Natural Rate of Interest, Monetary Policy and Shocks in Tunisia

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Research Question:

Can we define and provide a reliable estimate of the natural rate of interest for Tunisia?

Interest of this research

Estimating a benchmark interest rate for monetary policy makers – macroeconomically founded and empirically reliable.

This rate should help in characterizing, in real time, the stance of the monetary policy.

Introduction

Parts of the Prestation

I- Theorical framework

Definitions and estimation methods

II- Empirical approach:

A semi-structural multivariate model

III- Results for Tunisia

Evolution of Potential GDP growth, of the Naturla rate of interest and evaluation of the Monetary policy stance

Many definitions of the Natural Rate of Interest

(a) A neutral Interest rate: $\pi = \pi^*$ et $y=y^*$

(b) It's determined in the Real Sector and its determinants are real factors.

(c) A benchmark.

And also many estimation methods

a) Univarite statistical filters

b) DSGE models wtih Néo-Wicksellian view.

c) Multivariate approachs

II- Selected method: HLW

The selected method is inspired from the HLW approach

The semi-structural model of Laubach and Williams (2003) and its different versions and extensions, HLW(2017 and 2023).

The reduced form of the model

- Output gap: $\tilde{y}_t = a_{y,1}\tilde{y}_{t-1} + a_{y,2}\tilde{y}_{t-2} + \frac{\alpha_r}{2}\sum_{j=1}^{2}\left(r_{t-j} - r^*_{t-j}\right) + \epsilon_{\tilde{y},t}$
- Inflation: $\pi_t = b_\pi \pi_{t-1} + (1 - b_\pi)\pi_{t-2,4} + b_y \tilde{y}_{t-1} + \epsilon_{\pi,t}$
- Output (GDP): $y_t = \tilde{y}_t + y_t *$
- Taux intérêt naturel: $r_t * = c\, g_t + z_t$
- PIB potentiel: $y^*_t = y^*_{t-1} + g_{t-1} + \epsilon_{y^*,t}$
- Potential growth $g_t = g_{t-1} + \epsilon_{g,t}$
- Other determinants: $z_t = z_{t-1} + \epsilon_{z,t}$
- Real interest rate: $r_t = i_t - E_t[\pi_{t+1}]$
- Expected inflation: $E_t[\pi_{t+1}] = (\pi_t + \pi_{t-1} + \pi_{t-2} + \pi_{t-3})/4$
- Interest rate gap: $i_t - E_t[\pi_{t+1}] - r^*_t = r_t - r^*_t$

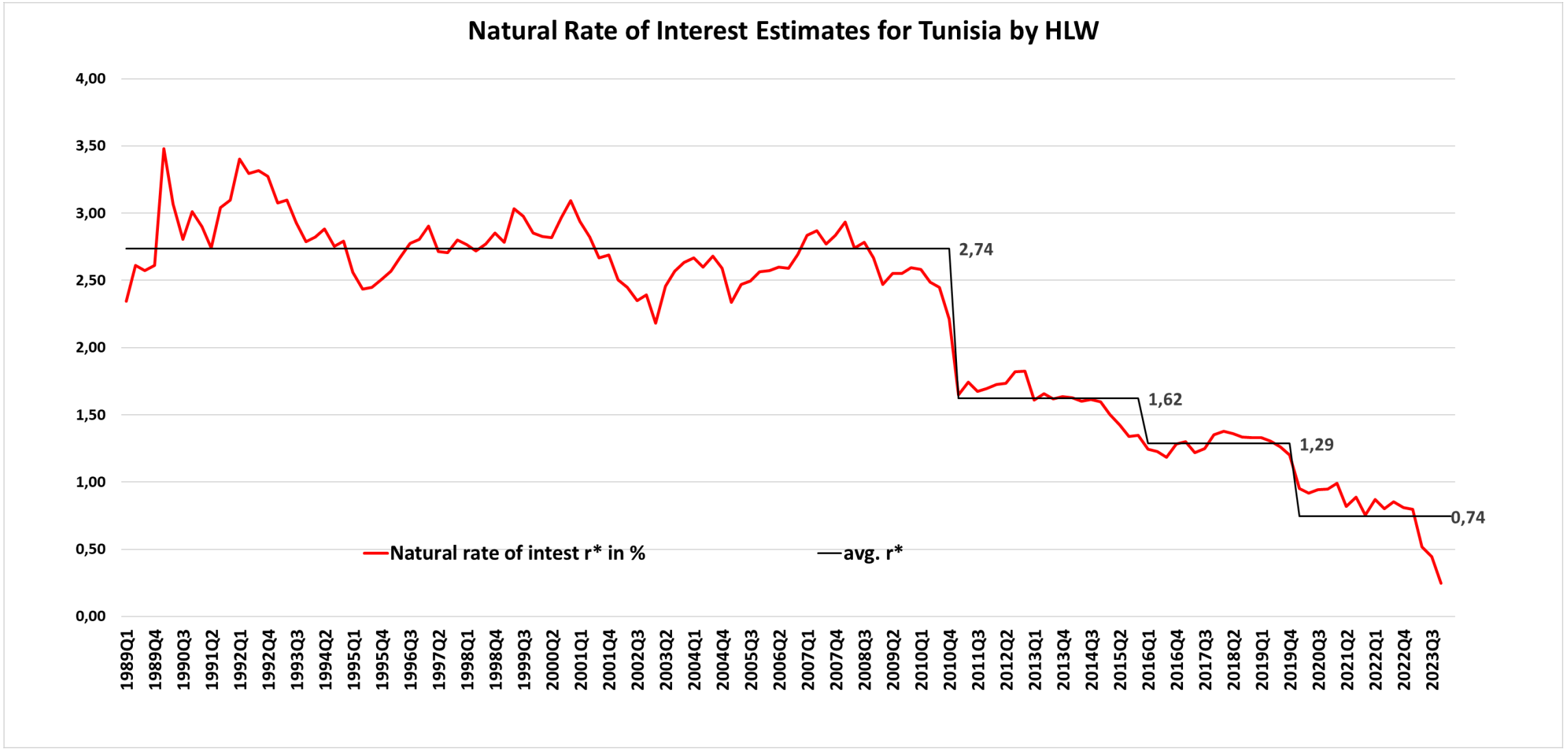
III- VARIABLES

Variables used are:

