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THE SUSTAINABILITY OF MALTESE GOVERNMENT DEBT

BOX 3: THE SUSTAINABILITY OF MALTESE GOVERNMENT DEBT¹

This box assesses the sustainability of Maltese general government debt using different methodologies. It updates previous debt sustainability analyses (DSA) published by the Bank.² The term ‘sustainability’ used in this analysis is in line with the International Monetary Fund’s (IMF’s) definition that ‘sovereign debt is sustainable if the country is able to finance its policy objectives and service the resulting debt, without resorting to unduly large adjustments, which could otherwise compromise its stability’.

Main messages

The main messages can be summed up as follows:

- According to a heatmap of relevant indicators, most short-term and long-term risks to sustainability in 2023 (latest available data) were considered to be contained to medium.
- Medium-term sustainability risks are assessed via a deterministic and stochastic approach. In a scenario assuming additional fiscal consolidation in line with EU rules, the debt-to-GDP ratio is expected to remain below the 60% reference target.
- The stochastic debt analysis offers a supplementary evaluation of the scenarios by incorporating macroeconomic uncertainty into the debt-to-GDP trajectory. The findings indicate a small likelihood of the debt-to-GDP ratio surpassing 60% in the medium term, with the probability peaking at 8.8% in 2032. This suggests that, even under the combined impact of shocks, debt levels are projected to remain stable by the end of the forecast period.
- While the stochastic analysis provides an assessment of macroeconomic uncertainty, there remain risks that are difficult to quantify. Risks with an adverse impact on debt sustainability include the likelihood of higher-than-expected discretionary spending, the effects of international tax harmonisation and costs related to the physical and transition risks from climate change and nature degradation. On the other hand, other unquantifiable risks – such as the EU’s clean industrial deal and digitalisation – may well present positive externalities to the economy, in the form of increased investment and productivity.

Deterministic debt sustainability analysis

Traditional deterministic approaches to DSA project a single debt-to-GDP trajectory, based on a baseline forecast for GDP and the underlying fiscal position. This trajectory is then subjected to various shocks in order to determine the susceptibility of the projections to adverse circumstances.

In contrast with previous sustainability analyses published by the Bank, this box will assess the profile of Maltese general government debt in only one scenario. The uncertainties surrounding this scenario are then explored further through a stochastic analysis (see section below).

In this scenario, GDP growth, inflation and Government’s borrowing costs up until 2027 are in line with the Bank’s latest forecast exercise.³ Thereafter, these are determined by a set of assumptions.⁴

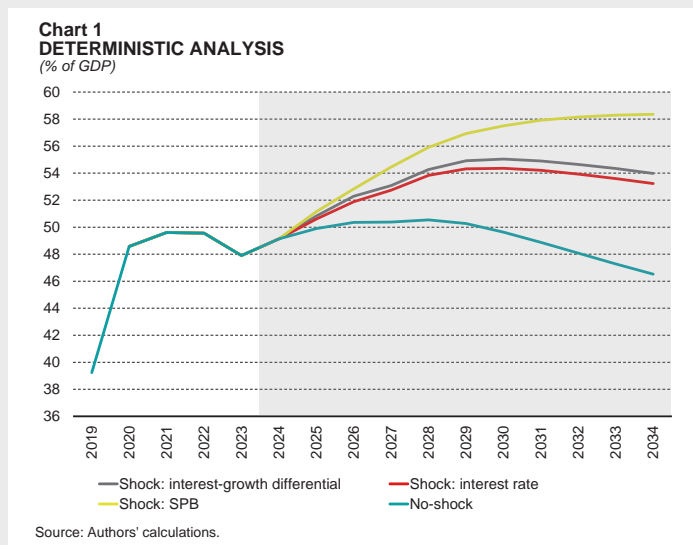
¹ Prepared by Ian Debattista and John Farrugia, respectively a senior economist and manager at Fiscal Affairs and Reports Office within the Economic Analysis Department of the Central Bank of Malta. The views expressed are those of the authors and do not necessarily reflect the views of the Central Bank of Malta. Any errors are the authors’ own.

² This study uses the national accounts vintage up to the fourth quarter of 2024, published in February 2025 and the general government data vintage up to the third quarter of 2024, published in January 2025. The cut-off date for projections is 6 February 2025.

