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Financial Sustainability and the Debt-Stabilizing Rule in the New Keynesian Dynamic Stochastic General Equilibrium (DSGE) Model

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Abstract :
This article examines the dynamics of financial sustainability in an open economy exposed to oil price shocks, using a baseline New Keynesian Dynamic Stochastic General Equilibrium (DSGE) model based on the three core equations. The model is extended to include a public sector characterized by an intertemporal budget constraint and a simplified fiscal block that links the primary balance to public debt. Two scenarios are compared: (a) the absence of a fiscal rule, where the government does not respond to debt gaps, and (b) the presence of a debt-stabilizing rule, where the primary balance adjusts proportionally to the debt level.
The model is calibrated and simulated using **Dynare/MATLAB**, and the **Impulse Response Functions (IRFs)** are analyzed following a positive shock in natural resource revenues (an oil shock). The results show that, in the absence of a fiscal rule, a revenue shock leads to a gradual and persistent accumulation of public debt, indicating a lack of internal stabilization mechanisms. In contrast, under the debt-stabilizing rule, the automatic adjustment of the primary balance allows for a rapid

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stabilization of the debt trajectory, ensuring medium-term fiscal sustainability. Real and nominal variables (output, inflation, and interest rates) remain almost unchanged, reflecting the decoupling between real and fiscal components in the linearized version of the model. This approach highlights the pivotal role of fiscal rules in correcting debt imbalances and provides a simple analytical framework to assess the robustness of fiscal policy in resource-dependent economies.
Keywords: Public debt; fiscal policy; fiscal rule; simplified New Keynesian DSGE model.
Jel Classification Codes: E62; H63; E52; E61; C63.

Introduction :

The issue of fiscal sustainability represents a central challenge for developing economies, particularly those whose public revenues depend heavily on natural resources. Fluctuations in oil prices and related revenues directly affect fiscal balances and the dynamics of public debt. In this context, the implementation of effective fiscal rules serves as a key instrument for ensuring macroeconomic stability and the credibility of fiscal policy.

Over the past two decades, many countries have adopted debt-stabilizing rules aimed at reducing fiscal imbalances and strengthening financial discipline. These measures rely on a mechanism that automatically adjusts the primary balance based on the debt gap, thereby contributing to the medium-term stabilization of the debt trajectory. However, a precise understanding of how these rules operate within a general equilibrium framework—particularly under external shocks to resource revenues—remains limited.

The main objective of this article is to analyze the ability of a fiscal anchor rule to ensure the sustainability of public debt in the face of a positive shock to oil revenues, using a New Keynesian Dynamic Stochastic General Equilibrium (DSGE) model. The model incorporates a simplified fiscal block that describes the joint dynamics of the primary balance and public debt, distinguishing between two scenarios:

(a) a baseline scenario without fiscal rules, where the primary balance is passive; and

(b) a rule-based scenario in which the primary surplus responds proportionally to the debt level.

Simulations conducted using **Dynare (MATLAB)** enable a comparison of the **Impulse Response Functions (IRFs)** of key macroeconomic variables under both setups. This approach provides a clear analytical framework for evaluating the stabilizing effect of fiscal rules in economies exposed to volatile resource revenues. The results show that, in the absence of fiscal rules, public debt reacts strongly to a positive income shock, reflecting the lack of an adjustment mechanism. By contrast, the presence of a fixed fiscal rule generates a primary surplus that gradually offsets the shock and returns debt to its steady-state path. These findings illustrate the crucial role of fiscal rules in reinforcing medium-term sustainability.

The paper is structured as follows: Section 1 presents the theoretical framework and the specification of the chosen New Keynesian DSGE model; Section 2 details the calibration and simulation assumptions; Section 3 presents and interprets the empirical results derived from domestic revenue models; and finally, the conclusion discusses the main policy implications and suggests directions for extending the model.

