

# Measuring the equilibrium real interest rate

Alejandro Justiniano and Giorgio E. Primiceri

## Introduction and summary

In conducting monetary policy, policymakers find it useful to monitor the performance of the economy relative to some benchmark. For instance, the policy decision whether to raise or lower the short-term nominal interest rate might be affected by the deviations of current inflation from policymakers' comfort zone, of output from potential output, and of the real interest rate (current nominal rate minus expected future inflation) from its equilibrium value (the rate that would be consistent with output at its potential level). Unfortunately, these benchmark concepts are not directly observed in the data, but can only be defined in the context of a specific theoretical framework.

Over the past decade, the *new Keynesian model* has become the workhorse for the analysis of monetary policy. This model departs from the neoclassical framework of the 1980s by assuming imperfect competition in goods and labor markets and “sticky” (meaning rigid or inflexible) prices and wages—neoclassical models assume prices and wages are flexible and adjust quickly. These ingredients in the new Keynesian model alter the transmission of fundamental shocks perturbing the economy and allow monetary policy to have temporary real effects.

The *equilibrium real interest rate* is a crucial concept in the new Keynesian class of models. This rate represents the real rate of return required to keep the economy's output equal to *potential output*, which, in turn, is the level of output consistent with flexible prices and wages and constant markups in goods and labor markets (Woodford, 2003; and Galí, 2008).<sup>1</sup> Meanwhile, the difference between the *ex ante real interest rate*—the nominal interest rate minus expected inflation—and the equilibrium real interest rate is defined as the *real interest rate gap*.

In the new Keynesian model, the real interest rate (RIR hereafter) gap is central to the determination of

output and inflation. Loosely speaking, if this RIR gap is positive, output will decline relative to potential. This is because people will be inclined to postpone spending decisions today to take advantage of higher returns to savings. All else being equal, a negative output gap will then put downward pressures on prices and wages because of weaker aggregate demand. Conversely, a negative RIR gap will typically be associated with a positive output gap, setting in motion inflationary forces—higher demand leads to higher prices.

The main policy implication of this observation is that policymakers concerned with maintaining output close to its potential level should set short-term nominal interest rates—the policy instrument of most central banks—in order to minimize the RIR gap. In the absence of a trade-off between stabilizing inflation and output, this simple policy prescription would also completely stabilize inflation. In practice, however, there may well be a trade-off between the two objectives of output and inflation stabilization.<sup>2</sup> Nonetheless, the equilibrium RIR constitutes a natural benchmark for the conduct of monetary policy, and the RIR gap can be viewed as providing some indication of the stance of monetary policy (Neiss and Nelson, 2003).

While the equilibrium RIR is theoretically appealing, its use in guiding monetary policy decisions faces at least two major hurdles. First and foremost, the equilibrium RIR is not directly observable in the data, limiting its usefulness as a target for monetary policy in practice.<sup>3</sup> Moreover, rather than being constant, the

*Alejandro Justiniano is a senior economist in the Economic Research Department at the Federal Reserve Bank of Chicago. Giorgio E. Primiceri is an assistant professor in the Department of Economics at Northwestern University. The authors are grateful to Anna Paulson, Richard Porter, Spencer Krane, and seminar participants at the Federal Reserve Bank of Chicago for helpful comments.*



