³ This exercise is available at: <https://www.centralbankmalta.org/economic-projections>.

⁴ Real GDP growth is set to grow in line with the forecast structural primary balance and potential output growth. Inflation is assumed to revert to around 2.0%. The forecast path of interest rates is based on ECB technical assumptions and the maturity profile of outstanding MGS. For further details, see boxes published in previous Annual Report publications.

The forecast fiscal path is expressed in terms of the structural primary balance (SPB). This is set to be in line with the Bank's fiscal projections up until 2027. The SPB in 2028 is set to be in line with Government targets, as published in the Medium-Term Fiscal Structural Plan.⁵ Thereafter, Government is assumed to adhere to the terms of the Stability and Growth Pact (SGP), such that no additional consolidation is pursued once the structural deficit is brought down to 1.5% of GDP (see section on assumptions and Table 3).



On the basis of these assumptions, and excluding the impact of any shocks, the general government debt is expected to peak at just over 50.0% in 2028 before declining to just over 46.0% of GDP by 2034 (see Chart 1). It is thus not expected to decline to pre-pandemic levels, before Government introduced significant support measures. Nevertheless, it is set to be considerably lower than the 60% reference ratio set by the SGP.

In this scenario, the debt-to-GDP ratio remains less than 60% even when assuming an adverse shock.

Owing to the different magnitude of shocks, a less favourable interest-growth differential and higher interest rates have a broadly similar effect on the debt ratio. By 2030, the debt ratio is set to peak at between 54.0% and 55.0% in these scenarios. It is then projected to decline to around 53.0% and 54.0% by 2034.

A shock to the SPB exerts the largest impact on the debt profile. The debt-to-GDP ratio would increase at a gradual pace, before stabilising somewhat at just over 58.0% by 2034.

According to this scenario, adverse shocks cause the debt-to-GDP ratio to peak at a progressively later timeframe. Moreover, the debt-to-GDP ratio remains comparatively high for an extended period. For public finances to be less susceptible to these shocks, a more aggressive fiscal consolidation path than that assumed in the no-shock path would be needed.⁶

Stochastic debt sustainability analysis

Deterministic analyses do not fully capture the uncertainty inherent when projecting the debt-to-GDP path. Stochastic debt sustainability analysis (SDSA) addresses this limitation by simulating multiple

⁵ The Plan, which was published in September 2024, establishes the minimum fiscal adjustment path necessary to ensure debt sustainability in line with the EU's economic governance framework. Targets are based on a reference trajectory, estimated by the Commission, for net nationally-funded expenditure. The Plan covers the period 2025-2028.

⁶ Were the deterministic no-shock scenario set to assume that the debt-to-GDP ratio return to its pre-pandemic level (around 39% in 2019), the SPB would need to improve consistently each year. In this instance, by 2034 the structural balance would be in surplus by just under 1.5% of GDP.

debt paths under various shock combinations, effectively conducting extensive sensitivity tests on debt determinants. Unlike deterministic models, which offer a fixed trajectory, SDSA generates a distribution of possible outcomes, enabling a probabilistic assessment of debt sustainability. This approach allows policymakers to quantify risks and make more informed decisions based on the full range of potential debt paths, rather than a single estimate.

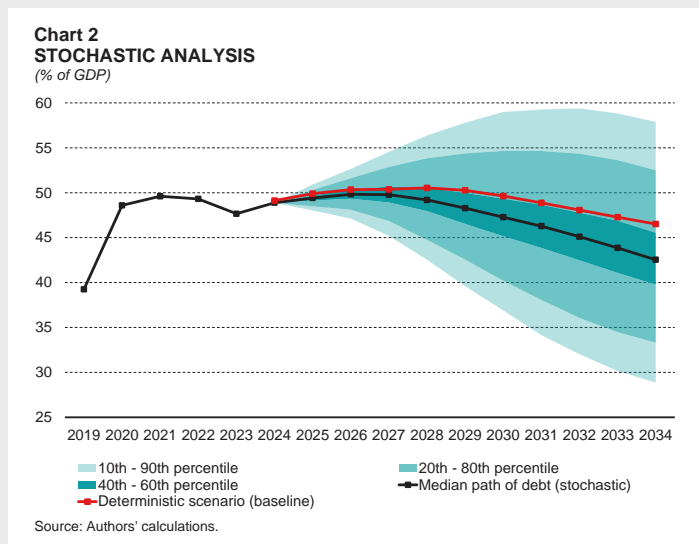
Existing literature uses several methodologies to generate shocks to macroeconomic variables, that drive debt dynamics. This analysis applies bootstrapping techniques on the residuals of a vector auto regression (VAR) estimation applied to Maltese data.⁷ Shocks are generated for real GDP growth, the short and long-term interest rate and the SPB (see section at the end of this box). The central path of these variables, i.e. the path without accounting for any shocks, is based on the trajectory forecast using the deterministic model.

