

# DESIGNING A RULES-BASED FISCAL FRAMEWORK FOR ALGERIA<sup>1</sup>

## A. Introduction

**1. Algeria's government has set a number of fiscal reform priorities and aims to maintain prudent and sustainable policies.** The 2021 Government Action Plan (*"Plan d'Action du Gouvernement"*, PAG) sets an ambitious policy agenda for fiscal reforms aiming at *"responding to the imperatives of preserving financial balances while maintaining the social role of public policies"*. It also identifies strategic goals for fiscal policy, including promoting economic diversification, enhancing job creation, and reinforcing human capital.

**2. Yet, the fiscal policy stance and limited fiscal buffers are raising Algeria's vulnerabilities and pose risks to macroeconomic stability.** At the current juncture, public finances are benefiting from a strong boost from high hydrocarbon prices. Still, fiscal buffers are thin, leaving public finances highly vulnerable to hydrocarbon market vagaries amid a highly uncertain global backdrop. Existing mechanisms meant to smooth oil revenue and accumulate savings have become much less effective in recent years. Meanwhile government debt has risen rapidly and considerably and, after a temporary decline in 2022-23, is projected to resume its ascension in the medium term, constraining fiscal space. In case of renewed hydrocarbon price shocks, the government is likely to face arduous tradeoffs between its set policy priorities in order to preserve fiscal sustainability.

**3. This paper discusses the design of a rules-based fiscal framework which could help rebuild buffers and support the government's policy agenda.** The proposed calibration, which relies on two separate pillars—a gross debt pillar and a savings pillar—is well-suited to Algeria and to its long-term objectives. The paper finds that building a fiscal buffer of about 40 percent of GDP, via the combination of a savings floor and a safe gross debt target (or debt anchor), could preserve medium-term fiscal sustainability and insure public finances against hydrocarbon price shocks. The savings floor is calibrated based on a stochastic approach so as to protect Algerian public finances against hydrocarbon price shocks. The debt anchor, or medium-term gross debt target, is calibrated so as to prevent debt from reaching potentially unsustainable territory under a wide range of macro-fiscal scenarios.

**4. A multiyear transition period is needed to set the proposed rules-based framework in place.** Given that the build-up of savings in 2022 is projected to be temporary and the savings fund is projected to be depleted as early as 2023, a transition period of 8 years would be needed to reach the recommended targets. This transition period would allow the authorities to implement a medium-term fiscal adjustment strategy and gradually replenish their savings.

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**5. While based on existing IMF guidance, the dual-pillar approach is novel.** On top of ensuring fiscal sustainability through debt anchors, the traditional focus of fiscal rules in resource-rich countries has been on promoting intergenerational equity through frameworks built around the permanent income hypotheses (PIH). Yet, in light of the very high volatility of resource prices in recent years, growing attention is now being given to designing fiscal rules with a precautionary purpose (Eyraud and others 2018a)—e.g. revenue-split mechanisms, price smoothing frameworks. This is the focus we adopt in this paper, by proposing to restore the effectiveness of the oil stabilization fund in the medium term and calibrating a savings floor that can help smooth hydrocarbon volatility. This paper does not explicitly consider the intergenerational equity objective in the design of the proposed rules-based fiscal framework.<sup>2</sup> This objective remains nonetheless important in the authorities' reform agenda; the PAG aims at the transition of the Algerian economy to sustainable and inclusive growth, relying less on hydrocarbon production, and ensuring the welfare of future generations.

**6. Given that Algeria's precautionary savings are thin and the need to reduce gross debt, we propose reliance on two distinct objectives rather than on a single "net" anchor.** To do so, we combine two calibration methodologies—a value-at-risk model similar to the approach proposed in IMF (2012) and the IMF's Fiscal Affairs Department gross debt calibration tool (Eyraud and others 2018c)—in an original fashion. Once the authorities have replenished savings and stabilized debt, i.e. after the 8-year transition period, they will be able to target a single "net" anchor, as the difference between gross debt and precautionary savings. This could require a complementary model to resolve the tradeoff between debt accumulation/paydown and asset drawdown/buildup, for example through an integrated asset-liability framework (Maziad and Skancke 2014), an area we leave for future research. After the transition period, authorities could also adopt a system of operational rules that would help actively maintain compliance, combining an oil-price smoothing rule and a ceiling on either the non-resource balance or expenditure.

**7. The paper also explores design considerations in terms of flexibility and enforceability.** These include escape clauses and correction mechanisms—that can help ensure the effectiveness of the framework. It finally touches upon concomitant public financial management (PFM) reforms which are required to maximize the effectiveness of the framework in Algeria, emphasizing reporting and transparency, and budget monitoring capacity within the Ministry of Finance.

**8. The rest of the paper proceeds as follows.** Section B discusses the rationale for a fiscal rule framework in Algeria, based on a brief background analysis of past and expected fiscal policy challenges. Section C introduces a proposed calibration for a rules-based fiscal framework. Section D examines important design considerations and PFM reforms to support the successful and effective implementation of this framework. Section E concludes.

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<sup>2</sup> The high sensitivity of PIH-like frameworks to assumptions on asset returns, oil prices and the size of hydrocarbon resources also makes their immediate application challenging in the current context of high global uncertainty and oil price volatility.

## B. The Case for a Rules-Based Fiscal Framework in Algeria

**9. Fluctuations in oil prices have fueled budget revenue volatility in Algeria and the fiscal policy stance tends to be procyclical (Figure 1).** Hydrocarbon revenue provides Algeria with substantial financial resources, accounting for around half of total budget revenue in the last decade. However, its volatility is a major challenge for fiscal and economic management. The standard deviation of budget hydrocarbon revenue has exceeded 6 percent of GDP since 2011 mostly due to fluctuations in hydrocarbon prices. The fiscal response to oil revenue volatility has often been procyclical, i.e. fiscal policy is expansionary during booms and contractionary in a downturn and does not act as a macroeconomic stabilizer; such procyclicality has been shown to harm long-term growth (IMF 2015). Algeria's fiscal policy stance—measured by the change in the non-hydrocarbon primary balance relative to non-hydrocarbon GDP—has often been loosened during oil price upswings and tightened during downturns. This procyclical pattern was observed in fourteen of the last twenty years although 2022 seems to have been an exception, meaning that fiscal policy might have failed to dampen the impact of oil price shocks on the rest of the economy.<sup>3</sup> An econometric analysis building on the approach presented in IMF (2015) confirms this conclusion: we find a positive association between real government spending and the change in the terms-of-trade (ToT) for Algeria, pointing to fiscal procyclicality. On average, a 10 percent change in the growth of Algeria's ToT—which are mostly dominated by hydrocarbons—is associated with a 4.6 percent change in the growth of real government spending.<sup>4</sup>

**10. Thin fiscal savings and weakened revenue-split mechanism based on the Revenue Regulation Fund (« *Fonds de Régulation des Recettes* », FRR) exacerbate the exposure of Algeria's public finances to oil market vagaries.** The FRR constitutes, in principle, an oil-price smoothing mechanism. The supplementary budget law for 2000 which created it (Article 10) simply required that, when oil prices exceed a benchmark level defined in the budget law for a given year, all windfall gains realized that year should be transferred to the FRR. In practice, the nature of the FRR mechanism started to change in 2006, when a budget law authorized withdrawals from the fund to finance the deficit, albeit irrespective of oil prices, while setting a minimum balance requirement (DZD 740 billion). Nonetheless, the FRR grew to become one of the largest sovereign wealth funds on the African continent, with financial assets over 30 percent of GDP over the period 2011-13. However, as fiscal funding needs ballooned following the 2014-2015 oil price shock, the 2017 budget law abolished the FRR's minimum balance requirement, leading to the full depletion of the fund that year. The balance of the FRR is estimated by staff at close to DZD 2,000 billion at end-2022 reflecting savings accumulation since late 2021, but an announced sizeable rise in budget spending under the 2023 budget law is likely to deplete the fund in 2023.