1. Theoretical Framework and Model Specification

1.1 Conceptual Foundations

The analysis of fiscal sustainability rests on the principle of intertemporal budget balance, which states that the present value of public debt must equal the present value of future primary surpluses. This principle, established by *Blanchard et al.* (1990) and later confirmed by *Bohn* (1998), constitutes the starting point for dynamic models that examine debt stability. From a New Keynesian perspective, this sustainability is closely linked to the management of fiscal policy and its consistency with monetary policy rules.

The model employed follows the **Dynamic Stochastic General Equilibrium (DSGE)** framework, which combines microfounded economic behavior with a dynamic structure that allows for the analysis of external shocks. The New Keynesian approach, initiated by *Clarida, Galí,* and *Gertler* (1999), is built upon three key equations:

1. The **IS curve**, which describes households' intertemporal trade-offs.
2. The **New Keynesian Phillips curve**, which relates inflation to the output gap.
3. The **Taylor rule**, which formalizes the monetary policy response to inflation and economic activity.

To study the fiscal dimension, this framework is extended to include a **fiscal rule** that links the primary balance to public debt. This extension draws on recent studies of fiscal discipline—particularly those of *Leeper* (1991), *Woodford* (2003), and *Bi* (2012)—which demonstrate that an active (debt-responsive) fiscal policy is essential to ensure macroeconomic stability and to prevent fiscal dominance.

1.2 Model Specification

The model employed is a **small open economy DSGE** framework grounded in the New Keynesian paradigm. The economy includes representative households, firms, a government, and a monetary authority. Each agent optimizes intertemporally under conditions of rational expectations and stochastic shocks.

Households maximize an intertemporal utility function defined over consumption and labor supply, subject to a budget constraint that links disposable income, government bonds, and interest rates. Their optimal choices yield an **IS curve** that captures the intertemporal substitution effect in consumption and reflects the expected path of real interest rates.

Firms operate under monopolistic competition and Calvo-type price rigidity. They set prices in a staggered manner, leading to a **New Keynesian Phillips Curve** that connects current inflation to expected future inflation and the output gap.

Monetary policy follows a **Taylor-type rule**, where the central bank adjusts the nominal interest rate in response to deviations of inflation and output from their steady-state levels. This rule ensures price stability and anchors inflation expectations.

On the **fiscal side**, the government budget constraint is specified as an intertemporal equation where public debt accumulates according to the difference between expenditures, interest payments, and revenues. The **fiscal rule**, or "debt stabilization rule," makes the **primary balance** a function of the debt ratio, allowing automatic adjustment mechanisms to operate after fiscal shocks.

External influences are modeled through a **terms-of-trade or oil-price shock**, which affects export revenues and, consequently, public finances. This specification makes the model particularly suited to analyzing resource-dependent economies exposed to commodity volatility.

The linearized version of the model around the steady state allows for analytical solutions of the dynamics and facilitates the computation of **Impulse Response Functions (IRFs)**. These functions trace the time path of macroeconomic variables in response to a temporary oil revenue shock, under alternative fiscal policy regimes.

1.2 Model Structure

The log-linear model around the steady state consists of six endogenous variables:

- y_t: output gap
- π_t: inflation
- i_t: nominal interest rate
- b_t: public debt-to-GDP ratio
- s_t: primary balance
- $rrev_t$: income from natural resources (oil)

The economy is subject to an external shock representing a change in the oil price or in resource revenues.

1.3 Sets of Equations

(a) IS Curve

This equation expresses the intertemporal relationship between consumption and the real interest rate, where σ denotes the intertemporal elasticity of substitution. An increase in the nominal interest rate leads to a decline in current demand, ceteris paribus.

(b) New Keynesian Phillips Curve (NKPC)

In this equation, κ represents the slope of the Phillips curve and depends on the degree of price rigidity. The equation links current inflation to expected future inflation and to the degree of slack in economic activity.

