ARTICLE – The Riksbank's experiences of a negative repo rate

In February 2015, the Riksbank cut its repo rate below zero for the first time ever. Inflation had then been below the target for a long time and there was a risk that inflation expectations would become entrenched at low levels. In February 2016, the repo rate was cut further to –0.5 per cent. Inflation gradually began to rise and eventually approached 2 per cent again. In December 2018, the repo rate was raised to −0.25 per cent and in December 2019 to zero per cent. The Riksbank was thus the first of the central banks with negative policy rates to raise the rate back to zero. There may therefore be reason to summarise the Riksbank's experiences so far of monetary policy with a negative policy rate. The Riksbank's assessment is that the negative policy rate has had an expansionary effect on the economy and contributed to inflation being close to the target in recent years.

Why a negative repo rate?

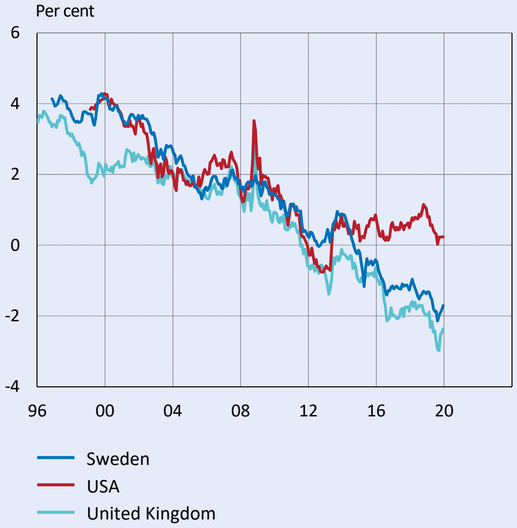
Since the beginning of 2015, the Riksbank has conducted a very expansionary monetary policy, with a negative repo rate and large purchases of government bonds. The Executive Board assessed that this expansionary monetary policy was necessary to bring inflation back to 2 per cent and in this way maintain confidence in the inflation target. The advantages of having an inflation target and why it is a good idea to have a target of 2 per cent are discussed in more detail in the section "The purpose of the inflation target" in Chapter 4.

An important explanation for the repo rate needing to be negative is that interest rates in general, both in Sweden and abroad have become historically low. This is in turn due to structural factors such as demographic developments and trends in productivity that have led to real interest rates in the world falling in recent decades (see Figure 2:13).[6] The central banks are not able to steer this development.

How this has contributed to the need for a negative repo rate is explained schematically in Figure 2:14.

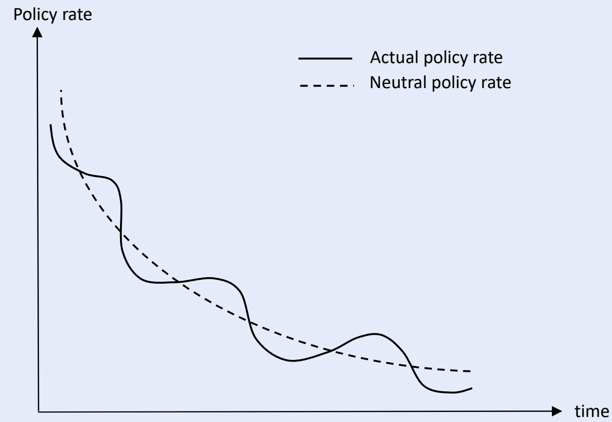
One consequence of the low interest rates is that the level where central banks' policy rates are 'neutral' – that is, neither expansionary nor contractionary – has fallen over time. In Figure 2:14 the neutral policy rate is represented by the broken line.

Figure 2:13. Real government bond yields, 10-year maturity



Sources: National central banks and the Riksbank

Figure 2:14. The average policy rate has fallen



Source: The Riksbank

When central banks conduct monetary policy via the policy rate, they change it in the way described in the solid line. An interest rate that is lower than the neutral one stimulates demand and inflation, while an interest rate that is higher than the neural one has the opposite effect. When the neutral interest rate is very low, the central bank's policy rate

[6] One of the reasons why the *nominal* interest rates around the world have fallen and are now lower than they were a few decades ago, is that inflation has fallen due, for instance, to the introduction of inflation targeting. The nominal interest rate includes compensation for inflation.

may need to be negative to obtain a sufficiently expansionary effect. The reason the Riksbank's repo rate has been negative is thus partly because interest rate in general are very low, and partly because the Riksbank needed to conduct a very expansionary policy to maintain confidence in the inflation target.