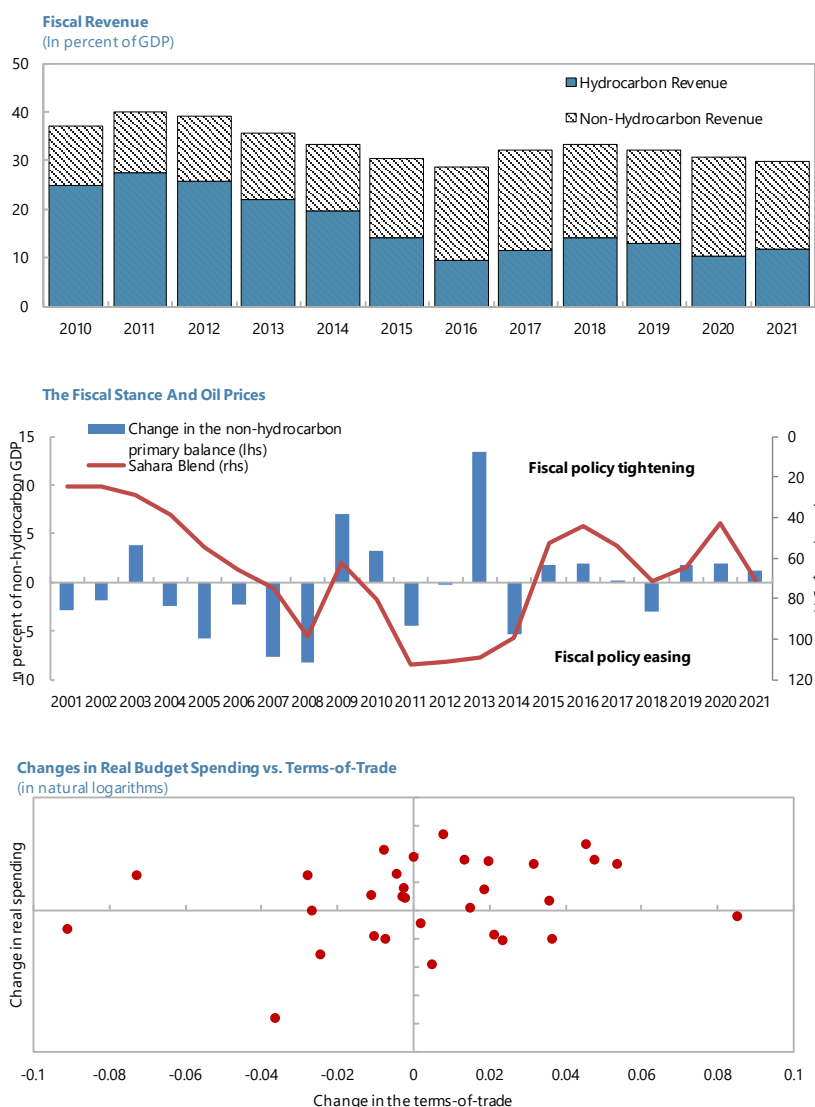
**11. A rapid debt built-up has also weakened the resilience of public finances to exogenous shocks.** Algeria's government debt has risen from a low point of 7.1 percent of GDP at end-2013 to

<sup>3</sup> See the Staff report on the 2022 Article IV consultation with Algeria for further discussion of fiscal policy in 2022.

<sup>4</sup> We consider the growth in real spending as a proxy for discretionary fiscal measures given its weak elasticity to the state of the economic cycle (Fatas and Mihov 2003).

6.8 percent of GDP at end-2021. It is projected to temporarily fall to 49.4 percent of GDP at end-2023 on high nominal growth and temporary fiscal surplus in 2022, before resuming an upward trajectory in the medium term. This rise in debt between 2013 and 2021 reflected the impact of repeated exogenous shocks, including the 2014-2015 and 2020 slumps in oil prices and the Covid-19 pandemic, and continued wide budget deficits. Going forward, the debt build-up leaves little room to absorb new shocks without posing risks to macroeconomic stability or to the government's policy priorities, raising the pressing need for well-articulated fiscal adjustment plans and a reassessment of the policy framework to achieve fiscal sustainability while preserving priority spending.

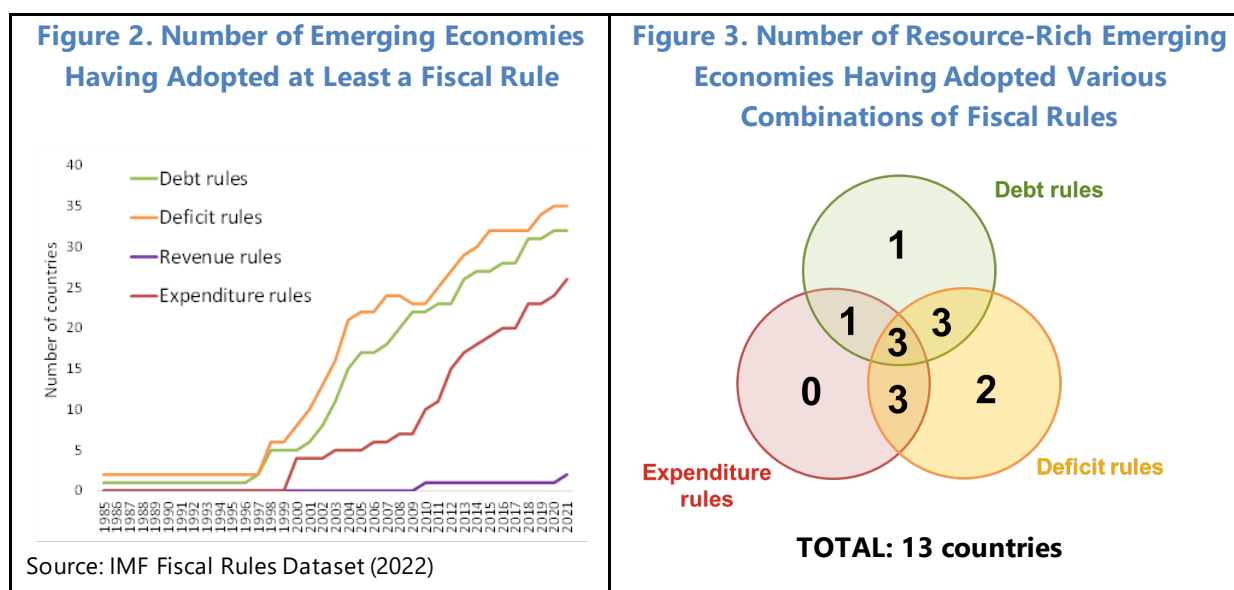
**Figure 1. Oil Prices and Public Finance**



Sources: National authorities, IMF staff's estimates and forecasts

**12. A well-designed rules-based fiscal framework would help address the challenge of stabilizing debt and rebuilding resilience to oil price volatility.** As per the IMF definition, numerical fiscal rules (or “fiscal rules”) impose long-lasting constraints on fiscal policy through numerical limits on broad fiscal aggregates. There is empirical evidence of the effectiveness of fiscal rules in improving fiscal outcomes, including during and after economic crises.<sup>5</sup> This is because well-designed fiscal rules, which strike an appropriate balance between simplicity, flexibility and enforceability, promote fiscal discipline and prevent deficit bias, while still allowing for countercyclical policies when needed. They also act as commitment devices, enhancing the credibility of fiscal policies, increase the transparency and produce a signaling effect. Lastly, they play a political role, helping to rally support around fiscal goals. In the case of Algeria, a rules-based framework would help cushion public finances against gyrations in oil prices and dampen the procyclical bias, while facilitating the reconstitution of fiscal reserves. It would also help protect debt sustainability in the medium term.

**13. A growing number of emerging countries and resource exporters have implemented a fiscal rule framework.** According to the IMF’s Fiscal Affairs Department Fiscal Rules dataset (2022), forty-three emerging economies had at least one fiscal rule in 2021 (twice as much as two decades ago), including thirteen resource-rich economies (Figure 2). Of these thirteen economies, most have combined a deficit rule with a debt rule and/or an expenditure rule (Figure 3).<sup>6</sup>



<sup>5</sup> See Fiscal Monitor (October 2021). Governments which have adopted a debt rule are usually more cautious and manage to overturn an increase in debt faster than countries without one (David and others 2022, forthcoming). There is also evidence that the credibility of official forecasts is higher when countries adhere to a fiscal rule framework (End and Hong, 2022 forthcoming).

<sup>6</sup> Azerbaijan, Botswana, Chile, Colombia, Ecuador, Equatorial Guinea, Indonesia, Iran, Kazakhstan, Namibia, Peru, Russia, Turkmenistan.

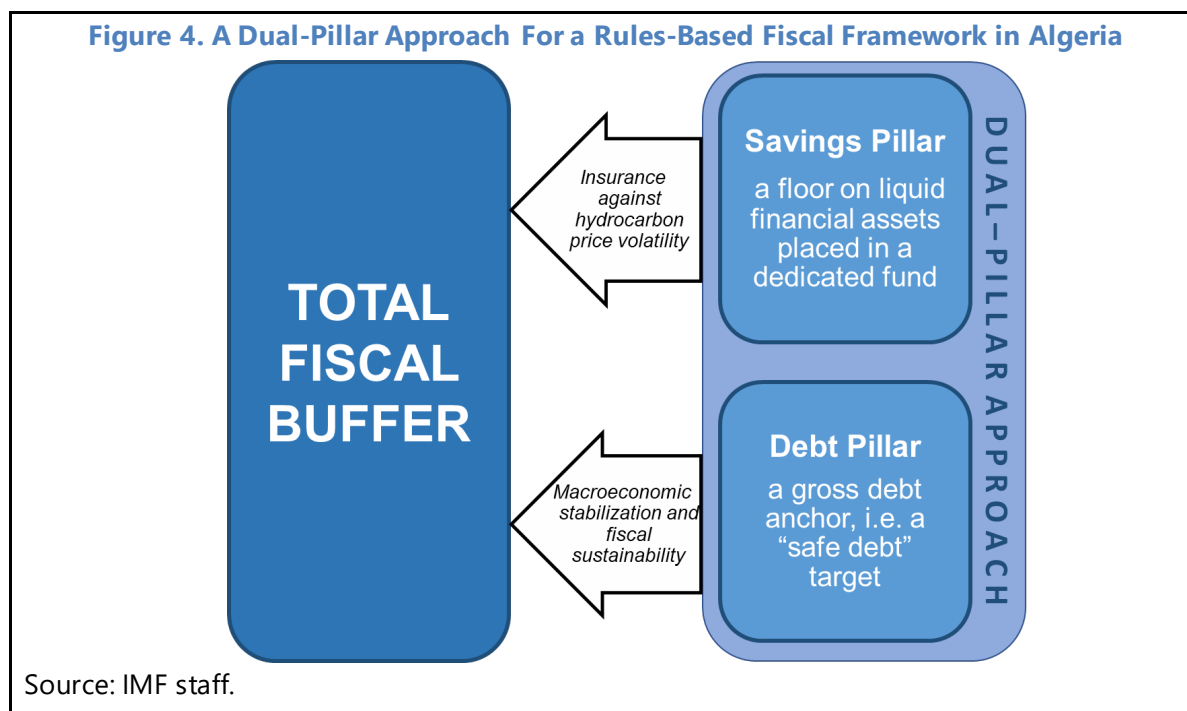
## C. Designing and Calibrating a Rules-Based Fiscal Framework in Algeria