This model generated 10,000 different paths for government debt, consistent with what is done in Medeiros (2012). Chart 2 presents a fan chart showing the distribution of results across the next decade based on this framework.

A key distinction between the stochastic and deterministic approaches lies in the treatment of macroeconomic uncertainty. Traditional deterministic models apply shocks to individual economic variables in isolation, leading to a single projected path for the debt-to-GDP ratio. In contrast, SDSA considers simultaneous shocks to multiple debt determinants, resulting in a broader distribution of potential outcomes.

The results of the SDSA in Chart 2 indicate a range of possible debt-to-GDP trajectories over the forecast horizon. According to the median path of possible trajectories, the debt-to-GDP ratio peaks at just over 49.8% in 2026, before decreasing gradually thereafter. The results highlight increasing uncertainty surrounding the projections over time, as evidenced by the widening confidence intervals. The 10th-90th percentile range suggest that debt paths could vary considerably depending on uncertainty related to macroeconomic conditions. Nevertheless, the median debt path is broadly in line with the deterministic scenario between 2025 and 2027 and exerts a stronger downward trajectory thereafter.

Table 1 presents two important metrics with which to gauge the range of probabilities generated by the stochastic analysis. The probability that the debt ratio remains higher than its initial level in 2024, is rather high in during the first years of the projected horizon due to the projected moderation in economic growth and higher refinancing costs for government debt. Thereafter, the



⁷ See Medeiros, J. (2012). Stochastic debt simulation using VAR models and a panel fiscal reaction function: Results for a selected number of countries. European Commission, Directorate-General for Economic and Financial Affairs. *Economic Papers* 459. <https://doi.org/10.2765/26084>

Table 1
STOCHASTIC ANALYSIS: PROBABILITY METRICS

Probability

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Debt exceeds its initial level	69.2%	68.6%	60.9%	52.6%	46.6%	42.2%	39.2%	36.1%	32.8%	29.1%
Debt exceeding 60% of GDP	0.0%	0.0%	0.5%	3.1%	5.9%	7.9%	8.6%	8.9%	8.6%	7.9%

Source: Authors' calculations.

probability declines gradually from 69.2% in 2025 to 29.1% by 2034. This suggests that although debt levels are expected to increase in the initial years, there is a growing likelihood that debt stabilises in the long-term and even trends downwards.

This stochastic analysis also shows that throughout the next decade, there is only a small likelihood of government debt exceeding 60%. This probability reaches a peak of 8.9% in 2032. The relatively higher probability in the outer years of the projected horizon is attributed to the wider confidence bands, as uncertainty compounds the further the distance from the current year.⁸

The fan chart analysis is a useful means to account for uncertainties surrounding the deterministic scenario. Some of these uncertainties can be identified, without being quantified. For instance, there exists the risk of higher-than-expected outlays on subsidies to retain fixed retail utility prices, if commodity prices are high. This would directly affect the Government's ability to follow fiscal targets, since the European Commission considers the profile of net nationally financed expenditure as the single operating indicator when assessing adherence to the SGP.⁹

Other types of uncertainties reflect events which are without precedent and thus cannot be measured within the stochastic framework. Such risks include the planned reform in the international corporate tax framework, and a requirement by EU Member states to implement the EU Minimum Tax Directive (Directive 2022/2523). Malta applied a derogation to this directive but needs to transpose it by end-2029. Further uncertainties reflect the extension of the EU Emissions Trading System to additional industries, and the likely introduction of an EU-wide carbon tax. Other risks are on balance more likely to bring about positive externalities. An EU-wide effort to boost investment in green technology and enhance competitiveness, known as the clean industrial deal, may create new market opportunities and increase foreign direct investment. The proliferation of AI technology also has the potential to improve productivity and the economic environment.

