

The natural rate of interest: Estimates for the UK

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There has recently been an increased attention to the natural rate

- As Hummel (2017) has said, “only since the financial crisis, with the continuing persistence of low interest rates, have mainstream monetary economists started taking seriously the fact that the equilibrium real rate can change”
- And as Wieland and Wolters (2017) document, the concept - and conventional methods of estimation - have wide policy influence:
 - “The Laubach/Williams methodology demonstrates a very substantial and continuing decline in the (equilibrium) real rate of interest” L. Summers, 2014
 - “the low natural rate [as per L-W] is as solid a result as anything in real time can be” P. Krugman, 2015, NYT
 - “Under assumptions that I consider more realistic under present circumstances, the Taylor rule calls for the federal funds rate to be close to zero” J. Yellen, 2015

Hummel, J.R., (2017) “Central bank control over interest rates” Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA.
Wieland, W., and Wolters, M., (2017) “R-Star: The long-run equilibrium rate has not declined by much” [presentation at 1st Research Conference of the Macroeconomic Modelling and Model Comparison Network (MMCN), Goethe University Frankfurt [https://www.imfs-frankfurt.de/fileadmin/user_upload/Events_2017/MMCN_Conference/Presentations/Wolters_presentation.pdf]]

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Contemporary economists care about the natural rate due to Woodford, not Wicksell

Three views of the natural rate

Fundamentalists	Sceptics	Pragmatists
<ul style="list-style-type: none"> Treat the natural rate as having fundamental significance in understanding economic coordination Follow closely the Wicksellian legacy Tend to be less formally inclined In an Austrian framework r^* is the price at which present goods trade for future goods Policy goal: an intertemporally sustainable path 	<ul style="list-style-type: none"> Keynes argued that there is no natural rate Lots of equilibrium interest rates (the market is segmented) Note that Friedman (1968) introduced the concept of a "natural rate of unemployment" to mimic the natural rate of interest Natural as in non-monetary Some argue that there is no "natural" rate of unemployment, rather several equilibrium real wages for each separate labour market 	<ul style="list-style-type: none"> View the natural rate as an input to resolving more important issues (e.g. through a Taylor rule) Follow Woodford In a Keynesian framework r^* is where the IS curve hits Y^* Policy goal: price stability

Summary

		Can we measure it?	
		Yes	No
Does it matter?	Yes	Pragmatists	Fundamentalists
	No		Sceptics

Irony: ABC requires an implicit claim about the natural rate

What affects the natural rate?

- Do consumers want to save?
 - Time preference (i.e. the discount rate, risk aversion)
 - Expectations of future income streams
 - Expected future wealth
- Do firms want to invest?
 - Return on new capital (i.e. marginal product of capital)

Other drivers:

- Technology
- Productivity growth
- Demographics
- Global economic growth

See Wessel, D., and Olson, P., "The Hutchins Center Explains: the Natural Rate of Interest" Brookings, October 19th 2015

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Kaleidic estimate

- Following Beckworth and Selgin (2010), the following chart shows estimates of the natural rate from 1998-2018.*
- Their method is based on a Ramsey growth model that says that the neutral rate of interest is a function of productivity growth, population growth, and time preference. For simplicity, they focus on the component that is likely to be most volatile - productivity. Their equation for their estimate of the neutral rate is as follows:

$$r_t^n = r^n + (g_t^e - g)$$

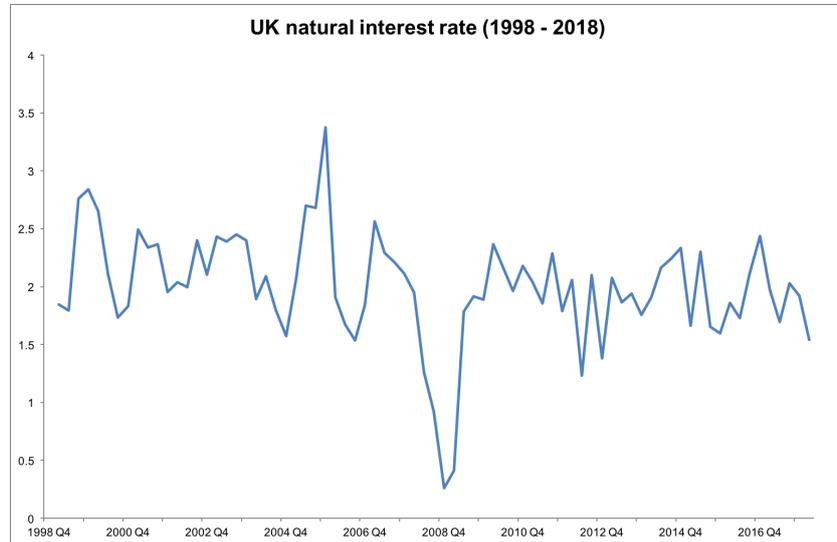
- In other words, the neutral rate today is equal to the long run steady real interest rate, plus the difference between expected Total Factor Productivity Growth, and the long run average TFP growth rate.
- Where expected TFP using the following approximation of an exponentially weighted moving average:

$$g_t^e = \lambda(g_t) + (1 - \lambda)(g_{t-1}^e)$$

Parameters:

- $r^n = 2\%$
- $\lambda = 0.7\%$
- $g = 0.2$ (the average TFP over the range of the data)
- A spreadsheet with full workings is available at <http://www.kaleidic.org/natural-rate>

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Source: Kaleidic Economics
September 2018

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Observations

- The median real natural rate up to and including 2008:2 was 2.11% and has been 1.9% since then
- The natural rate peaked at 3.4% in 2005:4 and fell to 0.23% in 2008:4
- It has been between 1.4% and 2.4% since 2009

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Discussion points

1. Population changes in
 - An increase in working age population should increase our estimate.
2. I used quarter on quarter growth rates because they lead to less volatile results but Beckworth and Selgin use year on year rates
3. Which Y^* ?
 - Why final goods and not Gross Output?
 - Global Y^* or domestic Y^*
4. This estimate is a real rate, so shouldn't be compared to a nominal policy rate without correcting the latter for inflation. But which P ?
 - GDP deflator?
 - Inflation target?
 - Inflation expectations?
5. The Bank of England's Bank rate isn't the same thing as the Federal funds rate, however, so it might be better to compare the estimate of the natural rate with an overnight interbank measure for the UK, rather than the policy rate

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Monetary policy stance

- Use GDP deflator to create a nominal natural rate
- If we compare this nominal rate to the actual short-term nominal interest rate (in particular the “Quarterly average Sterling overnight index average (SONIA) lending rate”) we can establish a gauge of whether policy is too loose or too tight.

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