**14. A new rules-based fiscal framework in Algeria could build on recent structural fiscal reforms.** Preserving fiscal sustainability is an explicit policy priority which has been enshrined in the 2018 Organic Budget Law (OBL)—Article 5 states that budget preparation, adoption and execution should be consistent with a sustainable path set in a medium-term budget framework. The OBL also provides the government with the legal means to set a rule or targets on its deficit. Article 3 states that *“in its financial management, the government looks to prioritize the coverage of its current expenditure with ordinary [non-oil] revenue. The coverage ratio is set in a budget law”*. This provision constitutes an expression of fiscal discipline, as it aims to avoid using volatile oil revenue to finance relatively inert spending items. The dispositions of Article 3 remain however insufficient to address Algeria’s fiscal challenges described in the previous section—they do not prevent procyclical fiscal policy, nor impose limitations on the coverage ratio, which could be set at low levels in practice.

**15. We propose the adoption of a rules-based framework combining a carefully calibrated gross debt anchor and a savings floor, which would support the authorities’ policy priorities and help preserve fiscal sustainability.** This dual-pillar framework (Figure 4) would be adapted to the case of a resource-rich country like Algeria:

- The **debt anchor** requires keeping total government debt below a certain level, i.e. targeting a “safe debt” level taking into consideration Algeria’s debt carrying capacity, policy priorities, exposure to macroeconomic and fiscal shocks and other idiosyncratic characteristics. This should help preserve fiscal sustainability, leaving room for the materialization of negative shocks and giving space for countercyclical fiscal policies.
- The **savings floor** requires keeping liquid financial assets above a certain floor, i.e. accumulating, in a dedicated fund, a stock of liquid resource-related wealth invested overseas. This would first and foremost serve a precautionary motive and offer a self-insurance mechanism against sharp downswings in commodity prices by smoothing resource revenue and avoiding undesired and large adjustment in budget spending.<sup>7</sup> The savings pillar would also support macroeconomic stability and dampen the typical procyclicality of Algeria’s fiscal policy: saving a share of resource revenue constrains spending during booms, while asset drawdown expands fiscal space in times of bust, helps to stabilize spending in an economic downturn and shields public finances against tightening market conditions which typically comove with oil prices for hydrocarbon exporters. Restraining public spending, and hence domestic absorption, when commodity prices are high would also contribute to mitigating the effects of Dutch disease (Eyraud and others, forthcoming), promoting economic diversification and long-term growth.

<sup>7</sup> Financial instruments such as futures and forwards can be also used to hedge budget revenue against the volatility of oil prices. However, such instruments can be complex and costly.



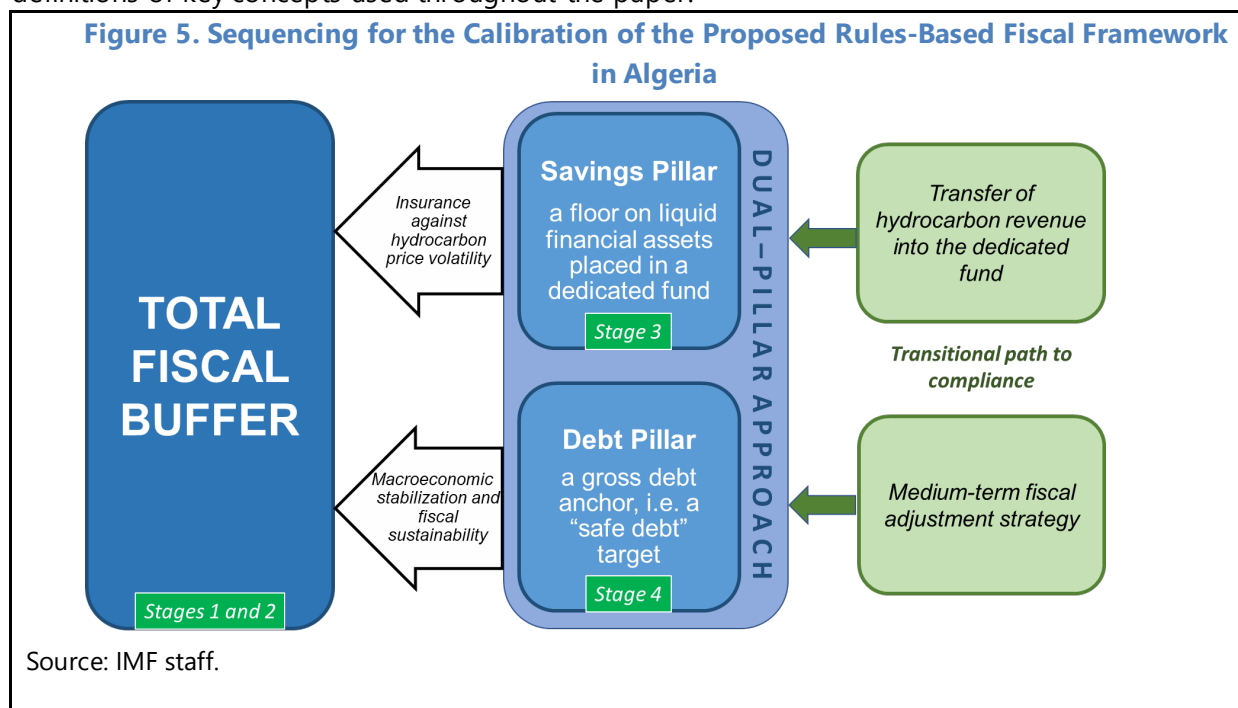
**16. Given Algeria’s sizeable gross debt level and thin fiscal savings, we propose a combination of a gross debt anchor and a savings floor, rather than an anchor on net debt.** In general, a net debt target is ideally a more relevant stock variable to use as an anchor, provided the government can liquidate financial assets easily to cover its obligations (Eyraud and others 2018b). However, asset drawdowns or debt accumulation can be imperfect substitutes, particularly in times of shock and for a country with a significant debt burden like Algeria, making it important to maintain two separate objectives as long as debt is high and savings depleted, rather than a “net” target on debt minus savings. Indeed, a “net” target could in theory be achieved with a debt buffer only and no savings. While a debt buffer is relevant to ensure sustainability in the medium term, this might not necessarily protect priority spending against oil price shocks in the near term due to financing constraints, since market financing conditions for oil producers tend to co-move with hydrocarbon prices.<sup>8</sup> Accumulating foreign assets in a savings fund would help cushion near-term oil price volatility, over 1-3 years for example, while protecting priority spending. Fiscal adjustment to persistent shocks would remain necessary under the proposed framework but can be staged over time. In the medium term, once the stock of savings has increased to sufficient levels and gross debt has been brought down, after the 10-year transition period, the Algerian authorities could consider a single, integrated “net” anchor, based on the difference between gross debt and the savings fund’s assets. This would give the authorities more flexibility (e.g. this would allow for higher gross debt, as long as savings are also higher). An integrated asset-liability framework could then be used to manage the sovereign’s balance sheet.

<sup>8</sup> Algeria also has limited track record of accessing foreign private or official financing in recent decades and the authorities are reluctant to borrow externally, while the absorption capacity of its domestic markets is constrained.



**17. Establishing a debt anchor and building a savings floor both entail opportunity costs which can be large in a lower middle-income country like Algeria, calling for their adequate calibration.** Finding the appropriate level of buffers is difficult yet critical—insufficient buffers put fiscal sustainability at risk, while superfluous buffers are missed opportunities for productive spending. Locking too much hydrocarbon revenue in a savings fund or excessively capping the deficit could indeed constrain spending in areas where needs are high, such as education, social protection and infrastructure. Policymakers might also face political and social pressures to spend hydrocarbon windfall revenue or large accumulated savings on consumption and wages. Given these opportunity costs which are akin to an “insurance premium”, the debt and savings buffers should be calibrated to offer adequate insurance coverage and ensure fiscal sustainability, without impeding opportunities for inclusive growth.

**18. The calibration of the proposed framework is a sequential exercise (Figure 5).** In a first section, we calibrate the dual-pillar framework. We start by setting a maximum debt limit above which the risks of debt distress would materially increase (*Stage 1*). Second, we estimate the total required buffer to ensure that gross debt would remain below the maximum debt limit with a high degree of confidence, based on stochastic simulations of medium-term macro-fiscal trajectories (*Stage 2*). This level of required buffer is achieved through a combination of savings accumulation and targeting of a safe gross debt level. In subsequent stages, we calibrate a savings floor that could provide self-insurance against the large fiscal effects of oil price volatility with a sufficient probability, using a value-at-risk approach (*Stage 3*). We then infer the appropriate gross debt anchor (or medium-term debt target) which would allow to achieve the required level of total buffers (*Stage 4*). In a second section, we propose a medium-term transitional fiscal path which would enable compliance with both the debt anchor and the savings floor. Box 1 provides definitions of key concepts used throughout the paper.





