Box 5.1

ALTERNATIVE SCENARIOS FOR PUBLIC DEBT IN THE MEDIUM AND LONG TERM

The economic crisis triggered by COVID-19 has called for a forceful fiscal response in the near term, both in Spain and in other affected countries (see Sections 3.4 and 4.3 in Chapters 3 and 4, respectively, of this Report), to limit the scale and duration of the adverse effects of the pandemic, and to foster the subsequent recovery. However, this budgetary stimulus is prompting a very substantial rise in general government indebtedness (see Sub-section 4.4.3 in Chapter 4), which will require that a broad fiscal consolidation strategy be applied in the medium term, once the current economic downturn is over.

This box analyses the possible future path of the public debt-to-GDP ratio in Spain over the coming decade, considering various assumptions as to the behaviour of its main determinants. The two approaches used for analysing the debt trajectory on the basis of the relevant driving factors are based, respectively, on a standard deterministic model and a stochastic model.

The standard model contains three equations describing changes in real GDP, inflation and interest rates.[1] Specifically, the real GDP growth rate is assumed to depend upon the degree of slack in the economy – measured by the output gap – and changes in interest rates. The inflation rate in each period is estimated on the basis of the output gap and future inflation expectations, which, in turn, are determined by a combination of the ECB's medium-term inflation target and more recent price behaviour. Lastly, interest rates on general government financing hinge on the public debt maturity structure and are sensitive to the potential adverse effects on conditions of access to financing that could derive from having an excessive debt stock or deficit (see Box 3.4 of this Report for an analysis of the interplay between these variables).

Charts 1 and 2 show the expected path of public debt in Spain over the coming decade according to this model under different sets of assumptions. Specifically, the paths presented differ from one another in two aspects: the trend in the macroeconomic and fiscal variables up to 2021, and the (fiscal and structural) economic policies adopted from 2022 onwards. As regards the former, it is assumed that the trajectory of GDP, inflation, interest rates, the budget deficit and public debt in 2020 and 2021 alternately reflect those of the early and gradual recovery scenarios

constructed by the Banco de España in its most recent projections in June 2020.[2] For the latter, the alternative assumptions as to fiscal policy beyond 2021 are that the structural balance will either remain constant as from that year or that it rises 0.5 pp annually until it reaches equilibrium. The possibility of structural reforms being introduced to raise potential growth is also considered.

Construction of the paths of public debt set out in Charts 1 and 2 is completed with the endogenous changes in the different variables (real GDP, inflation, interest rates, budget deficit) obtained in the context of the model described above. In particular, Chart 1 shows the public debt-to-GDP ratio under the early and gradual recovery scenarios, assuming, in both cases, a neutral fiscal policy from 2022 (i.e., no variation in the structural deficit). As can be seen in the chart, the public debt ratio is expected to rise gradually over the course of the decade, to around 115% and 125%, respectively, in 2030 under the two scenarios. This increase in debt during the period considered is due to nominal GDP growth not being sufficient to counterbalance the high primary deficit recorded year after year. Moreover, the rise in debt is greater in the gradual recovery scenario because of the higher primary deficit in 2022, which would be maintained going forward, whereas nominal growth thereafter is relatively similar to that under the early recovery scenario. Similarly, if a more adverse macroeconomic scenario than those described were to materialise, such as the very slow recovery risk scenario also considered in the most recent projection exercise, the debt ratio would reach significantly higher levels, owing essentially to the greater worsening in public finances in the short term.

Taking the gradual recovery scenario up to 2021 as an example, Chart 2 illustrates the sensitivity of the debt path to alternative economic policy strategies from 2022 onwards, in terms of adopting a fiscal consolidation programme and possible structural reforms that raise economic growth capacity.

The red line in this chart, reflecting a neutral fiscal policy from 2022 onwards, corresponds to the gradual recovery scenario presented in Chart 1. The yellow line shows the public debt-to-GDP ratio if, rather than fiscal policy being neutral from 2022, an effort is made to reduce the deficit

1   See Hernández de Cos, López-Rodríguez and Pérez (2018). "The challenges of public deleveraging", *Occasional Paper* No 1803, Banco de España.
2   See Sub-section 4.4.3 in Chapter 4 and Banco de España (2020). "Macroeconomic projections for the Spanish economy (2020-2022): the Banco de España's contribution to the Eurosystem's June 2020 joint forecasting exercise".

