Economic Commentary

Structural factors determine interest rates in the longer run

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Structural factors determine interest rates in the longer run[1]

Prior to the upturn in inflation and interest rates in recent years, real interest rates in Sweden and abroad had been showing a falling trend for several decades. There is relatively broad consensus that a large part of the downturn is due to changes in several structural factors, which do not appear to have changed significantly in recent years. How these factors and their impact on interest rates will develop going forward is uncertain. There are both arguments in favour of a higher interest rate in the long run and arguments in favour of a lower interest rate in the long run. Regardless of the direction, however, the expected changes are probably relatively small in relation to the trend decline that has already happened.

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The real interest rate on low-risk assets has shown a declining trend

It is largely the real interest rate that is relevant for various economic decisions. The real interest rate on a loan or savings can be calculated as the nominal interest rate adjusted for the average, expected inflation rate during the period a loan or savings run. Thus, the real interest rate is a measure of the purchasing power a borrower must give up to take a loan, or the real return, that is to say how much more goods and services savings could pay for in the future.

During 2022, many central banks began to raise their policy rates to bring down inflation, which was rising rapidly. Before the most recent rise in inflation and interest rates, the real interest rate on low-risk assets, such as government bonds and mortgages, had been steadily falling over several decades. The decline has been common for almost all developed countries, including Sweden (see figure 1). But it is also expected that the Swedish real interest rate will be affected by developments abroad, as Sweden is a small open economy with strong international trade and financial links.

[1] Economic Commentaries are brief analyses of issues with relevance for the Riksbank. They may be written by individual members of the Executive Board or by employees at the Riksbank. Employees' commentaries are approved by their head of department, while Executive Board members are themselves responsible for the content of the commentaries they write.

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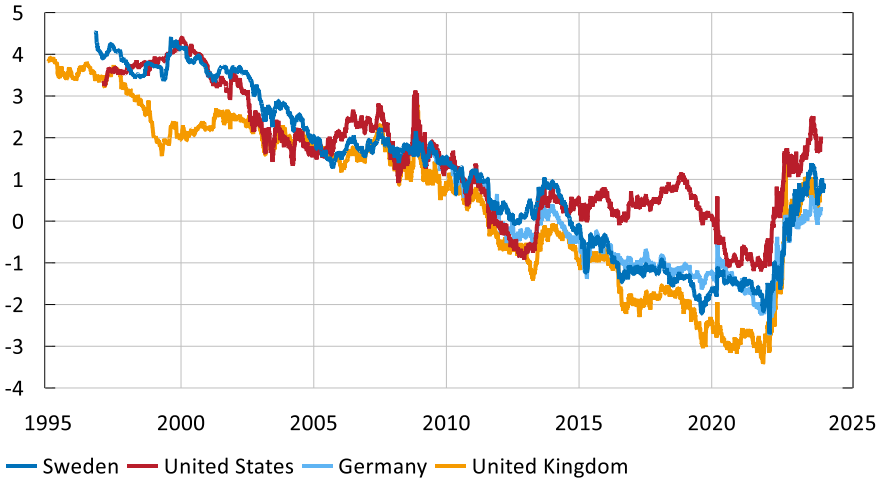
There is relatively broad consensus that much of the decline in global real interest rates is due to structural changes. The real interest rate is the price of savings that balances the supply of savings and demand for investment. In research one therefore often assumes that a lasting downturn in the real interest rate is either due to the supply (savings) for a given rate having increased, or to the demand (willingness to invest) for a given rate having declined.[3] Several different factors have been highlighted to explain why savings have shown a lasting increase in recent decades, and willingness to invest has declined.[4] These include demographic changes, lower productivity growth, increased inequality in incomes, a high level of saving in China and a scarcity of safe assets.[5]

Figure 1. Real government bond yields, 10-year maturity

Per cent



Note. Government bond yields for Sweden are estimated using the Nelson-Siegel method.

Sources: Bloomberg, Bank of England and the Riksbank.

The neutral interest rate varies over time

Economic theory differentiates between the real interest rate that savers and borrowers actually meet and the real interest rate that is compatible with a normal resource utilisation. The latter is often referred to as the "neutral" interest rate.[6] The difference

[3] The starting point here, and in most of all economic research, is that the real interest rate is in the longer run determined by the supply of and demand for saved funds. However, in recent years a number of studies have questioned this explanatory model, which illustrates the degree of uncertainty regarding this subject, see for instance Borio et al. (2022).