## Calibration of the Dual-Pillar Framework

### Stage 1. Estimation of the Maximum Debt Limit

**19. The first step of the calibration is to estimate the maximum debt limit, i.e. the gross debt level beyond which risks of debt distress would materially increase.** This is a key reference point for estimating a “safe” debt level, which is necessarily set below the maximum debt limit to minimize the risks of breaching it. There is great uncertainty on what the level of the maximum debt limit should be and how to assess it. Several possible limits have been discussed in the empirical literature to estimate a maximum debt carrying capacity for emerging economies. These include:

- *The debt limit under the IMF’s framework for debt sustainability for market access countries (MAC-DSA).* This framework sets a gross nominal debt benchmark of 70 percent of GDP for emerging market economies which was calibrated to minimize the risk of making errors in predicting stress episodes.<sup>9</sup>
- *The level of debt beyond which further increases would have negative effects on economic growth, leading to a feedback loop to debt dynamics.* Possible reasons for the negative effect of high debt on growth include the crowding-out of the private sector, higher exposure to risks of sudden shifts of interest-growth differentials (Lian and others 2020), or weaknesses in public debt management capacity. Reinhart and Rogoff (2010) concluded that high debt-to-GDP ratios tend to be associated with lower growth outputs in emerging countries: adverse effects become visible with a debt ratio above 60 percent of GDP and aggravated beyond 90 percent of GDP.
- *The debt level that could be sustained with the highest achievable and politically acceptable fiscal balance.* Recent IMF estimates (Caselli and others 2022)<sup>10</sup> show that if a typical emerging market economy can economically and politically sustain a fiscal surplus of 0.5 percent of GDP over the long run (a figure suggested by historical track record), the corresponding maximum sustainable level of debt would be 95 percent of GDP, based on pre-pandemic fundamentals. However, these simulations are highly sensitive to the assumptions made regarding interest rates, real economic growth and the elasticity of interest rates to an increase in debt. The estimated limit falls to about 70 percent of GDP, when using the higher interest rates observed in the mid-2000s rather than the record low interest rates that prevailed before the outbreak of the Covid-19 pandemic.

**20. A debt limit of 70 percent of GDP would help ensure fiscal sustainability in Algeria.**

This estimate takes Algeria’s specific macroeconomic and fiscal characteristics into account. A large

<sup>9</sup> The Sovereign Risk and Debt Sustainability Framework (SRDSF), which will start gradually replacing the MAC-DSA framework from this year onwards, will no longer set discrete debt thresholds and rather rely on continuous metrics, including debt levels but also other characteristics, such as the structure of debt, capacity or financing conditions (IMF, 2021b).

<sup>10</sup> These estimates are based on Mian and others (2022). This three-agent model – the government, a representative household and the monetary authority – approaches the debt-deficit trade-off by modelling the attractiveness of government bonds according to their safe asset features (liquidity and safety premia). The model also relies on a positive elasticity of interest rates to an increase in debt due to crowding-out effects and higher risk premia.

primary surplus is unlikely in the foreseeable future, absent further substantial increases in hydrocarbon prices, a sizeable expansion in hydrocarbon production or unrealistic consolidation efforts. Algeria's primary deficit was large at 6.5 percent of GDP in 2021, and a primary surplus has not been recorded between 2008 and 2021; the surplus in 2022 is expected to be short-lived and renewed large deficits are expected from 2023 onwards. Furthermore, Algeria's debt interest costs are expected to rise substantially in the coming years. Direct borrowing from the central bank between 2017 and 2019 and the special refinancing operation ("*plan spécial de refinancement*" PSR) in 2021 have put a lid on interest costs, while posing risks to macroeconomic stability and monetary policy effectiveness. However, the authorities have committed not to have recourse to monetary financing and the PSR has expired. Hence, interest rates are expected to rise amid high inflation as the government relies increasingly on domestic market financing, creating additional fiscal pressures. The room for debt accumulation is also constrained by the limited absorptive capacity of the domestic debt market and the risk of crowding-out of the private sector, while the government is reluctant to borrow externally. Finally, the government may need to rebuild its capacity to manage debt following a long period of low market debt and foreign borrowing.

**21. Still, the proposed threshold is subject to high uncertainty and should be reassessed in the future.** This is because the maximum debt level that a government can sustain is not constant across time. It can vary according to a host of factors such as macro-fiscal and financial circumstances in terms of growth and interest rates, exposure to fiscal risks, sources and ease of access to financing, market perceptions, as well as debt management capacities.

## Stage 2. Definition of the Aggregate Buffer to Preserve Fiscal Sustainability

**22. In this stage, we estimate the size of the total buffer necessary to accommodate shocks while preserving fiscal sustainability.** The starting point is a situation of full depletion of fiscal savings, in line with staff's forecasts for 2023. Under these circumstances, the total required buffer can be defined as the difference between the maximum debt limit (i.e. 70 percent of GDP as discussed in the previous step) and the starting debt level which would keep debt below the limit in the medium term, with a high probability (e.g. 95%). To compute the total buffer, we use a tool developed by the IMF's Fiscal Affairs Department (Eyraud and others 2018c). The tool estimates the joint distribution of shocks to Algeria's real GDP growth, exchange rate, interest rate and other debt drivers over the period 2009-2021. These combined shocks are then used to carry out thousands of simulations of future debt trajectories summarized in a fan chart (Figure 9). Lastly, the starting debt level is calibrated so that 95 percent of the simulated trajectories remain under the maximum debt limit over the projection horizon (i.e. the maximum debt limit is not breached with a degree of confidence of 95 percent).

**23. Under the assumptions set above for Algeria, the total required fiscal buffer is estimated at 39 percent of GDP.** This level of buffer could preserve fiscal sustainability over the next six years by creating sufficient fiscal space to keep debt in a safe zone, even under severe macro-fiscal shocks akin to those observed historically in Algeria. This means that if debt were at 31 percent of GDP, it is likely to be kept below 70 percent of GDP with a 95 percent confidence over a six-year horizon. The low level of the starting point for the debt stock reflects the combination of

both high exposure to shocks (i.e. Algeria's high commodity dependence) and the large magnitude of the shocks that Algeria has faced in the past (i.e. hydrocarbon price volatility).

### Box 1. Definitions of Concepts Used in the Design and Calibration of the Rules-Based Fiscal Framework for Algeria

**Maximum debt limit:** gross debt level beyond which risks of distress would materially increase.

**Safe debt level:** a level of debt that is sufficiently low to ensure that debt will remain below its maximum limit in the medium term under most macro-fiscal scenarios.

**Fiscal buffer:** fiscal stock, in the form of liquid financial assets or sufficiently low debt liabilities relative to the maximum debt limit, and which can be used to accommodate future macro-fiscal shocks.

**Total required buffer:** size of the buffer which would preserve fiscal sustainability by offsetting hydrocarbon revenue downturns and maintaining debt at a safe level.

**Savings floor:** minimum amount of accumulated hydrocarbon revenue invested in liquid foreign assets which would provide self-insurance against hydrocarbon price shocks for a given number of years with a high likelihood. This amount is calibrated based on a value-at-risk approach (Box 2 and IMF, 2012).

**Gross debt anchor:** highest safe debt level, given the savings floor, to ensure that gross debt remains below the maximum debt limit in the medium term with a high probability. The anchor is calibrated using stochastic simulations of medium-term macro-fiscal trajectories. The gross debt anchor is equal to the maximum debt limit *minus* the total required buffer *plus* the savings floor.

**Risk tolerance:** measure of the authorities' acceptance for having a number of macro-fiscal scenarios under which the buffer would not be sufficient to prevent debt to rise above the maximum debt limit or that would require large spending cuts that could affect policy priorities.

**Transition period:** initial number of years during which the authorities gradually make their way to compliance with the debt anchor and savings floor without imposing an unrealistically large fiscal adjustment.

**Escape clause:** clause setting specific conditions and procedures under which the rules-based framework can be temporarily and exceptionally suspended in response to large exogenous shocks.

**Correction mechanism:** formal mechanism, triggered in cases of non-compliance with the rule(s), under which authorities are mandated to return to compliance within a reasonable timeframe.

**24. The size of the required total buffer is sensitive to a number of assumptions on the authorities' preferences and policies (Appendix 1).** Tolerance to risk is an important assumption—when risk tolerance is higher (e.g. the total buffer is set to ensure that debt remains below the maximum debt level in 90% of all possible simulated debt paths rather than 95%), the required total buffer is reduced. If the authorities were to have significant recourse to public private partnership arrangements or if state-owned enterprises were to face growing risks, an additional buffer should be added to offset the potential realization of these new contingent liabilities. Finally, the analysis can be considered on a different timeframe—if the aim of the buffer is to preserve sustainability after a period of ten years instead of six, its size would increase, as macro-fiscal uncertainty grows over time.