(c) Taylor Rule

This equation describes the systematic response of the central bank to inflation and the output gap, and it incorporates interest-rate inertia ρ_i. The conditions $\phi_\pi > 1$ and $\phi_y > 0$ ensure monetary policy stability (Taylor principle).

(d) Resource Revenue Process

Oil revenues follow a first-order autoregressive process, AR(1), which captures the persistence of oil prices on international markets.

(e) Budget Rule

This rule states that the primary balance reacts proportionally to the public debt gap. When $\phi_b > 0$, the government increases its primary surplus in the case of excessive indebtedness, thereby ensuring sustainability. Conversely, if $\phi_b = 0$, there is no reaction and debt grows freely.

(f) Public Debt Dynamics

Here, b_t denotes the public debt ratio, s_t the primary balance, and $rrev_t$ natural resource income (oil).

The positive sign associated with resource income reflects a convention consistent with the observed procyclical behavior of fiscal policy in most resource-rich economies. In these countries, periods of high commodity prices and abundant government revenues are often accompanied by a substantial expansion in public spending, rather than by fiscal consolidation. This behavior leads to a deterioration of the primary balance despite the temporary increase in revenues, which slows down debt reduction or even raises debt in the medium term.

This specification therefore allows us to replicate a well-established empirical fact: the procyclical nature of fiscal policy in resource-exporting countries. According to Alesina and Tabellini (2005), Frankel, Végh, and Vuletin (2013), and Céspedes and Velasco (2014), governments in these economies tend to increase current and capital expenditures during resource booms, often under political or institutional constraints. Similarly, World Bank (2019) analyses show that the correlation between resource income and government spending averages between +0.4 and +0.6, confirming the magnitude of procyclical fiscal behavior.

Accordingly, the sign convention adopted in the debt equation has a clear economic rationale: it reflects the tendency of governments to expand public spending and worsen their fiscal position during booms, thereby accurately reproducing the fiscal dynamics of economies that are highly dependent on natural resources.

Debt accumulation thus depends on the primary balance and resource income. An increase in resource revenues improves or worsens the fiscal position, depending on the convention used, while a primary surplus reduces public debt.

1.4 Economic interpretation

The interaction among these equations highlights the relationship between monetary policy, fiscal policy, and resource-related shocks. In this model, the real block is separated from the fiscal budget block, which allows for an independent analysis of public debt stability in the face of shocks. This simplification is common in small-scale DSGE models for pedagogical purposes (Galí, 2015).

The parameter ϕ_b plays a **crucial** role in sustainability:

- When $\phi_b = 0$, debt is unstable and can drift under the effect of shocks.
- When $\phi_b > 0$, an automatic correction mechanism operates to stabilize the debt path.

Thus, the comparison between the two scenarios (with and without fiscal rules) empirically illustrates the role of fiscal discipline in preventing budgetary imbalances.

2.2 Calibration and Simulation Strategy

2.2.1 General calibration logic

The model is calibrated on an annual basis and relies on benchmark values from the New Keynesian literature applied to emerging and developing economies. The aim is not to perform an econometric estimation, but rather to select representative parameters that allow the analysis of the transmission mechanisms of the fiscal shock and the qualitative response of public debt under the adopted fiscal rule.

This calibration strategy follows the approach of analytical DSGE models developed by Galí (2015) and Woodford (2003), in which structural parameters are determined based on previous empirical studies and standard macroeconomic considerations (discount rates, elasticities, nominal rigidities, etc.).

2.2.2 Structural parameters of the model

(The list of parameters would follow here.)