consistent with the usual requirements of the Stability and Growth Pact (SGP). In particular, a fiscal policy is assumed that would enable the primary structural balance to rise by 0.5 pp of GDP each year until it reaches equilibrium. Thanks to such budgetary consolidation, public debt shows a clear trend of sustained moderation, returning to a level in 2030 similar to that recorded at end-2019, before the outbreak of

the health crisis. If this fiscal policy were also combined with the introduction of ambitious structural reforms that increase economic growth potential (by 0.5 pp, to 1.7% in 2030) and, therefore, the size of the main tax bases, the resulting greater economic buoyancy would enable the debt ratio to fall more sharply, to below 90% of GDP in late 2030 (blue line).[3]

Fiscal policy must play an active role in reducing the public debt ratio following the economic crisis. A structural effort in line with SGP requirements would reduce public debt to below 100% of GDP before 2030. The adoption of structural measures that increase potential GDP would substantially improve public debt sustainability.
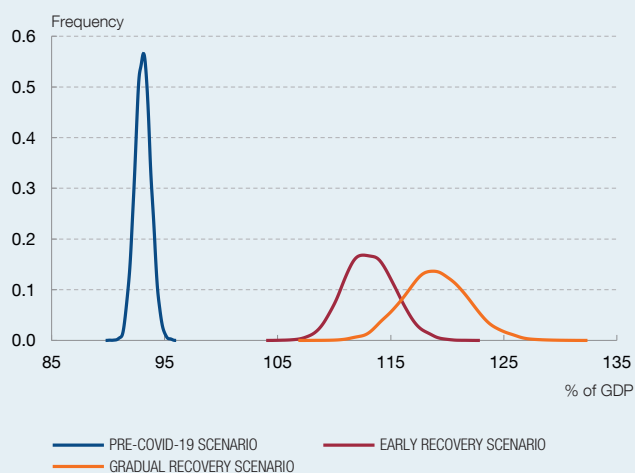
Chart 1
SIMULATED PUBLIC DEBT PATHS WITH A NEUTRAL FISCAL EFFORT
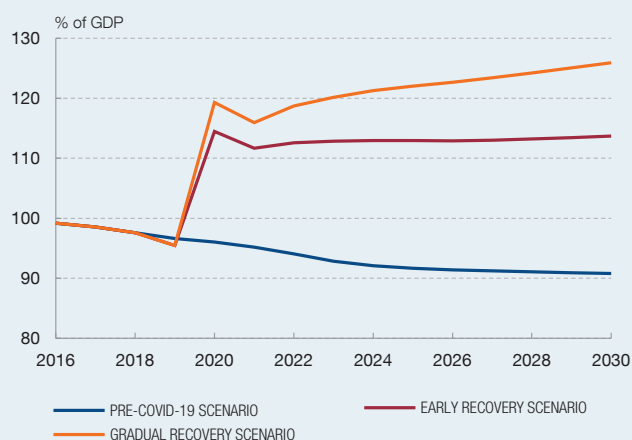
Chart 2
SIMULATED PUBLIC DEBT PATHS UNDER THE GRADUAL RECOVERY SCENARIO CONSIDERING ALTERNATIVE ASSUMPTIONS AS TO FISCAL EFFORT
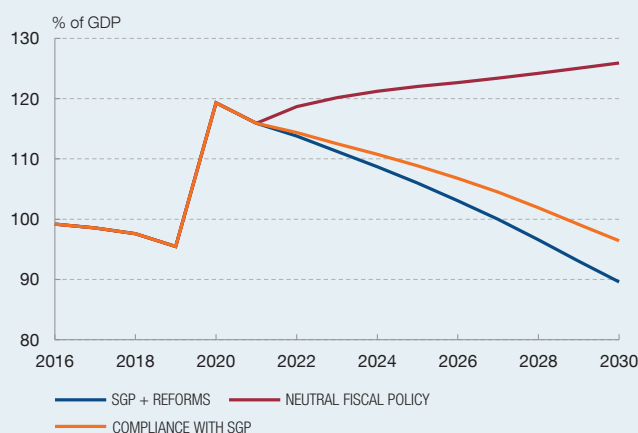
Chart 3
DISTRIBUTION OF PUBLIC DEBT SIMULATIONS ONE QUARTER AHEAD (FORECASTS FOR 2020 Q1-2022 Q4)

