural primary balance (before CoA)	0.2	0.3	0.9	-2.3	-2.3	-2.3	0.4	-1.8	-1.2
Real GDP growth	1.5	1.3	1.1	1.6	1.6	1.6	1.3	1.8	1.7
Implicit interest rate (nominal)	3.1	3.0	3.0	3.5	3.7	3.8	3.0	3.4	3.3
7. Higher IR scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	86.6	85.5	84.6	82.8	83.5	84.8	85.5	83.4	83.9
Implicit interest rate (nominal)	3.1	3.2	3.2	3.8	4.2	4.6	3.2	3.9	3.7
8. Lower IR scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	86.6	85.1	83.8	78.3	77.2	76.3	85.2	78.8	80.4
Implicit interest rate (nominal)	3.1	2.8	2.7	2.7	2.9	3.1	2.9	2.8	2.8
9. Higher IR scenario (enhanced DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	86.6	85.7	85.0	84.0	85.0	86.5	85.7	84.6	84.9
Implicit interest rate (nominal)	3.1	3.4	3.5	3.9	4.3	4.7	3.4	4.0	3.9
10. Higher growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	86.6	84.9	83.3	77.7	76.7	76.1	84.9	78.2	79.9
Real GDP growth	1.5	1.8	1.6	1.9	2.1	2.2	1.6	2.0	1.9
11. Lower growth scenario (standard DSA)	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	86.6	85.7	85.0	83.4	84.0	84.9	85.8	83.9	84.4
Real GDP growth	1.5	0.8	0.6	0.9	1.1	1.2	1.0	1.0	1.0
12. Higher growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	86.6	84.9	83.4	77.8	76.8	76.1	85.0	78.3	80.0
Real GDP growth	1.5	1.7	1.6	1.9	2.1	2.2	1.6	2.0	1.9
13. Lower growth scenario (enhanced	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	86.6	85.7	84.9	83.3	83.9	84.8	85.7	83.8	84.3
Real GDP growth	1.5	0.8	0.7	0.9	1.1	1.2	1.0	1.0	1.0
14. Lower SPB scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	86.6	85.3	84.3	82.4	82.8	83.7	85.4	82.9	83.5
Primary balance	0.5	0.6	0.6	-0.2	-0.4	-0.4	0.6	-0.1	0.1
Structural primary balance (before CoA)	0.2	0.3	0.5	0.5	0.5	0.5	0.3	0.5	0.5
Real GDP growth	1.5	1.2	1.4	1.4	1.6	1.7	1.4	1.5	1.4
15. Exchange rate depreciation scenario	**2017**	**2018**	**2019**	**2024**	**2026**	**2028**	**2017-19**	**2020-28**	**2017-28**
Gross public debt	86.6	85.3	84.2	80.5	80.2	80.4	85.4	81.0	82.1
Exchange rate depreciation	0.0%	16.4%	16.4%	0.0%	0.0%	0.0%	10.9%	0.0%	2.7%

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