Parameter	Description	Value	Justification / Reference
β	Intertemporal discount factor	0.99	Corresponds to a real interest rate of about 4% per year, the standard value in DSGE models (Woodford, 2003).
σ	Inverse of the intertemporal elasticity of substitution	1	Common assumption in models of this type (Galí, 2015).
κ	Slope of the Phillips curve (price rigidity)	0.1	Moderate level of nominal rigidity, consistent with Clarida, Galí and Gertler (1999).
ρ_i	Monetary policy persistence parameter	0.8	Reflects the interest rate smoothing observed in central banks.
ϕ_π	Weight on inflation in the Taylor rule	1.5	Taylor condition 1 ensures nominal stability.
ϕ_y	Weight on the output gap in the Taylor rule	0.1	Low sensitivity to activity, in line with the literature.
ρ_o	Persistence of resource income	0.9	Strong persistence is a feature of oil prices (Bi, 2012).
$\bar{s}$	Steady-state primary balance (% of GDP)	0.03	Corresponds to a primary surplus of 3% of GDP, consistent with sustainability benchmarks (Blanchard et al., 1990).

$\bar{b}$	Steady-state public debt (% of GDP)	0.6	Reference ratio of 60% of GDP inspired by the Maastricht criteria.
ϕ_b	Reaction coefficient of the primary balance to debt	0 / 0.5	0 = no fiscal rule; 0.5 = strong debt-stabilizing rule.
stderr(ε_o)	Standard deviation of the oil revenue shock	0.01	Small shock.

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2.3 Simulation strategy

All simulations are carried out using Dynare (version 4.6.4) within the MATLAB environment. The model is solved to first order (linear approximation), and Impulse Response Functions (IRFs) are computed over a horizon of 20 periods.

The comparison is made between two scenarios:

1. **First scenario: Absence of a fiscal rule**

$$\phi_b = 0$$

- The primary balance remains unchanged, which allows observation of debt dynamics following a positive shock to resource income.
- This represents a passive or non-reactive fiscal policy regime.

1. **Second scenario: Presence of a benchmark rule**

$$\phi_b = 0.5$$

- The primary balance varies positively with public debt: the higher the debt, the larger the fiscal surplus.
- This represents an effective fiscal discipline regime.

The oil revenue shock follows an AR(1) process:

$$rrev_t = \rho_o \, rrev_{t-1} + \varepsilon_t^o$$

This formulation allows us to simulate the observed persistence of natural resource revenues and to study the dynamic response of public debt.

2.4 Expected interpretation

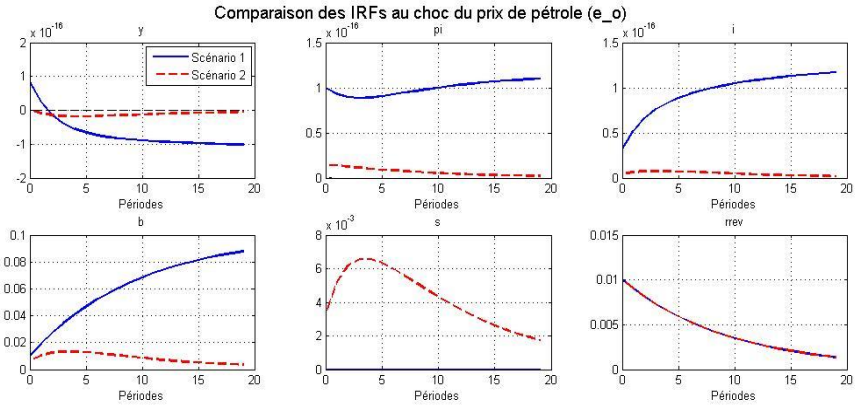
The simulated impulse response functions allow us to assess how fiscal and macroeconomic variables react to a positive external shock in oil revenues. According to theory:

- In the absence of a fiscal rule, public debt gradually rises to a new, higher level as a result of the lack of adjustment in the primary balance.
- With a debt-stabilizing rule in place, the primary surplus increases immediately, leading to a rapid stabilization of debt around its steady-state level.

The real and nominal variables (y_t, π_t, i_t) remain unchanged, confirming that the fiscal shock does not affect the real block in this simplified version of the model.