Chart 4
PROBABILITY OF THE DEBT RATIO EXCEEDING A THRESHOLD 10 YEARS AFTER A GIVEN DATE (FORECASTS UNDER THE GRADUAL RECOVERY SCENARIO FOR 2020 Q1-2022 Q4)
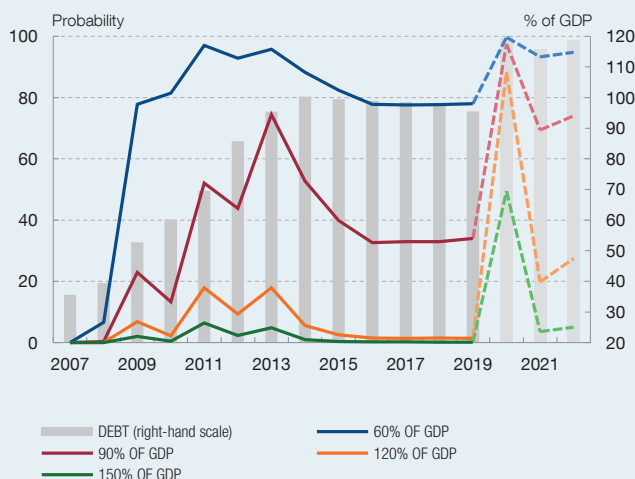
SOURCES: Banco de España, using INE and IGAE data.

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3   The tool used distils the fiscal policy stance in the change in the structural primary balance, without distinguishing between the effects derived from using alternative combinations of fiscal instruments, which could be conducive to economic growth to different degrees.

When considering the different potentially feasible scenarios, the public debt paths set out in Charts 1 and 2 help illustrate, as an initial approximation, the high level of uncertainty surrounding the future behaviour of this variable, on the basis of its main driving factors. For a more explicit quantification of the effect of this uncertainty, a second set of exercises has been conducted, based on a stochastic model. This model uses empirical relationships between the main determinants of the public debt ratio to generate a large number of alternative paths for this variable which are, a priori, statistically feasible.[4] The simulation of these paths is therefore based on the assumption that the fiscal policy discretionary measures are governed by their historical behaviour, abstracting from hypothetical changes in the fiscal policy reaction function. The paths obtained can subsequently be used to calculate probability distributions as to the possible future behaviour of public debt.

By way of illustration, Chart 3 shows the probability distribution for the public debt-to-GDP ratio in 2023 Q1 under three different macroeconomic scenarios: that considered by the Banco de España in late 2019,[5] before the outbreak of the health crisis, and the early and gradual recovery scenarios considered in the June 2020 projections. The change in the probability distribution for the public debt ratio highlights the heightened uncertainty over the future behaviour of this variable as a result of the adverse shock to activity triggered by the pandemic. Thus, while under the scenario considered in the December 2019 projection exercise, this ratio was simulated at around 93%, within a relatively limited range of some 4 pp, under the gradual recovery scenario, not only is the ratio significantly higher, but its dispersion is also wider (with potential values ranging between 110% and 130%).

This stochastic model can also be used to calculate the probability of the debt-to-GDP ratio rising above a certain threshold over a specified horizon. Chart 4 shows the outcome of this exercise, taking by way of example the gradual recovery scenario, and considering a period of ten years. As can be seen in the chart, in late 2019 the probability of the public debt-to-GDP ratio exceeding 120% ten years ahead was virtually zero. However, after incorporating the information for this gradual recovery scenario, taken from the published 2020-2022 macroeconomic projections, which already considers the substantial worsening in public finances expected in the short term, the probability of debt surpassing 120% of GDP over a ten-year horizon increases to around 25%.

In summary, the simulations presented in this box, which consider different macroeconomic scenarios and models, underline that the necessary fiscal stimulus in response to COVID-19 will trigger a very significant, prolonged increase in government indebtedness in Spain from 2020 onwards. In this setting, the striking degree of vulnerability brought about by persisting and very high levels of government indebtedness will have to be tempered, and a degree of scope for fiscal action will have to be rebuilt in order to be able to deal with future adverse shocks. These needs make it advisable to undertake an ambitious medium-term fiscal consolidation plan and structural reforms, once activity begins to recover, in order to increase growth potential and, therefore, help reduce the cost of budgetary consolidation.

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4   See Alloza, Andrés, Pérez and Rojas (2020). "Implicit Public Debt Thresholds: An Operational Proposal", *Journal of Policy Modeling,* forthcoming.

5   See Banco de España (2019). *"Macroeconomic projections for the Spanish economy (2019-2022): the Banco de España's contribution to the Eurosystem's December 2019 joint forecasting exercise"*.