Heat map of indicators

This section assesses highly relevant indicators, according to literature, to assess debt sustainability in the short and long-term. The thresholds set to indicate low, medium and high risks are sourced from the European Commission's Debt Sustainability Monitor series. This is a backward-looking analysis using information up to 2023. At the time this exercise was conducted, data at end-2024 was not available for most indicators.

The threat that each indicator poses to the debt ratio is color-coded: red indicates a high threat, yellow indicates a medium threat, and green indicates a low threat to sustainability. The heat map is presented in Table 2.

⁸ The stochastic analysis also enables the computation of the probability that the debt-to-GDP ratio returns to pre-pandemic levels. By 2034, the likelihood of the debt level falling below its 2019 level is estimated at 38.1%.

⁹ The term 'net nationally financed expenditure' is defined as primary expenditure, adjusted for the economic cycle, net of EU funds and the impact of discretionary revenue measures. Government expects to limit growth in net nationally financed expenditure by an average of 5.2% between 2025 and 2027. According to the deterministic projections discussed in this box, spending would need to grow by just above this rate between 2028 and 2034, if fiscal targets are to be met.

Table 2
HEAT MAP

	2019	2020	2021	2022	2023
Structure of debt					
Share of short-term debt	Yellow				
Change in share of short-term debt (y-o-y)	Green				
Share of foreign currency denominated debt	Green				
Share of debt with variable interest rate in GDP	Green				
Share of debt held by non-residents	Green				
Liquidity risks					
Gross financing needs (% of GDP)	Green				
Net financing needs (% of GDP)	Yellow				
Ten-year government bond spread over German Bund	Green				
Macro-financial risks					
Private sector debt (% of GDP)	Green				
Private credit flow (% of GDP)	Red	Yellow	Green	Green	Yellow
Net international investment position (% of GDP)	Green				
Share of non-performing loans to gross loans: core banks	Red				
Change in share of non-performing loans (core banks) (y-o-y)	Green				
Bank loans-to-deposits ratio (core banks)	Green				
Change in nominal house prices (y-o-y)	Green				
Competitiveness risks (high/low risk)					
ULCs (% change over three years)	Red				
Real effective exchange rate (% change over three years)	Green				
Current account balance (three-year average as % of GDP)	Green				
Export market shares (% change over five years)	Green				
Implicit/ contingent risks					
Commission Ageing Report: increase in ageing costs (pp of GDP)	Red	Green	Green	Red	Green
General government guarantees (% of GDP)	Green	Yellow	Green	Green	Green

Sources: Eurostat; author's calculations.

Risks associated with the composition of debt and availability of liquidity are assessed to be relatively low. While the share of short-term debt within total debt presents a moderate risk, this has been on a declining trend, decreasing from around 16% in 2020 to around 11% by the end of 2023. Notably, short-term debt also encompasses holding of Maltese Government Retail Saving Bonds, which are classified as deposits under the ESA methodology. Other indicators for the structure of debt remain at a low threat, mainly as debt remains almost all denominated in euro, and at a fixed interest rate and mostly held by Maltese residents.

Risks associated with gross and net financing needs have diminished, driven by the sustained reduction in the government deficit since 2020, and were low by the end of 2023.

From a macro-financial perspective, the main risks to debt sustainability arise predominantly from the historically elevated share of non-performing loans in total loans issued by the core domestic banks, when compared with the applicable threshold. This indicator reflects the risk of a sudden shock to one or more economic sectors due to the inability of a bank to meet its credit obligations, leading to adverse effects on GDP and ultimately on public finances. Nonetheless, this metric has improved significantly over time and is currently at historic lows.¹⁰

¹⁰ The high-risk threshold applied in this study has a value of 2.30%. This metric amounted to 2.33% by September 2024.

Another key risk to sustainability stems from implicit liabilities related to ageing costs, including pensions, healthcare, and long-term care, as a share of GDP. According to the European Commission's 2024 Ageing Report, between 2022 and 2070 Malta is projected to experience the second-largest increase in age-related expenditure as a share in GDP within the euro area, increasing by 8.7 points. Nevertheless, by 2070, ageing-related costs are expected to remain below the euro area average. The Commission's projections are also based on the assumption that migrant workers continue to live in Malta long enough to qualify for pension benefits.