3. Simulation results and analysis

3.1. Description of the simulation scenarios”



Dynare 4.6.4 output results

The results are derived from simulating a positive shock to resource income (> 0), interpreted as a temporary increase in oil prices (or an improvement in tax revenues from natural resources). Two fiscal policy regimes are compared:

- Scenario 1: absence of a fiscal rule ($\phi_b = 0$)
- Scenario 2: presence of a debt-stabilizing rule ($\phi_b = 0.5$)

The impulse response functions (IRFs) are plotted over 20 periods and describe the dynamic response of macroeconomic and fiscal variables to the resource income shock.

3.2 Response of real and nominal variables

The results indicate that the real variable y_t and the nominal variables π_t and i_t do not exhibit any significant reaction to the resource income shock in either scenario. This lack of response is consistent with the structure of the model, in which the budget block is separated from the real block. In fact,

$$y_t = \mathbb{E}_t\{y_{t+1}\} - \frac{1}{\sigma}(i_t - \mathbb{E}_t\{\pi_{t+1}\})$$

and

$$\pi_t = \beta \mathbb{E}_t\{\pi_{t+1}\} + \kappa y_t$$

do not include public debt b_t, the primary balance s_t, or resource income $rrev_t$.

Consequently, the fiscal shock does not distort aggregate demand or the price-setting mechanism, which confirms that debt dynamics operate within a "quasi-real" framework that is neutral with respect to the business cycle.

Interpretation:

Within this framework, the model isolates a purely fiscal mechanism—an analysis "abstracting from inflation and output gaps"—which makes the reading of the impulse responses for b_t and s_t clear and sharply defined.

3. Public debt dynamics

First scenario: Without a fiscal rule ($\phi_b = 0$)

In the absence of an adjustment rule, the primary balance remains constant ($s_t = 0$), and public debt therefore evolves as follows:

$$b_t = \rho_b \, b_{t-1} + \gamma_r \, rrev_t$$

A positive shock to resource income leads to a persistent increase in debt (according to the sign convention adopted in the model). The path of b_t shows a sharp rise at the time of the shock, followed by a gradual decline toward a new level that is higher than the initial one, reflecting the absence of a stabilizing mechanism. This dynamic illustrates a situation of passive fiscal policy or weak fiscal discipline, in which public debt fully absorbs the shock. Such behavior is typical of an economy where fiscal policy is not geared toward debt stabilization, in contrast to the reaction mechanism highlighted by Bohn (1998) and Leeper (1991), who show that a parameter $\phi_b > 0$ is a sufficient condition for fiscal sustainability.

Second scenario: With a stabilization rule ($\phi_b = 0.5$)

When the stabilization rule is activated, the primary balance increases proportionally with the level of public debt. The dynamics then become:

$$b_t = \rho_b \, b_{t-1} - \phi_b \, b_t + \gamma_r \, rrev_t$$

This rule introduces a negative feedback mechanism: any increase in debt triggers a fiscal adjustment (an increase in the primary surplus) that curbs the growth of debt.

The impulse response functions show that debt initially rises, but quickly returns to its steady-state value after a few periods. The system converges back to equilibrium, and public debt returns to its long-run level, which demonstrates fiscal sustainability under the stabilization rule.

This behavior supports the argument that an "active" fiscal policy (in the sense of Leeper, 1991) is necessary to ensure overall budgetary stability and public debt sustainability. In this context, the fiscal rule operates as an automatic stabilizer, dampening shocks and preserving the solvency of the state.

3.4 Response of the primary balance

The variable s_t clearly illustrates the contrast between the two regimes:

- In the no-rule scenario, s_t remains equal to zero, confirming fiscal inertia.
- In the rule-based scenario, s_t rises immediately after the shock, in proportion to the increase in debt, then declines as debt stabilizes.

This pattern reflects the government's ability to adjust its primary balance in response to debt, according to the rule:

$$s_t = \phi_b \, b_t$$

The existence of a mechanism to adjust the primary balance is a necessary condition for debt stabilization and fiscal sustainability.