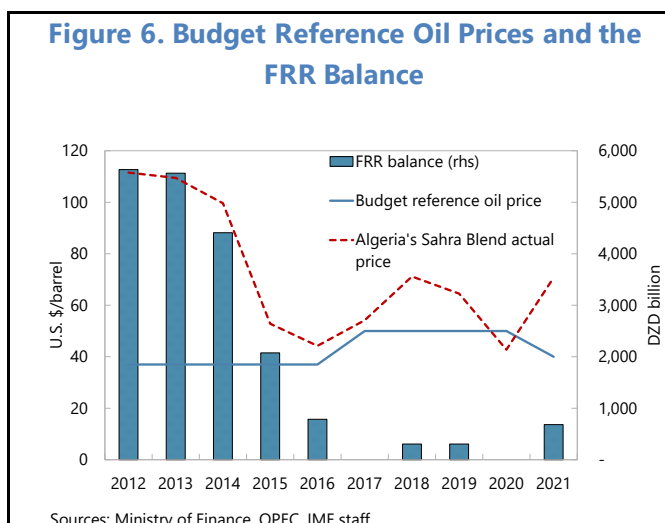
**25. In a resource-rich economy like Algeria where revenues derived from hydrocarbons are both large and volatile, the total buffer of 39 percent of GDP does not necessarily need be**

**achieved only by constraining the debt level but could rely on the combination of a savings floor and the targeting of a safe gross debt level.** The savings fund would cushion public finances against oil price shocks and help smooth revenue volatility in the medium term. This fund could hence help achieve a portion of the required total buffer; the rest of the total buffer would then need to be embedded in the setting of a safe medium-term debt target, which would be distant enough from the maximum debt limit to avoid overshooting it with high probability. We discuss the savings floor in Stage 3 and the debt anchor in Stage 4.

### Stage 3. Calibration of the Savings Floor

#### 26. Building on the current practice in formulating Algeria's annual budgets, the fiscal savings mechanism could be premised on an oil price-smoothing rule.

The Algerian budget's reference oil price is currently set discretionarily at a level well below projected market prices. However, this reference price does not appear to be factored in the design of the budget: although actual oil prices have exceeded budget reference prices by a very large margin in all years but 2020, the balance of the FRR has dropped continuously since 2012 until its full depletion in 2017 (Figure 6).



**27. Under the proposed fiscal framework, the budget's reference oil price would be defined based on a moving average of past realizations.**<sup>11</sup> The difference between budgeted hydrocarbon revenue based on the reference price would then result in transfers to, or withdrawals from, the fund, after the transition period during which the savings buffer is built up to the minimum floor level. This framework would decouple, to some extent, fiscal revenue and spending from immediate oil price volatility, striking a balance between the objective of stabilizing spending and the imperative of adjustment to market conditions. Oil price gyrations would still seep through to public finances and adjustment to permanent shocks will remain unavoidable, but the transmission to the budget would occur only gradually, helping to smooth spending adjustment over time. A moving-average price-smoothing rule would also have the merit of being simple, transparent and easy to communicate.

<sup>11</sup> Futures settlement prices can be also incorporated to add a forward-looking component, but this would put more weight on more recent realizations given the well-documented co-movement between spot and futures oil prices.

**28. For the insurance mechanism to be effective, the savings fund should be invested in foreign assets.** This is because the value of domestic assets is likely to be negatively affected by the oil price shocks against which the government aims to insure itself.

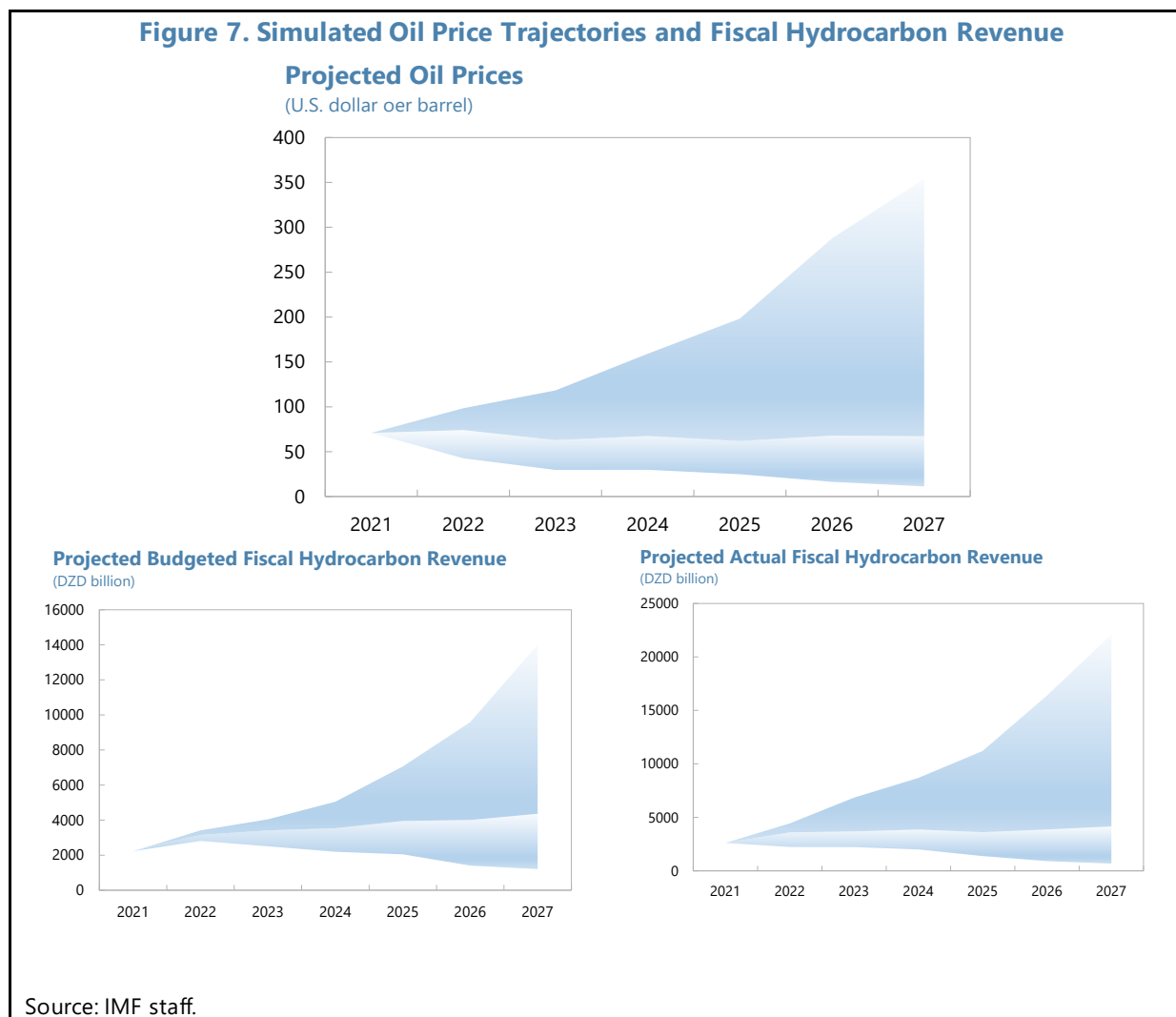
**29. The fund should be sufficiently large to stabilize spending for a given number of years with a high likelihood.** We built a value-at-risk model to calibrate the initial required minimum size of the savings fund, following the approach presented in IMF (2012) and Bartsch (2006)—see Box 2 for details. As shown in Figure 7, the model simulates thousands of alternative oil price trajectories and derives the corresponding budgeted oil revenue under an oil-price smoothing rule and realized oil revenue under Algeria's fiscal regime. It then produces an estimate of the minimum initial size of the savings buffer that would be sufficient, once the price-smoothing rule comes into effect, to offset revenue shortfalls caused by oil price fluctuations over the forecast window, while ensuring with a sufficient degree of confidence that assets would not be depleted and consequently, spending cuts would not be required. The main features of the model are presented in Box 1.

**30. The size of the fund is influenced by exogenous parameters which would reflect the authorities' possible preferences for self-insurance and the underlying tradeoff between the desired level of insurance and the opportunity costs of savings.** These parameters mainly include:

- *The averaging period for the price-smoothing rule.* The length of the averaging period used in the calculation of reference oil prices reflects a tradeoff between the level of savings and spending volatility. The longer the averaging period, the more stable budget hydrocarbon revenue and the higher the level of savings that should be maintained for insurance against future shocks. We run the model under the alternative assumptions of 3, 5 and 8-years backward-looking moving averages, for illustrative purposes.
- *The insurance period or dissaving horizon.* The length of the period of spending smoothing is also important for the size of the fund. The longer the coverage period, the higher the required savings level. For illustrative purposes, we retain two alternative assumptions of an insurance period of 3 and 6 years.
- *The authorities' risk tolerance.* The model estimates the initial level of the savings fund required to ride out oil price volatility *for a given predefined probability*. This parameter captures the authorities' degree of risk tolerance. The higher the probability, the lower the authorities' risk tolerance and the larger the size of the fund. We perform the analysis under the alternative assumption that the buffer should be of sufficient magnitude to cover any revenue shortfall with a probability of 80 and 90 percent.

**31. We find that under a five-year moving average price smoothing rule, a savings fund of DZD 3,600-5,300 billion (16-24 percent of 2021 GDP) would be sufficient to insure Algeria against abrupt adjustment to spending over six years with a high probability of 80-90 percent.** This would be equivalent to 1.4-2.0 years of annual budget hydrocarbon revenue. Reducing the insurance period to three years requires an initial savings buffer of DZD 1,600-4,700 billion depending on the oil-price smoothing rule and the degree of confidence (7-21 percent of

GDP). The size of the buffer would increase if the authorities had a preference for more stability and would rather lengthen the averaging period under the price-smoothing rule to 8 years; it would be reduced if they tolerated greater volatility and cut the averaging period to 3 years. The main results of the model under alternative sets of assumptions are summarized in Tables 1 and 2.