[4] For a detailed review of various explanatory factors, see Lundvall (2023).

[5] Recently, the research has focused on a complementary type of explanation that concerns the composition of households' and investors' different types of asset. One example concerns the average household's attitude to risk, which can be affected by demographic changes if more households are approaching retirement and want to reduce the risk in their savings. A higher risk aversion can in equilibrium lead to the real interest rate on loans falling, at the same time as the difference in return between risky and risk-free assets rises, see Kopecky and Taylor (2022).

[6] The concept of the neutral interest rate goes back a long way in economic history. Knut Wicksell introduced the concept "natural interest rate" as early as the late 19th century, and this concept is similar to what we are discussing here.

between the actual real interest rate and the neutral interest rate says something about the stance of monetary policy, namely whether it is expansionary or contractionary. However, a complicating factor is that the neutral interest rate, like potential GDP for instance, cannot be observed directly but must be estimated using statistical methods and on the basis of assumptions of how the economy functions. The assessment of the neutral interest rate is therefore very uncertain, which is also seen in that there is a spread in the estimates of the rate.

A further source of uncertainty is the fact that the neutral interest rate varies over time. It is affected by both global and fairly sluggish structural factors, such as demographics, which affect the equilibrium between savings and investment, and also short-term factors such as temporary economic shocks, for instance from fiscal policy or temporary changes in productivity, which can cause the neutral interest rate to rise or fall over a number of years.[7] One way to illustrate this is to divide the neutral interest rate into two parts:

Neutral interest rate = trend component + short-term component

This Economic Commentary discusses the development of various driving forces that affect interest rates in the longer run, when resource utilisation is assumed to be normal and the effects of all short-term economic shocks are assumed to have waned.[8] The focus is thus on the trend component of the neutral interest rate.

Empirical estimates and calculations do not indicate any clear change in the trend in the neutral interest rate in recent years

As the neutral interest rate cannot be observed directly, it needs to be calculated or estimated using models and statistical methods. One approach uses normal macroeconomic models that estimate the neutral interest rate indirectly, in the sense that they do not use data for the structural factors that affect the interest rate's trend in the estimate.[9] Estimates using such models show that the neutral interest rate has fallen steadily in recent decades. One limitation of this approach is that it cannot distinguish the trend component from the short-term component, and it often leaves a large part of the variation in the neutral interest rate unexplained. Moreover, it is assumed in many of these models that the neutral interest rate follows a so-called ran-

[7] For a more detailed discussion, see Platzer et al. (2022) and Bank of England (2018).

[8] In practice, however, the economy is constantly affected by new, short-term economic shocks, which means that both the actual interest rate and the neutral interest rate normally deviate from the trend component. When we look ahead, however, we have no reason to believe that a particular economic shock will occur – economic shocks are by definition unpredictable – which is thus assumed to lead us in the right direction on average over time.

[9] Examples of such models are Holston-Laubach-Williams and DSGE-models such as the Riksbank's general equilibrium model (MAJA), see Holston et al. (2017) and Corbo V. and I. Strid (2020) for a description.

dom walk, which means that the level of the neutral interest rate going forward is assumed to be the same as it is now. They therefore cannot help us understand why the interest rate could rise or fall in the longer run.

In recent years, a number of studies have been published with models which instead have a more direct approach and include data for many of the structural factors that are assumed to affect the interest-rate trend.[10] Even then, the neutral interest rate appears to have shown a falling trend in recent decades.[11] The downturn is explained by, for instance, increased demand for safe assets, demographic changes and lower productivity. Such estimates and calculations of the trend in the neutral interest rate for a number of developed economies indicate that it has been in the interval –0.6 to 1.3 per cent in recent years, but there is considerable uncertainty.[12] Overall, nor do they indicate any clear change in recent years either.[13] Some factors such as higher public debt and an increased supply of government bonds may have raised it, but demographics have continued to work in the opposite direction.

Structural changes are expected to affect interest rates in different directions going forward

For a small, open economy like Sweden, the trends in the neutral interest rate are almost exclusively determined by structural changes abroad.[14] However, the uncertainty over their development in the future is considerable.

The conclusion that global demographic changes[15] have driven some of the downward trend in the real interest rate has relatively strong empirical support, and demographic changes are also comparatively simple to predict, given that the current population structure is known. In many countries, ageing has reached a point where an increasingly large share of the population is retiring and may need to reduce their savings. But at the same time, population growth is continuing to slow down globally,

[10] See Platzer and Peruffo (2022) and IMF (2023), Ferreira and Shousha (2023) and Ferreira and Davin (2022) and also Cesa-Bianchi et al. (2023).

