

INTERNATIONAL MONETARY FUND

Optimal Fiscal Path Considerations

Portugal

Ippei Shibata and Volodymyr Tulin

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Optimal Fiscal Path Considerations (Portugal)
Prepared by Ippei Shibata and Volodymyr Tulin

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ABSTRACT: Despite achieving a rapid reduction in the public debt-to-GDP ratio in recent years, Portugal's debt ratio remains relatively high at 113.9 percent of GDP in end-2022. This paper employs an analytical model to determine the appropriate trajectory for structural consolidation to sustain ambitious debt reduction over the medium term, taking into account the uncertainties in the economic landscape. The model points to a need for continued fiscal tightening between 2024 and 2028. Optimal consolidation would be higher under higher long-term interest rates, lower medium-term growth prospects, or increased market sensitivity to debt.

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June 1, 2023

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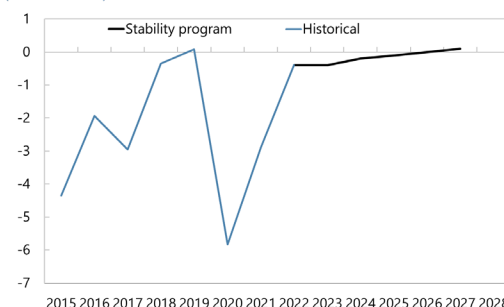
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OPTIMAL FISCAL PATH CONSIDERATIONS¹

1. This note analyzes the considerations for Portugal’s fiscal policy and public debt to stay on a sustainable path under alternative economic conditions. Despite a nearly 20 percentage points of GDP spike in 2020 at the onset of Covid-19 shock, the public debt-to-GDP fell below its pre-pandemic level by end-2022. The authorities’ 2023 Stability Program forecasts the overall deficit to remain low and the public debt to stay on a downward track. However, the still-high debt ratio implies that a sustained effort will be needed for continued ambitious debt reduction over the medium term. This note uses an analytical model—the Buffer Stock model (see Fournier, 2019) to shed light on how the optimal medium-term path for structural consolidation may be affected under alternative scenarios.

2. A structural stochastic model of the general government is used to help formulate an appropriate medium-term fiscal path.² The model presents an optimizing framework whereby the government aims to strike a balance between the objectives of economic stabilization and debt sustainability (see adjacent figure, top panel). The model features a forward-looking fiscal policy setting to smooth cyclical shocks and reduce scarring effects, subject to the initial public debt level, fiscal policy stabilization function, market’s risk appetite and the distribution of future shocks that may hit the economy (Annex I). When debt is low, the government’s best response to adverse economic shocks is to smooth the shocks with countercyclical fiscal policy. However, as the debt level increases, so do borrowing costs (interest rates). As debt gets close to its limit regarded by the model as the point where the government may lose market access³, the government’s optimal policy is to respond less to the negative shocks and instead preserve the fiscal room.

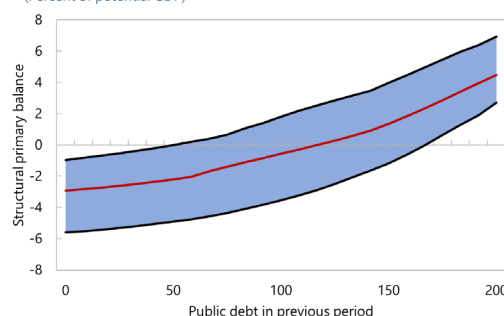
Overall Balance: Stability Program Forecast
(Percent of GDP)



2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028

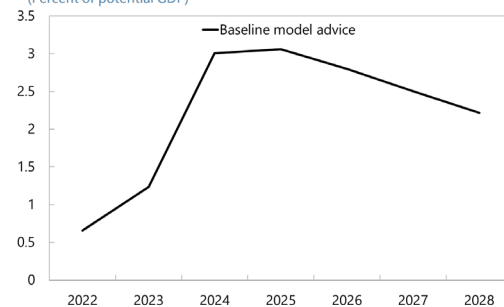
Sources: 2023 Portugal Stability Program Report

Fiscal Reaction Function to Debt
(Percent of potential GDP)



Source: IMF staff calculations.

Structural Primary Balance
(Percent of potential GDP)



Source: IMF staff calculations.

¹ Prepared by Ippei Shibata and Volodymyr Tulin.

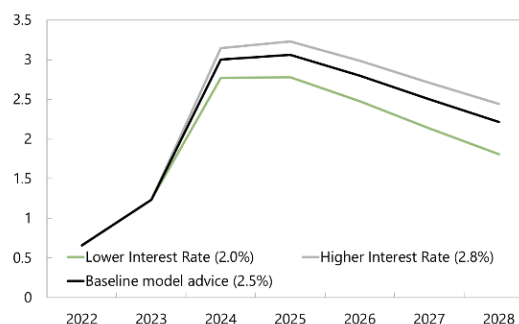
² The model, described in [Fournier \(2019\)](#) and [Fournier and Lieberknecht \(2020\)](#), has been featured in recent staff reports for Article IV consultations for France, Israel, Lithuania, Spain. See Annex of the papers for additional model details and calibrations.