**32. Our results are of similar magnitude to savings currently maintained by other hydrocarbon exporters as well as with the recommendations of other papers (Figure 8).** The median level of assets held by sovereign wealth funds in a sample of 22 hydrocarbon exporters represented 40.5 percent of GDP at end-2021. Based on a similar VaR approach to the one developed in this paper, IMF (2012) recommends a minimum buffer of 48 percent of non-oil GDP for the Republic of Congo. Bartsch (2006) finds that for Nigeria, a fund of US\$16-18 billion (17.6 percent-20 percent of the 2004 non-oil GDP) would be sufficient to bring the probability of a fiscal crisis within five years to a manageable level. IMF (2015) estimates that net financial assets of around 2 years of annual resource revenue would be needed for Angola, Russia and Saudi Arabia to cover half of the revenue loss from commodity price fluctuations over five years.

### Box 2. A Value-at-Risk Model to Calibrate Algeria's Savings Buffer

We estimate the minimum required size of Algeria's savings buffer by developing a value-at-risk model, following the approach presented in IMF (2012) and Bartsch (2006). This calibration methodology relies on stochastic simulations of oil price trajectories and the corresponding fiscal hydrocarbon revenue under Algeria's fiscal regime and hydrocarbon production profile.

The main assumptions and equations are as follows:

- Oil prices are assumed to follow a first-order autoregressive process, under which oil prices in a given year are a function of their past year's value and a random term ( $\epsilon_t$ ):  $P_t = \alpha + \beta \log(P_{t-1}) + \epsilon_t$  where  $P_t$  denotes the logarithm of oil prices in year  $t$ .
- The model parameters are estimated based on data published by British Petroleum over the period 1976-2021. We include dummy variables to control for possible structural changes in oil markets during episodes identified by Baumeister and Kilian (2016), and namely the Iranian revolution in 1979/1980 and the Iran/Iraq war in 1980-1988. The inclusion of dummies for the first Gulf war in 1991, the Great Financial Crisis and the outbreak of the Covid-19 pandemic did not yield statistically significant results.
- We then estimate 10,000 oil price trajectories using a bootstrapping procedure and setting the 2021 actual outturn as the starting value. The trajectories are estimated for alternative periods of 3 and 6 years.
- Both budgeted fiscal hydrocarbon revenue  $HR_t^b$  and actual fiscal hydrocarbon revenue  $HR_t^a$  are estimated based on the forecasts for hydrocarbon production volumes and the Algerian dinar's exchange rate included in staff's baseline scenario and assuming an unchanged fiscal regime in the hydrocarbon sector. Budgeted hydrocarbon revenues are estimated under an oil price smoothing rule whereby budget reference oil prices are alternatively calculated as a moving average of past realizations over 3, 5 or 8 years.
- Transfers to and from the savings fund  $T_t$  are calculated as the difference between budgeted and actual fiscal hydrocarbon revenue:  $T_t = HR_t^a - HR_t^b$
- In any given date, the balance of assets held in the savings fund  $S_t$  is a function of its value in the previous year, the yield on the previous year's holdings and transfers during the present year:  $S_t = S_{t-1} * (1 + \delta) + T_t$ , where  $\delta$  is the annual yield realized on the fund's investment.

The required initial size of the fund  $S_0$  is calculated as the minimum starting amount that would avoid a full depletion of the fund at the end of the projection window with a given level of confidence (set alternatively at 80 and 90 percent).

## Stage 4. Calibration of the Gross Debt Anchor

**33. Based on the size of the total buffer and required savings floor, the gross debt anchor can now be inferred.** If part of the total required buffers computed in Stage 2 (39 percent of GDP) is covered by the savings floor computed in Stage 3, the rest should then be embedded into a "safety margin" under the maximum debt limit needed to calibrate the debt anchor. While the buffers might not be strictly additive per se, our country-specific approach is to sum them given the nature of the shocks that affect Algeria's debt, public finances, and economy. The debt calibration tool used to estimate the size of the total buffer draws on the past distribution of real GDP growth, the exchange rate, the interest rate and other debt drivers. Given the high reliance of Algeria's budget on oil revenue and the large footprint of the public sector in the economy, these shocks



reflect, to a large extent, fluctuations in oil prices. This means that the savings buffer, estimated through a model squarely centered on oil price shocks, can be deducted from the total buffer: risks from oil price volatility are insured against by building a savings buffer while the debt buffer (or safety margin under the maximum debt limit) protects residual shocks.

**Table 1. Algeria: Minimum Required Size for the Asset Buffer (DZD bn and Percent of GDP)**

DZD bn (in percent of GDP)	Insurance (dissaving) period	3 years		6 years	
	Degree of confidence	80 percent	90 percent	80 percent	90 percent
Oil price smoothing rule					
	3-year moving average	1600 (7.3)	2300 (10.4)	1900 (8.6)	2900 (13.2)
	5-year moving average	2800 (12.7)	3800 (17.3)	3600 (16.3)	5300 (24.1)
	8-year moving average	3600 (16.3)	4700 (21.3)	5800 (26.3)	8400 (38.1)

Source: IMF staff.

**Table 2. Algeria: Minimum Required Size for the Asset Buffer (Relative to Budget Hydrocarbon Revenue)**

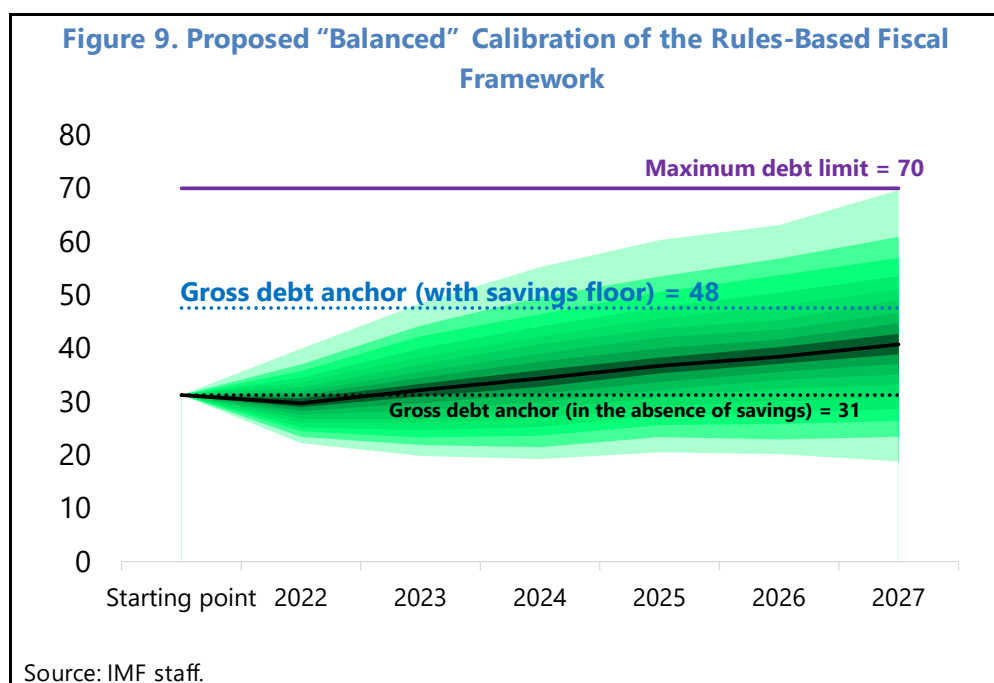
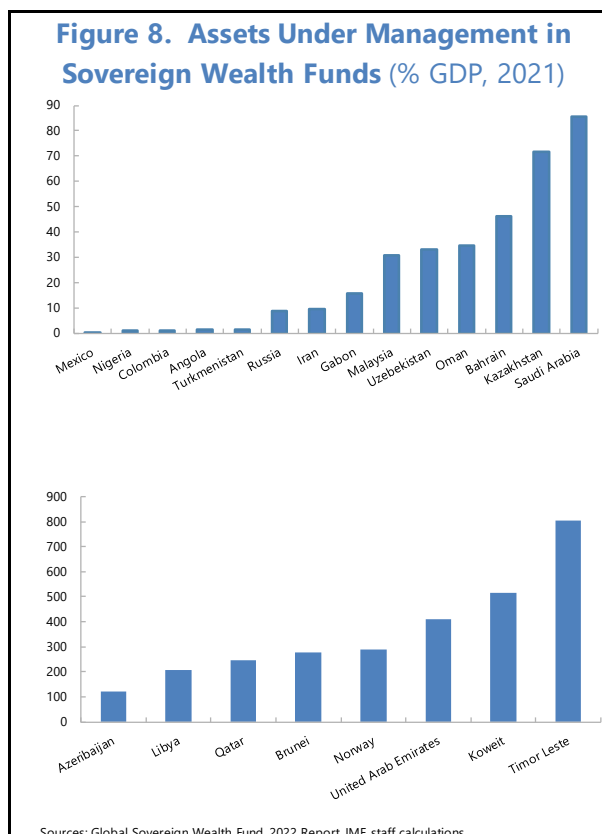
Relative to budget hydrocarbon revenue (years)	Insurance (dissaving) period	3 years		6 years	
	Degree of confidence	80 percent	90 percent	80 percent	90 percent
Oil price smoothing rule	3-year moving average	0.6	0.9	0.7	1.1
	5-year moving average	1.1	1.5	1.4	2.0
	8-year moving average	1.4	1.8	2.2	3.2

Source: IMF staff.