3.5 Response of resource income

Oil revenues $rrev_t$ follow a first-order autoregressive process with strong persistence ($\rho_o = 0.9$). The impulse response functions (IRFs) show an initial peak followed by a gradual return to the mean, identical in both scenarios because $rrev_t$ is an exogenous variable.

This pattern reflects the temporary nature of the shock—a "resource boom" followed by a gradual return to normal—which is a characteristic feature of resource-dependent economies (Bi, 2012).

3.6 Policy implications

The results obtained highlight three main lessons:

1. **The stabilizing role of fiscal rules**
   The introduction of a debt-stabilizing rule gives the model a property of dynamic stability that is absent in the scenario without such a rule. It allows public debt to return to its steady-state path after any shock, thereby ensuring its long-term sustainability.
2. **Short-run real neutrality of fiscal shocks**
   In this simplified framework, resource income shocks do not affect economic activity or inflation. This confirms that the effects of fiscal policy operate primarily through the debt channel rather than through aggregate demand.
3. **The importance of the fiscal response** (ϕ_b)
   The parameter ϕ_b functions as an instrument of fiscal discipline: the higher its value, the faster debt converges back to its steady state, but at the cost of a sharper fiscal adjustment. The optimal calibration of ϕ_b therefore represents a trade-off between financial stability and macroeconomic flexibility.

For resource-exporting countries, implementing a credible stabilization rule—where the primary balance reacts to changes in debt in a transparent and predictable manner—constitutes a key tool to mitigate the procyclical nature of public finances and to strengthen long-term sustainability.

Conclusion

This article proposes an analysis of fiscal sustainability within a dynamic theoretical framework based on a New Keynesian DSGE model that incorporates a simplified fiscal block. The main objective was to study the impact of a debt-stabilizing rule on fiscal stability in the presence of resource revenue shocks, using simulations conducted with Dynare (MATLAB).

The results clearly show that the presence of a budget rule in which the primary balance responds to public debt constitutes a fundamental stabilization mechanism. In the no-rule scenario ($\phi_b = 0$), debt drifts to a new, higher equilibrium level, reflecting a lack of fiscal discipline and a loss of sustainability. By contrast, introducing a stabilization rule ($\phi_b > 0$) enables an automatic adjustment of the primary balance, which quickly anchors debt around its steady-state value.

From an economic standpoint, these findings confirm the insights of Leeper (1991) and Bohn (1998): an "active" fiscal policy is necessary to ensure debt sustainability and the coherence of the monetary–fiscal policy mix. Moreover, in economies that rely on resource revenues, the results underscore the need for a robust institutional framework to smooth budgetary volatility induced by external shocks.

In terms of economic policy, the analysis points to four main implications:

1. The fiscal anchor rule is an instrument of discipline and credibility, helping to reduce cyclical fluctuations in public spending.
2. The responsiveness of the primary balance to debt must be calibrated carefully: if it is too low, sustainability is undermined; if it is too high, it may trigger excessively abrupt fiscal adjustments.
3. Transparency and predictability of the rule are essential to strengthen market confidence and ensure macroeconomic stability.
4. The results underscore the importance of rule-based fiscal governance to guarantee the stability of public debt and macroeconomic resilience in the face of external shocks; the rule thus becomes a cornerstone of modern fiscal sustainability, reconciling fiscal discipline with flexibility in public action.

Finally, this work opens up several avenues for further research. It would be useful to extend the model framework by incorporating more realistic elements, such as capital dynamics, intertemporal consumption patterns, and the composition of public expenditure. Likewise, the analysis could be enriched by introducing multiple shocks (technological, financial, and political) or by performing empirical calibration using national data to test the robustness of the results. Such extensions would allow a better understanding of the channels through which fiscal policy affects macroeconomic stability and growth in emerging and resource-exporting economies within DSGE-type models, which are increasingly used to analyze and evaluate both fiscal and monetary policies.