Government guaranteed debt as a share of GDP continued to decrease in 2023, reaching 5.6% of GDP – well below the euro area average. Historically, this is the lowest ratio recorded since 2003. As a result, the risk of guarantees being called is considered low. The main source of risks concerning government guarantees lies in the fact that 45% of outstanding loans are concentrated in the energy sector.¹¹

Assumptions and technical information

Numerical targets included in the Stability and Growth Pact

Member States under the preventive arm of the fiscal rules will be subject to two safeguards. Under the debt sustainability safeguard, countries with debt ratios higher than 90% of GDP are required to bring down their debt ratio by a minimum annual average of 1 percentage point of GDP over the national plan's horizon. The minimum annual average of debt reduction for countries with ratios of between 60% and 90% is 0.5 percentage points of GDP. Under the deficit resilience safeguard, countries need to bring their structural deficit down to 1.5% of GDP to ensure a safety margin to the 3% of GDP Treaty-based threshold. To this end, the annual change in the SPB will be 0.4 percentage points of GDP for a four-year adjustment plan, and 0.25 percentage points for a seven-year plan.

Countries which breach the 3% deficit ratio threshold and enter into an excessive deficit procedure (EDP) are required to make a minimum annual adjustment of 0.5 percentage points of GDP in the SPB for the transitional period 2025-2027, and in terms of the structural balance thereafter.

Deterministic analysis: main determinants

The forecast path for the main determinants of debt is shown in Table 3.

Table 3

DETERMINISTIC ANALYSIS: MAIN DETERMINANTS OF DEBT

Per cent; averages over simulation period

	2025- 2034 average	Shock: interest growth differential	Shock: interest rate	Shock: SPB
Real GDP growth rate	3.5	3.0	3.5	3.5
Inflation (GDP deflator growth rate)	2.1	2.1	2.1	2.1
Implicit interest rate	2.9	3.4	3.7	3.1
Deficit-debt adjustments (% of GDP)	0.3	0.3	0.3	0.3
SPB (% of GDP)	-0.8	-0.9	-0.9	-1.8
<i>Memo: SPB in 2034 (% of GDP)</i>	<i>-0.1</i>	<i>0.0</i>	<i>0.0</i>	<i>-1.1</i>

Source: Authors' calculations.

¹¹ See National Audit Office Malta (2024). "Annual Audit Report: Public Accounts 2023" for further details.

Deterministic analysis: shocks (applied from 2025 onwards)

Shocks are assumed to be permanent in nature, and to target three main determinants of the debt-to-GDP path. Shocks to the interest-growth differential assume a 0.5 percentage points lower GDP growth path and 0.5 percentage points higher interest rate path. The interest rate shock scenario assumes a 1.0 percentage point higher path of interest rates. The SPB scenario assumes a 1.0 percentage point lower SPB path.

For shocks which impose an increase in interest rates, a gradual increase in the interest rate on non-maturing debt is being assumed, such that the full impact of the shock is felt by the end of the forecast horizon. The impact of the shock to interest rates applied to maturing and new debt is felt immediately.

Stochastic analysis: shocks (applied from 2025 onwards)

Shocks are generated through bootstrapping of residuals based on a quarterly VAR model, whose specification will be outlined in greater detail in a forthcoming Central Bank Discussion Paper. The VAR estimation is conducted using data for Malta, from 2001Q3 to 2024Q4 for four input variables, to which shocks are applied to: the growth rate of real GDP, short-term and long-term interest rates, and the SPB. Through resampling, shocks differ across multiple iterations, thereby creating different scenarios.

Projected real GDP growth is calculated in a similar manner to the deterministic approach, however adding the shock in each quarter. Growth is based on its lagged value, the level of potential GDP, changes in the SPB in the preceding quarter, and the output gap. Shocks to the short and long-term interest rates are generated in percentage point deviation. Therefore, the central scenario of the rates is similar to the deterministic approach, with the shocks adding potential deviation from such scenario.

The path of the SPB is set to be in line with the Bank's projections up until 2027. Thereafter, this is based on the abovementioned SGP numerical targets. The model takes into account possible divergence from this path following the introduction of shocks.