### 34. The relevant gross debt anchor depends on the authorities' preference for savings.

Table 3 proposes three possible calibrations, given the same total required buffer, depending on the authorities' preference regarding their level of self-insurance against hydrocarbon price shocks. The higher the preference for savings, the higher the gross debt anchor. Yet, a "balanced" approach could be to set the gross debt anchor at 48 percent of GDP and the savings floor at 16 percent of GDP (Figure 9).

This proposal is deemed realistic based on past FRR balances and the size of the adjustment needed to get to the anchor in the medium run. Overall, this framework would provide Algeria with the necessary space to accommodate the macro-fiscal effects of most shocks into the medium term (six years), even severe (95% probability). The savings floor would insure Algeria against abrupt fiscal adjustment over 6 years with a probability of 80 percent, under a price-smoothing rule based on a 5-year averaging period. Appendix 1 provides indications on the sensitivity of the gross debt anchor to changes in model assumptions (see also §24).



**Table 3. Algeria: Examples of Possible Calibrations of the Gross Debt Anchor and Savings Floor**

(Percent of GDP)	Calibration 1 (larger savings)	Calibration 2 ("balanced")	Calibration 3 (smaller savings)
Maximum debt limit (1)	70	70	70
Total buffer (2)	39	39	39
Savings floor (3)	24 <i>(6-y insurance, 5-y moving average, 90% degree of confidence)</i>	16 <i>(6-y insurance, 5-y moving average, 80% degree of confidence)</i>	9 <i>(6-y insurance, 3-y moving average, 80% degree of confidence)</i>
Gross debt anchor = (1) – [(2) – (3)]	56	48	40

Source: IMF staff estimates.

### Calibration of the Transitional Fiscal Path to Compliance

**35. A multi-year transition is needed before the authorities can realistically comply with the framework.** Given Algeria's large non-hydrocarbon fiscal deficit, rising debt and thin fiscal savings, and despite the hiatus in 2022, a sufficiently long transition period is required to avoid an unrealistically large fiscal adjustment. For example, the government could aim to achieve compliance with both the debt and the savings objectives within a timeframe of 8 years, following a five-year adjustment period – this means building up a total buffer of 39 percent of GDP in the next 8 years. To do so, the authorities would need to accumulate savings, depending on their preference for self-insurance, and find the relevant non-resource fiscal balance trajectory which would allow to comply with the associated gross debt anchor. Under current macro-fiscal assumptions, this would necessitate an improvement in the non-hydrocarbon primary deficit excluding Bank of Algeria's dividend by [0 percent of NHGDP relative to its projected level at end-2022 and by 2027, which, based on the current forecast oil prices, would result in an additional narrowing in the overall fiscal deficit by 4.8 percent of GDP relative to its projected level in 2027 under staff's baseline scenario, and a deficit of around 1.7 percent of GDP from 2028 onwards, as illustrated in Figure 10. This deficit trajectory would allow the authorities to save around 1.4 percent of GDP in hydrocarbon revenue in the asset fund per year until the targeted savings floor is reached.

**36. The transitional path is conditional on relatively high price trajectory.** It is predicated on the assumption that global benchmark oil prices will average USD 77/barrel in 2022-2027, versus an average of USD 69.3/barrel over the previous decade. However, should hydrocarbon revenue surprise on the upside relative to staff's baseline scenario, the authorities could accelerate asset accumulation and save the windfall gains, allowing for lower fiscal balance target in the outer years of the transition period. Conversely, if oil prices fall below the assumed trajectory, the authorities could consider temporarily relaxing efforts towards bringing the debt towards the medium-term anchor, by allowing a lower overall fiscal balance, and prioritize savings accumulation, given that Algeria's debt level is moderate while its asset buffers are merely depleted. However, they should still adhere to the calibrated trajectory for the non-hydrocarbon balance, to ensure a resumption of progress towards the medium-term

objectives, once prices recover. The transition path would need to be recalibrated and lengthened if oil prices fall substantially and durably below the assumed trajectory: the authorities could call on the escape clause (see §40) and make use of the savings accumulated in the fund so far to offset part of the fall in revenue, if oil prices move significantly below their historical average.

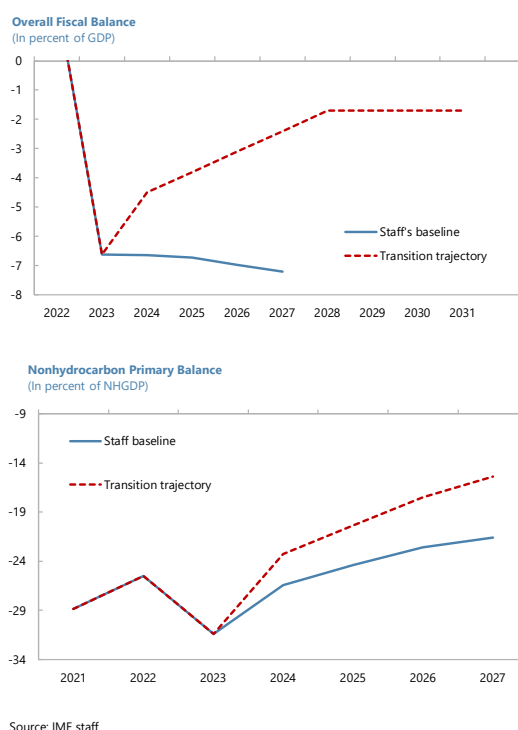
**37. In the medium term, a set of operational rules and targets would be required to support compliance with both objectives.** After the transition period, the oil-price smoothing rule could enter into full effect: the difference between actual and budgeted hydrocarbon revenue based on a reference price set as the moving five-year average of past realizations would be transferred to the fund or withdrawn from it.<sup>12</sup>

Concurrently, to maintain compliance with the debt anchor once it is reached, an operational rule, typically a ceiling on the non-resource deficit or on expenditure, should be included in the framework. In case of conflict between the two operational rules, the authorities should aim for compliance with the strictest of the two, to preserve the credibility and efficiency of the framework. Given the medium-term uncertainty, the full design of operational rules can be decided in a few years, once the authorities get closer to complying with the fiscal objectives.

## D. Ensuring Effectiveness of the Rules-Based Fiscal Framework

**38. As the calibration of the buffer is sensitive to a set of assumptions, it is good practice to set a *rendezvous* clause for the review of the framework, after three to five years.** Such a clause would require that the authorities assess the pertinence of the framework and the chosen calibration—changes might indeed be required if new macro-fiscal conditions have arisen. In the medium term, once a sufficient level of gross savings has been accumulated and gross debt brought down, the Algerian authorities could consider a single « net » anchor on the difference between gross debt and the savings fund's assets, which would provide them with more flexibility to arbitrate between debt accumulation and asset drawdown (e.g. this could allow for higher gross debt, as long as savings are also higher).

**Figure 10. Proposed Fiscal Paths in the Transition Period**  
(Percent of GDP)



<sup>12</sup> In the later years of the transition period, authorities should gradually phase in the smoothing rule to avoid threshold effects, depending on the oil price trajectory.

**39. In its design, the discussed framework also needs to strike an appropriate balance between simplicity, flexibility and enforceability.** Pursuing these multiple objectives often entails difficult tradeoffs. For example, while they should sufficiently constrain fiscal policies to be effective and credible, fiscal rules should also be sufficiently flexible to allow for countercyclical fiscal policy when needed, whether in the face of normal business cycles (letting automatic stabilizers operate) or of extraordinary shocks (allowing for the temporary suspension of the rules).

**40. The authorities could consider the adoption of an escape clause, which would allow for a temporary and exceptional suspension of the framework (including during the transition period) in the event of very serious shocks or when a large fiscal intervention is needed.**

Escape clauses are very common instruments, found in more than 80 percent of fiscal rule frameworks across the world, as per the IMF Fiscal Rules dataset. Close to 40 percent of countries with a fiscal rule have activated an escape clause following the COVID-19 pandemic (Davoodi and others 2022). This has enabled the adoption of large stimulus packages, while preserving the integrity of the fiscal rule frameworks. To avoid impeding the credibility of the rule, escape clauses need to be clearly defined at the time of the adoption of the fiscal rule framework, with at least a precise definition of the conditions under which the clause can be activated (e.g. nature and magnitude of shocks, time limits on the duration of its activation (or at least regular mandatory reassessments of whether the clause should stay active or not), requirements to return to the targets once the operation of the escape clause is terminated, and institutional responsibilities for the activation and monitoring of the clause. Box 3 provides examples of escape clauses, including in a few resource-rich countries.

**41. Credibility and enforcement can be enhanced by correction mechanisms for getting back to compliance after a breach of the rule.** Because of unexpected macroeconomic shocks which might affect fiscal aggregates, the authorities might be temporarily unable to comply with the rules or stick with the transitional path, for instance if revenue collapses late in the fiscal year with no time to react, or when needing to increase emergency spending in response to a shock. To ensure that the framework remains credible, the Algerian authorities could envisage correction mechanisms which impose the return to compliance within a reasonable timeframe, while avoiding sharp adjustments which might negatively affect the economy. These mechanisms vary in sophistication and level of constraint. In Panama, for instance, when the fiscal target is not reached, the government is simply required to publish a detailed explanation on why it failed to reach the target, and which fiscal adjustments are needed to resume compliance. A more sophisticated and stringent example (Slovakia) is provided in Box 4.

