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# The natural real interest rate and monetary policy: a review☆

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**Abstract**

The level of real interest rates actually observed does not necessarily coincide with its "natural" level. This paper contrasts a number of approaches that have served to elaborate alternative concepts referred to as the "natural", "equilibrium" or "neutral" real rate of interest. It highlights the relevance of those various concepts and angles for monetary policy decision making.


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*Keywords:* Natural rate of interest; Monetary policy

## 1. Introduction

To William Poole (2003), Irving Fisher's decomposition of the nominal interest rate into a real component and an inflation component was

> so powerful an idea that it remains with us today as a fundamental principle for economists analyzing interest rate determination.

☆ The views expressed in this paper are the authors' and do not necessarily reflect those of the European Central Bank.

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Building up on this seminal dichotomy, economists have developed the idea that there is a "natural", or "neutral", or "equilibrium" real interest rate level. This paper suggests that there is no such thing as a single consensual concept behind this macroeconomic variable and argues that the comparison of alternative measures can be insightful. We take a selective stance and choose to classify natural rate measures into three main categories: empirical measures based on time-series, measures derived from stochastic dynamic general equilibrium (SDGE) models, and natural rate indices based on the yield curve and asset pricing models. Alternative definitions of the natural rate concept are stated along with the set of approaches they best fit.

Within the paper, we retain a monetary policy perspective and keep a comparative angle on the United States and the euro area. As most central banks use the short-term interest rate to achieve inflation objectives, we believe that the "natural real rate issue" is central for monetary policy. As William Poole (2003) notes:

> policymakers do not have the luxury of calculating an interest rate theoretically consistent with a balanced growth path [. . . ] and then simply providing that interest rate to the market. [. . . ] Short-run adjustments in monetary policy have been of enormous help in damping the oscillations [around the economy's long-run growth path], but it is beyond the FOMC's power at the current state of knowledge to eliminate the oscillations altogether.

In this light, the spread between the actual real interest rate and what is thought of being its natural level is one possible indicator, even if it is imperfect, of the monetary policy stance. For such indicators to be reliable, central bankers need to have an idea (i) of the underlying level of real interest rates that corresponds to a neutral monetary stance, and (ii) of the channels by which this underlying level can be affected. It is therefore useful to have an idea of what the natural level of real interest rates may be.

The paper is structured as follows. Section 2 presents a selection of empirical natural rate measures, including historical averages, Taylor rule-based series and Kalman filter-based indices. In Section 3, natural rate measures based on SDGE models are given a particular emphasis, on account of their ability to track the structural deteminants of natural rate fluctuations. A financial markets perspective is taken in Section 4, linking the natural rate to yield curve developments and insights from consumption CAPM models. Section 5 concludes.

## 2. The natural real rate as a time series

### *2.1. The natural real rate as a historical average of real interest rates*

As a first take, one could measure the natural real interest rate by deflating a chosen nominal interest rate by a suitable measure of inflation or inflation expectations, and taking away the cyclical component of the measure thereby obtained.