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Methodological appendix: structure and interpretation of the Dynare code

This Dynare file constitutes the core of the simulation of the New Keynesian DSGE model, with a fiscal block added to the three main equations on which NK-DSGE models are based.

```
var y pi i b s rrev; // y: output gap, pi: inflation, i: nominal rate, b: dette publique ratio, s: primary surplus ratio, rrev: revenu des ressources (ratio)
varexo eps_o; //  oil revenue shock

// ----------------------
// Paramètres
// ----------------------
parameters beta sigma kappa rho_i phi_pi phi_y rho_o rho_i_shock Rsteady phi_b rho_b sbar bbar;

beta = 0.99;      // discount factor
sigma = 1;        // intertemporal elasticity inverse
kappa = 0.1;      // slope of NKPC
rho_i = 0.8;      // interest smoothing
phi_pi = 1.5;     // Taylor on inflation
phi_y = 0.1;      // Taylor on output gap
```

```
rho_o = 0.9;       // persistence of resource revenue
rho_i_shock = 0.8; // persistence of monetary shock

// Steady states (ratios)
Rsteady = 1/beta;  // steady nominal gross rate
sbar = 0.03;       // steady primary surplus / GDP (3%)
bbar = 0.6;        // steady debt / GDP (60%)

// Fiscal rule coefficient on debt (to switch scenarios)
phi_b = 0.0;       // si 0 => pas de règle, si >0 => règle: s = sbar + phi_b*(b - bbar)

// petite stabilisation pour l'équation d'évolution de la dette
rho_b = 1.0;       // roll-over factor (approx 1 dans log-deviations)

 // ----------------------
// Modèle (log-linearised)
// ----------------------
model;

// IS curve (linearized)
// y = E y(+1) - (1/sigma)*(i - E pi(+1) - r_n)
// Ici r_n (taux naturel réel) est supposé nul pour simplifier
y = y(+1) - (1/sigma)*(i - pi(+1));

// NKPC (New Keynesian Phillips Curve)
pi = beta*pi(+1) + kappa*y;

// Taylor rule
i = rho_i*i(-1) + (1-rho_i)*(phi_pi*pi + phi_y*y);

// Revenu de ressource: AR(1)
rrev = rho_o*rrev(-1) + eps_o;

// Fiscal rule: primary surplus responds to debt deviations around steady state
// s = sbar + phi_b*(b - bbar)  --> in deviations: s = phi_b*b  (since sbar and bbar are
steady and we work in deviations)
// To keep model linear, we express s in deviations from steady state
s = phi_b*b;

// Debt accumulation (log-deviations approximation)
b = b(-1) - s + rrev;

end;
```

```
steady;
check;

// ----------------------
// Shocks
// ----------------------
shocks;
var eps_o; stderr 0.01; // choc sur revenu de ressource

end;

// ----------------------
// Simulation: scénario 1 - PAS DE REGLE BUDGETAIRE (phi_b = 0)
// ----------------------
// mettre phi_b = 0 (déjà initialisé)

stoch_simul(order=1, irf=20, nograph) y pi i b s rrev ;

// Sauvegarder les résultats dans un fichier MATLAB pour comparaison
oo_scenario1 = oo_; // sauver le résultat du 1er scénario

// ----------------------
// Scénario 2 - REGLE D'ANCRAGE DE DETTE (phi_b > 0)
// ----------------------
// On réattribue phi_b puis on relance stoch_simul
phi_b = 0.5; // exemple: primary surplus augmente de 0.5 pour chaque point de %
de dette (ajustez selon vos préférences)

stoch_simul(order=1, irf=20, nograph) y pi i b s rrev;

oo_scenario2 = oo_; // sauver le résultat du 2eme scénario
save squelette_scenarios.mat oo_scenario1 oo_scenario2 M_ options_;


 // Fin du fichier
```