**42. Assigning responsibilities for the appropriate monitoring of the rules' implementation is critical to their enforceability, including during the transition path.** One should distinguish between *ex ante* compliance (i.e. the fiscal strategy and budget adopted every year is consistent with the fiscal rules) and *ex post* compliance (i.e. the rules have been effectively complied with, based on fiscal outturns). Responsibilities for *ex ante* compliance typically land within the agency or department within the Ministry of Finance in charge of leading the establishment of the fiscal strategy—the idea being that the proposed fiscal strategy should be consistent with the rules. To

ensure *ex post* compliance, this agency or department should also carefully monitor budget execution and keep track of possible deviations. Both the *Direction Générale du budget* and the *Direction Générale de la Prévision et des Politiques* could be tasked with this monitoring. Access to reliable, frequent infra-year fiscal data is critical—only then can the government proactively react in case *ex post* compliance with the rule is threatened.

### Box 3. A few Examples of Escape Clauses

**Colombia:** according to the 2021 Social Investment Law (Ley No. 2155), Article 60, the escape clause will allow for a temporary deviation from compliance with the fiscal targets set by the rule (on debt and on the structural primary balance) “in the event of extraordinary events, or events that compromise the macroeconomic stability of the country”. The clause can be activated by an internal council on fiscal policy headed by the Finance Minister, and subject to a non-binding opinion by a new Autonomous Committee of the Fiscal Rule. The National Government shall regulate the operation of the clause, including the maximum duration of the deviation, its magnitude, and the path of return to full compliance with fiscal targets.

**Peru:** The application of fiscal rules (ceiling on real expenditure and 1 percent fiscal deficit ceiling) may be suspended for up to three years when (a) real GDP is declining, with the ceiling on the deficit being raised up to 2.5 percent of GDP, with a minimum annual reduction of 0.5 percent of GDP until the 1 percent deficit ceiling is reached; and (b) in other emergencies declared by the Congress at the request of the Executive. The Executive must specify in its request the ceilings to be applied during the period of exception for the deficit and expenditure rules, with the minimum annual reduction of 0.5 percent of GDP on the deficit applying also in this case.

**Jamaica:** the debt and fiscal balance rules could be deviated on the grounds of national security, national emergency, or such other exceptional grounds, as the Finance Minister may specify in an order subject to affirmative resolution. It also had a correction mechanism, whereby annual deviations are stored in a notional account. When this exceeds a threshold, annual adjustments have to be implemented to get back to the fiscal rules.

Source: IMF Fiscal Rules dataset.

### Box 4. Example of Correction Mechanism: Slovakia

In Slovakia, a constitutional bill which caps public debt at 60 percent of GDP has been in effect since 2012. Automatic sanction mechanisms take effect when the debt-to-GDP ratio reaches 50 percent. In such a situation, the Minister of Finance is required to clarify the increase to parliament and suggest measures to reverse it. At 53 percent of GDP, the cabinet shall pass a package of measures to trim debt and freeze civil service wages. At 55 percent, expenditures shall be cut automatically by 3 percent and next year's budgetary expenditures shall be frozen, except for interest payments and other certain types of expenditure. At 57 percent of GDP, the cabinet shall submit a balanced budget. Should the debt climb to 60 percent of GDP, the cabinet would face a confidence vote in parliament.

Source: IMF staff.

**43. Institutional mechanisms aimed at discouraging non-compliance could also be envisaged.** Many countries having adopted fiscal rules have faced situations of non-compliance. In national settings, formal sanction mechanisms have proven largely ineffective; mechanisms creating reputational costs when breaching the rules have hence become a better way to encourage

compliance. On top of correction mechanisms described above, the two following mechanisms could be explored by the Algerian authorities:

- **Reporting on compliance.** The legislature and the public should be informed of whether the rule (or agreed transition path) has been complied with over the previous reporting period, whether the proposed upcoming budget is compliant, and whether special mechanisms (e.g. escape clause, correction mechanism) have been activated. This information can be communicated through budget documentation—this would typically be embedded in a medium-term fiscal strategy, or in a dedicated report. Reporting on compliance would fit well within Algeria’s ongoing fiscal transparency agenda, and could help raise awareness and trigger interest of the legislature, particularly in times of budget debates. The medium-term budget framework document attached to the budget bill would be the relevant place for such communication.
- **Independent fiscal institution.** About 50 countries have set up a fiscal council as of 2021 (Davoodi and others 2022). A fiscal council is a nonpartisan public entity with a statutory or executive mandate aimed at promoting sustainable public finances through assessing fiscal plans and performance, evaluating macroeconomic and budgetary forecasts, monitoring the implementation of fiscal rules, and costing of government measures (IMF 2013). They can hence be helpful in independently assessing compliance with the rules and alerting the public on potential breaches. The success of a fiscal council hinges on receiving funding and staffing commensurate with the size of its mandate, on ensuring nonpartisanship and formal independence, and with guaranteeing access all needed fiscal information on a timely basis. Setting up a fiscal council does not remove the need for internal monitoring mechanisms (¶136), which stands as a higher, more immediate priority in the case of Algeria. Algeria’s supreme audit institution (*Cour des Comptes*) could alternatively be tasked with providing an opinion on fiscal rule compliance.

**44. Fiscal rules require effective and robust fiscal institutions and strong political will.** On top of the need for a clear political commitment to fiscal discipline, the Algerian authorities should continue to build PFM capacity as a way to support the implementation of the new rules-based framework, mainly:

- *the reinforcement of macro-fiscal capacities.* While the Ministry of Finance does produce macro-fiscal forecasts, the implementation of a set of fiscal rules requires to assess the available fiscal space on a regular basis, propose a fiscal path consistent with the rules, and be reactive to changes in the outlook. Regular publication of targets and forecasts is also needed to encourage compliance with the rules.
- *the reliance on efficient information systems,* enabling timely, frequent access to fiscal outturns. This is especially needed to enhance the quality of forecasts and to achieve effective in-year monitoring of rules. The authorities should continue setting up modern financial IT systems (SIGBUD, SIGB) that could help provide a close to real-time picture of budget execution.
- *the development of sound fiscal risk management practices,* in particular the careful management of fiscal or quasi-fiscal operations that may fall outside the scope of the rule. The materialization



of contingent liabilities, such as those associated with SOEs or public-private partnerships (PPP), might hinder compliance with the rules by causing a sudden increase in government debt. The recently established High Committee on Fiscal Risks will help better identify, analyze and manage fiscal risks weighing on public finances in Algeria. In addition to the rules-based fiscal framework proposed earlier, the authorities could also consider mechanisms aimed at mitigating certain types of risks. For instance, given the authorities' expected recourse to PPPs in the coming years, setting ceilings on either the stock or the annual flow of PPP projects would prevent excessive exposure to fiscal risk.

- *assurances on the sound governance and transparent use of the FRR.* Financial information about the FRR—balance sheet, statement of operations, types of investment, rates of return—should be reported on at least an annual basis, as part of budget documentation. The investment strategy of the FRR should be published. To ensure good governance of the FRR, the authorities should consider subscribing to the International Forum of Sovereign Wealth Funds' Santiago principles, which provide 24 practical items of guidance on appropriate governance and accountability arrangements, and the conduct of investment practices necessary for sound long-term investment procedures.<sup>13</sup>

## E. Conclusion

**45. It is the right time for Algeria to implement a well-designed, well-calibrated rules-based fiscal framework.** A dual-pillar framework as the one proposed above would be an effective tool to support macroeconomic stabilization and fiscal sustainability and underpin fiscal credibility and market access. The proposed framework revolves around two objectives: (i) a savings floor, calibrated so as to self-insure Algerian public finances against hydrocarbon price shocks; and (ii) a debt anchor, or medium-term gross debt target, calibrated so as to prevent debt from reaching potentially unsustainable territory with sufficiently high confidence. A transition period of 10 years would be needed at first to comply with these two objectives; in a steady state, operational rules and targets can be designed to maintain compliance, and the oil price smoothing mechanism can enter into full effect. Mechanisms to ensure flexibility (escape clause) and compliance (correction mechanism, reporting) would be useful features to ensure the effectiveness of the framework. The adoption of such a framework should be accompanied by continued efforts to enhance macro-fiscal forecasting and budget monitoring capacities at the Ministry of Finance, so that it truly informs strategic planning, budget preparation and execution.

<sup>13</sup> <https://www.ifswf.org/santiago-principles-landing/santiago-principles>

## Appendix I. Sensitivity of the Calibration to Model Assumptions

The table below provides indications on the sensitivity of the debt anchor calibration model to its key assumptions. Results below assume no change in the authorities' preference for self-insurance: savings are calibrated to insure Algeria against abrupt fiscal adjustment over 6 years with a probability of 80 percent, under a price-smoothing rule based on a 5-year averaging period.

(Percent of GDP)	Description	Total Required Buffer	Debt Anchor	Savings Floor
"Balanced approach"	See §32	39	48	16
Lower Risk Tolerance	<i>The total required buffer is set so as to ensure that after six years, debt remains below the maximum debt limit in 96% (instead of 95%) of simulated debt paths.</i>	45	41	
Time Horizon	<i>The total required buffer is set so as to ensure that after seven years (instead of six), debt remains below the maximum debt limit in 95% of simulated debt paths.</i>	54	32	

Source: IMF staff estimates.

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