³ There is positive probability of losing market access.

3. Relative to the baseline path, the model illustrates the sensitivity of the recommended fiscal consolidation to interest rate, potential growth, and the market sensitivity to debt. We start with the model’s baseline path, calibrated to the Portuguese economy under the 2023 Article IV Staff Report forecast. Under these assumptions, the model recommends an increase in the structural primary balance averaging at around 2.1 percentage points of potential GDP relative to 2022 during 2024-2028, implying the average level of 2.7 percent of potential GDP. The front-loaded fiscal consolidation path reflects the higher initial debt level. Also, the model recommends a more aggressive consolidation path under:

- Higher long-run interest rate:** A key parameter to pin down the steady-state of the model is the long-run real effective interest rate. The baseline parametrization assumes that the real effective interest rate will eventually converge to 2.5 percent, a level comparable to the average over the two decades since euro adoption. To assess how the model recommendation would vary under different interest rate scenarios, alternative calibrations for the long-term real interest rate were considered, ranging from 2.8 percent observed over 2002-19 to the low levels of about 2.0 percent observed over the same period but removing sovereign crisis and Covid-19 periods. Higher long-term rates than in the baseline would call for the optimal fiscal path to entail a faster fiscal adjustment to offset the higher debt-serving costs and debt level. Specifically, for a 30-basis point increase in long run real interest rates, the recommended additional annual increase in the structural primary balance (relative to the baseline) would be some 0.2 percentage points higher than the baseline. Conversely, if the long-run interest rate is lower, the recommended fiscal path entails a lower structural primary balance.

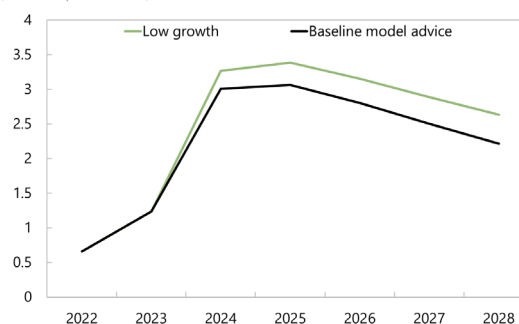
Structural Primary Balance: Long-run Interest Rate Sensitivity
(Percent of potential GDP)



Source: IMF staff calculations.

- Lower medium-term growth:** Lower medium-term growth would necessitate a significantly stronger adjustment to offset weaker debt dynamics. The baseline medium-term growth path assumes a boost to potential growth from the RRP investment and its structural reforms. An alternative scenario with a long-term potential growth rate of ¾ percent, which equals the average growth recorded during 2002-19, would necessitate an additional 0.3 p.p. average increase in structural primary balance starting in 2024 over the medium-

Structural Primary Balance: Potential Growth Sensitivity
(Percent of potential GDP)



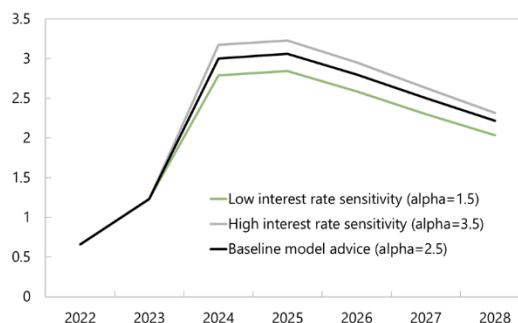
Source: IMF staff calculations.

term relative to the baseline model. Additional risks stem from possible fiscal cliff effects at the end of the NGEU period, which could reduce long term growth further.⁴

- **Market sensitivity to debt:** Among debt sensitivity parameters to measure the market’s risk appetite, interest rate sensitivity is important. Higher sensitivity of interest rate to the debt level necessitates stronger consolidation over the medium-term.

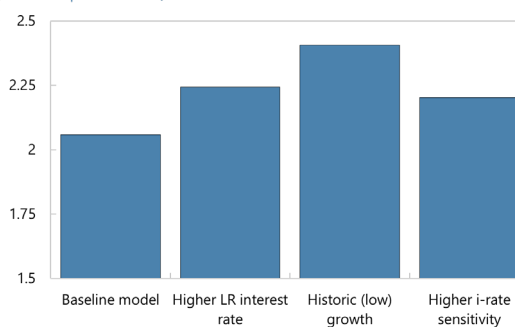
4. In conclusion, the buffer-stock model suggests that the appropriate fiscal consolidation path for Portugal will critically depend on medium-term output dynamics and market’s risk appetite. While debt is forecast to decline under the model’s baseline scenario, in line with staff’s baseline projections, the model calls for more ambitious consolidation. The recommended fiscal effort is higher under alternative adverse scenarios.