[11] In a larger compilation of various types of estimate for the global neutral interest rate, the downturn is estimated from 1990 and 2015 (or later) to between 1.5–3.2 percentage points, see Lundvall (2023).

[12] Estimates in real terms for Canada, the euro area, France, Germany, Japan, the United Kingdom, and the United States.

[13] This is also an assessment shared by others, see Raffo and Horwich (2024), Williams (2024) as well as Brand et al. (2024). However, there are also other perspectives, see for instance Schnabel (2024).

[14] Even if the trend over time is global, there are country-specific level differences in the neutral interest rate, as well as between regions with widespread trade and large capital flows, such as the euro area and the United States. One explanation is the existence of various frictions, such as more information about, and a greater propensity to invest in, their own country, as well as other differences in the fundamental factors that affect investments and savings and that are not eliminated by international capital flows, such as differences in productivity.

[15] These include slower population/labour force growth, a shift in the composition of the population towards a larger share in age groups that save more, at the same time as we are living longer and thus need to save for a longer period of retirement.

which reduces the need for investment. Demographic changes can on the whole be assumed to continue putting downward pressure on global interest rates.[16]

When more of the population are old, however, the need for and cost of medical care and elderly care services will increase.[17] This is also one reason why public debt in the United States and the supply of US government bonds are expected to increase.[18] This will in turn result in an increase in the supply of safe and liquid assets, which can be assumed to raise the neutral interest rate.

Other structural changes are more difficult to predict. The development of artificial intelligence (AI) could mean that we are now in a period of higher productivity and investment growth, which would contribute to a higher neutral interest rate. But it is too early to draw such a conclusion. The increased geo-economic fragmentation, with larger distances between for instance the United States and China, could indicate reduced pressure on interest rates in developed economies from China's large savings. If the "benefit" of holding certain particularly safe assets such as government bonds were to become lower, for instance, through an amended regulatory framework for certain financial institutions, the neutral interest rate could also rise.[19]

There is reason to believe that the climate transition will also affect the neutral interest rate, but there is uncertainty about both direction and magnitude. On the one hand, the climate transition will require considerable investments in several countries and regions, which can lead to higher interest rates. Although investment needs at global level are relatively limited.[20] And on the other hand, higher taxes on fossil energy sources can lead to poorer profitability in various investment projects, which can push interest rates down.[21] Moreover, the climate changes mean that future prospects will become more uncertain and that precautionary saving may increase, which would also have a subduing effect on the neutral interest rate.[22]

Overall, there is no clear answer as to how various structural factors will affect the neutral interest rate. However, a common factor of the projections made is that the changes expected are relatively small in relation to the declining trend that has occurred since the 1980s, regardless of whether the factors affect the real interest rate on the upside or downside.

[16] See Auclert et al. (2021).

[17] See discussion in Goodhart and Pradhan (2020).

[18] See CBO (2023).

[19] Out of a number of constructed scenarios, it is primarily this scenario that affects the development of the neutral interest rate going forward, see IMF (2023).

[20] See Aligishiev et al. (2022).

[21] See IMF (2023).

[22] See, for example, Jonsson and Bylund (2020).

Market-based measures have risen somewhat in recent years

Another common way of obtaining an idea of the long-term interest-rate level is to use forward-looking information from financial markets. Both Prospera's survey responses about the policy rate five years ahead and pricing for a nominal five-year government bond have shown a clear downward shift over a longer period of time (see figure 2).[23] However, in recent years they have risen somewhat and are now between 2 and 3 per cent.

Despite this measure intending to measure the policy rate and short-term interest rates in the longer run, they have varied substantially in recent years. Expectations and pricing fell clearly in 2019 (prior to the coronavirus crisis), but have shifted upwards again since 2021. The large downward shift in 2019 was driven by dampened expectations of economic activity and inflation in the United States and the euro area (that interest rates would be low for longer), which then showed a clear turnaround when inflation and interest rates rose. However, during this period the global slow-moving structural factors that affect the trend component of the neutral interest rate do not appear to have moved to the same extent. All in all, this indicates that these market measurements, despite being long-term, during some periods do not necessarily reflect only the development of the structural factors that determine the interest rate in the longer term.