- Period: 1988Q1 à 2024Q1
- Fréquency: Quarterly
- Variables:
  - Real GDP at constant prices of 2015: Série raccordée
  - Inflation (CPI): annualizesd quarterly averages growth rates(T/T-4)
  - Expected inflation: moving average of the last 4 quarters
  - Real (observed) interest rate: avg. Market rate – expected inflation
  - Covid-19 Stringency Index: Gouvernement response to Covid-19

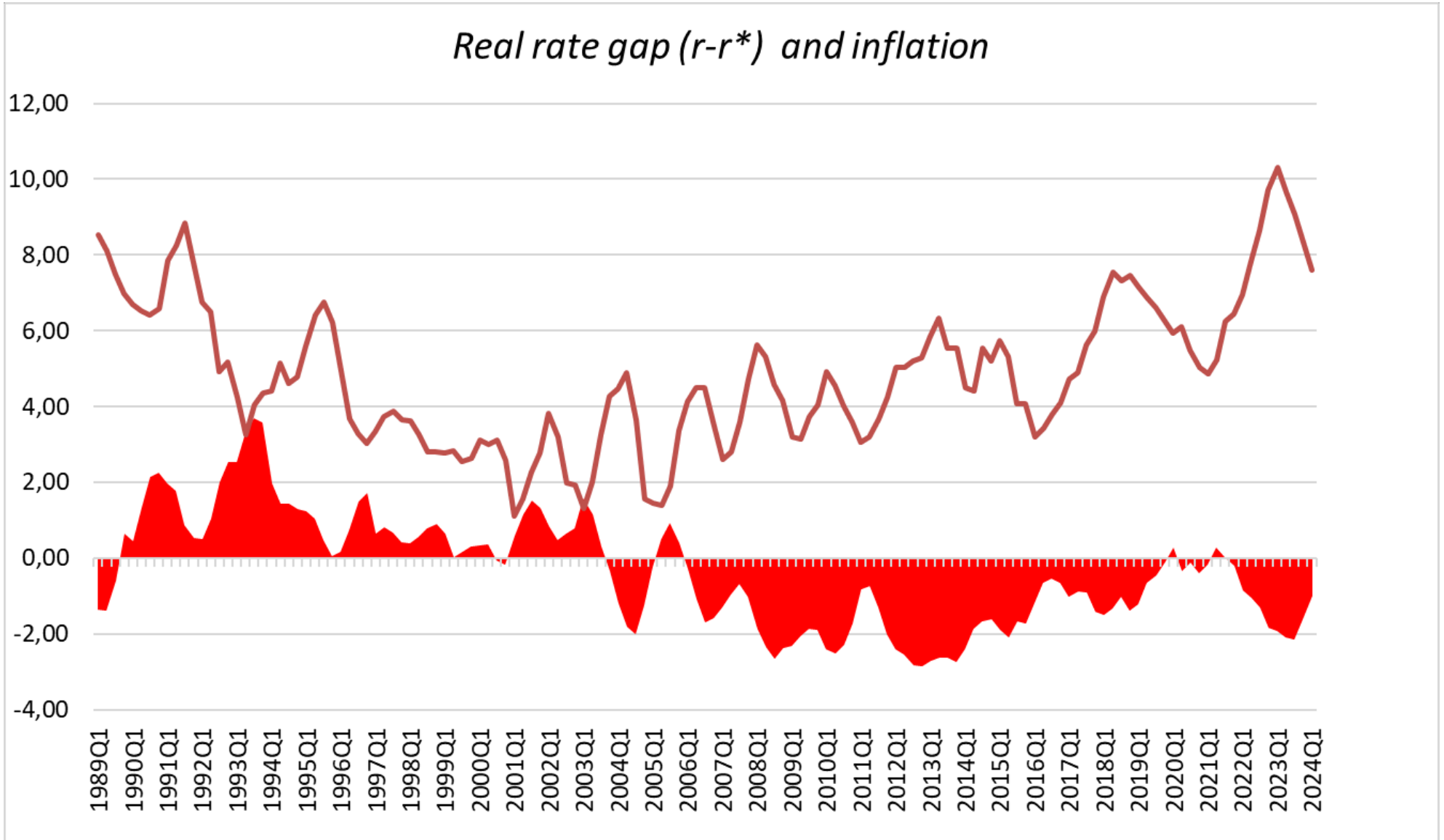
III- Results

A sharp decline of the natural rate of interest after each shock episode



The sign of the interest rate gap (r-r*) describes the stance of monetary policy .

Inflation seems to be consistent with monetary policy stance.



Conclusions

We can conclude that:

- Despite the action of the BCT on the key interest rate and its increase each time inflation accelerates, monetary policy continues to be characterized as accommodating.
- The budgetary dominance and the role of lender of last resort of the BCT mean that the interest rate alone cannot influence inflation.