Structural Primary Balance: Interest Rate Sensitivity to Debt Level
(Percent of potential GDP)



Source: IMF staff calculations.

Recommended Structural Primary Balance, Average for 2024-28
(Percent of potential GDP)



Source: IMF staff calculations.

⁴ Over the last decade public investment has fallen from high levels to below EU peers. We do not explicitly consider a large fiscal impact from NGEU grants. Given the focus on balancing country-level fiscal sustainability and stabilization policy setting, the model abstracts from the composition of public finances, an implicit near-term stimulus impact of NGEU grants, or EU-level fiscal stabilization considerations. Hence our approach is based on the scenario analysis with different long-term assumptions regarding the growth potential.

Annex I. Model Details

Key Model Highlights

- **Two-way feedback between fiscal policy and output.** A tightening of the structural primary balance negatively affects output (fiscal multiplier), in which the multiplier is cycle dependent (larger during recessions). Output also impacts the fiscal outcome (automatic stabilizers).
- **Macro stabilizing role of fiscal policy is constrained by high debt.** Countercyclical fiscal policy dampens recessions and limits overheating during upswings. However, the interest rate rises with debt, and at high levels, the government risks losing market access. As a result, the feasible fiscal response to a negative output shock will be much smaller if access to credit markets is affected. Therefore, building fiscal buffers by lowering debt is appropriate to reduce the risk of rising sovereign yields and market cutoff.
- **Hysteresis.** Recessions create a persistent effect on potential output owing to loss of physical and human capital and lower investment during severe economic downturns.

Calibration

- **The welfare function** parameters are standard in the literature. The discount factor is on the conservative side. Interaction with GDP growth implies a cumulative discount factor of 0.975. With the weight on labor set to one, the instantaneous utility peaks when the output gap is null.
- **Fiscal parameters** are country specific. The average fiscal multiplier of 0.5. Automatic stabilizers is set to 0.4. With fiscal multiplier sensitivity (m_2) of 3, a negative output gap of five percent lowers the fiscal multiplier by 0.15. The adjustment cost parameter (χ) of 3, is a moderate value in terms of allowing a sizable adjustment should the previous primary balance was far from appropriate.
- **The risk premium** is the linear function of government debt (α) and implies an increase of 2.5 bps per 1 p.p. increase in debt to GDP ratio. The value is in line with literature (Henao-Arbelaez and Sobrinho, 2017), though above the Fournier' parameter value of 1.5. For the risk of losing market access, the values imply the 50 percent probability of losing market access at debt-to-GDP ratio of 150 percent, level at which fiscal stress has been more frequent over the last twenty years among the advanced countries.
- **Economic parameters** entail a combination of country-specific and literature-based calibration. Potential growth at 1.3 percent reflects a scenario of above-historic growth (2001-19

average 0.75%), and about ½ p.p. below the medium-term potential growth of 1.9 percent under the baseline WEO. Real interest rate of 2.5 percent is based on the 20-year average 10-year bond yield (4.25 percent) and inflation (1.75 percent). Population growth is based on UN population projection (15-20 years ahead). Shock parameters (size and persistence) are estimated using 20-year averages on the output gap and primary balances. Lastly, the hysteresis parameters are calibrated such that the long-run effect is in the middle of the range from the literature (Blanchard and Summers, 1987; DeLong and Summers, 2012; Ball, 2014) with long-term effects in the middle of the range of around 0-20 percent.

Parameter Calibrations	
Welfare function	
Discount factor, β	0.99
Risk aversion, σ	2
Labor elasticity, η	1/0.3
Weight of labor, ξ	1
Fiscal parameters	
Fiscal multiplier, m_1	0.5
Fiscal multiplier sensitivity to shocks, m_2	3
Automatic stabilizers (primary balance semi-elasticity to the gap)	0.4
Adjustment cost, χ	3
Interest rate and debt parameters	
Effect of debt level on the risk premium, α	2.5%
Effect of debt change on the risk premium, α_2	0.5%
Debt level at which the risk to lose market access is 50%, d	150%
Debt limit accuracy, d_1	3
Effect of debt change on the risk to lose market access, d_2	1
Effect of debt change on the risk to lose market access, d_3	0
Economy parameters	
Potential growth, long-term	1.3%
Population growth	-0.4%
Real interest rate	2.5%
Shock persistence	0.77
Shock size	0.032
Hysteresis	10%
Hysteresis threshold	-1%
Sources: Fiscal Buffer Stock Model in Fournier (2019) and Fournier and Lieberknecht (2020) and IMF staff calculations.	

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