[23] As a long-term bond normal includes more risk compared with a short-term loan, it is reasonable to assume that this measure, in addition to an expectation of the policy rate, also includes a certain positive term premium.

Figure 2. Market pricing and expectations 5–10 years ahead

Per cent

Note. Money market participants' expectations, mean value. Expectations of the real policy rate calculated as expectations of the policy rate minus inflation expectations 5 years ahead.

Sources: TNS SIFO Prospera, Macrobond and the Riksbank.

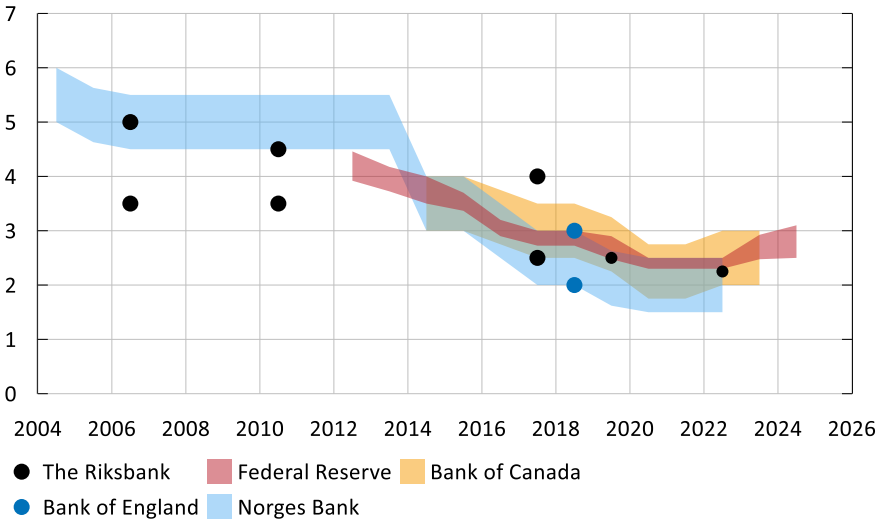
Central banks have gradually adjusted down their assessments of long-term policy rates

Many central banks publish with varying frequencies an assessment of the interest rate in the long run, or an interval for it (see figure 3). The assessments the Riksbank has previously published have applied to the policy rate's nominal level that can be divided up into a normal level for inflation (2 per cent) and an assessment of the level of the real policy rate in the longer run (5-10 years).

To conduct effective monetary policy, central banks need to adjust to the trends in the global real interest rate that are beyond their control. Over time, as global rates have fallen, many central banks have therefore shifted down their assessments of their own economy's future policy rate. The Riksbank's most recently published assessment of an interval for the interest rate five to ten years ahead is from 2017, and amounted to 2.5-4 per cent. This was a downward adjustment from the previously published interval from 2010, as the available information at the time pointed to the neutral interest rate having fallen further. Compared with 2017, several other central banks have adjusted down their assessments of the long-term level of the policy rate and the Riksbank has also communicated in 2019 and 2022 an assessment of a lower level, which is in line with the development of the global slow-moving structural factors that affect the trend component of the neutral interest rate. Since 2022, however, both the US and Canadian central bank assessments have moved slightly upwards.

The future development of interest rates is uncertain. Structural factors can both drive up and hold back interest rates in the long term. All in all, however, these factors are expected to have relatively small effects on interest rates for some time to come.

Figure 3. Central bank assessments of nominal policy rates in the long term
Per cent



Note. See the footnote for more information.[24]

Sources: **Federal Reserve, Bank of England, Bank of Canada, Norges Bank and the Riksbank.**

[24] Federal Reserve refers to the annual average of FOMC members' long-term assessment of the policy rate excluding the three highest and three lowest assessments (https://fred.stlouisfed.org/), Bank of England (2018), Mendes (2014), Bank of Canada (2017), Carter et al. (2019), Brouillette et al. (2021), Champagne et al. (2023), Sveriges Riksbank (2006), Sveriges Riksbank (2010), Sveriges Riksbank (2017), Sveriges Riksbank (2019) and Sveriges Riksbank (2022) as well as Norges Bank (2023). Norges Bank presents an assessment of the long-term interest rate in real terms. Norges Bank changed its inflation target from 2.5 per cent to 2 per cent in 2018. However, for comparability, the series in the chart has been adjusted upwards by two percentage points for the whole period. The European Central Bank is missing from this compilation as they do not normally communicate an assessment of the policy rate in the long term.

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