The negative repo rate has had an expansionary effect

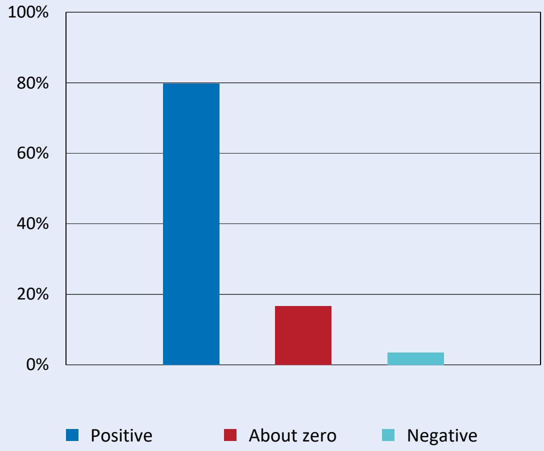
As a negative repo rate had not been used before in Sweden, the decision to introduce it had to be based on a thorough analysis.[7] Some of the analysis was published in autumn 2015 in the form of an Economic Commentary.[8] This also analysed whether a negative repo rate could be expected to have less effect on other interest rates in the economy than a positive one. To "test the waters" in this new environment, the Riksbank cut the repo rate in smaller steps than normal.

One fear raised by some was that rate cuts below zero would not have any effect, but perhaps even be counterproductive.[9] An empirical study by the Riksbank shows, however, that the negative repo rate has had a strong and immediate impact on Swedish money market rates and lending rates to companies, although the impact on lending rates to households was weaker and slower.[10] The study assesses that most of the monetary policy channels, such as market rates and the exchange rate, have functioned more or less as usual, even with a negative policy rate. The conclusion is that the negative repo rate has contributed to making monetary policy more expansionary, although the channel via bank loans to households may have been more subdued than normal. However, it is also pointed out that there is a possibility that the impact could gradually weaken if the repo rate were cut lower than –0.5 per cent.

Another type of information comes from the Riksbank's Business Survey. In November 2019, the companies were asked how interest rates over the past five years had affected their business.[11] During this period, the repo rate was negative almost all of the time.

Four out of five companies considered that the net effect of the low interest rates over the five-year period has been positive, primarily because the low interest rates had helped to sustain general demand in the economy (see Figure 2:14). Just under a fifth considered that the effect had been approximately zero, while a small share considered that the low interest rates had had a negative effect on their business.

Figure 2:15. Question in the Riksbank's business survey
Regarding the low interest rates over the past five years: What is your assessment of the net effect on your business? Per cent



Note. Weighted share of companies choosing each response alternative.
Source: The Riksbank's Business survey

International experiences paint a similar picture

Central banks in several other economies have also introduced negative policy rates, for instance in Denmark, Switzerland, Japan and within the euro area. A report from the Committee on the Global Financial System (CGFS) at the Bank for international Settlements (BIS) has compiled the central banks' experiences of unconventional monetary policy.[12] An overall conclusion is that the negative policy rate has had an impact. They also note, as was the case in Sweden, that the monetary policy transmission mechanism has functioned roughly as normal, with the exception of deposit rates to households in many cases not falling below zero.[13]

Altavilla et al have studied how negative policy rates affect banks and companies within the euro area.[14] They find that as long as the banks are healthy and function well, a negative policy rate will stimulate economic activity.[15] Brunnermeier and Koby, who also study the euro area, try to estimate at which policy rate further cuts will no longer stimulate lending, but instead have a contractionary effect. They find that this level is around –1 per cent.[16]

All in all, the practical experiences so far in Sweden and other countries show that monetary policy functions even when the policy rate is negative, at least at the relatively moderate negative levels that so far have been implemented.

[7] A negative policy rate had immediately prior to this been introduced in the euro area, Denmark and Switzerland. As early as July 2009, the banks' deposit rate with the Riksbank, the floor in the interest rate corridor, was negative during a period of time when the Riksbank cut the repo rate to 0.25 per cent. However, it was not until February 2015 that the repo rate was cut below zero.
[8] J. Alsterlind, H. Armelius, D. Forsman, B. Jönsson, and A-L. Wretman, "How far can the repo rate be cut?", Economic Commentaries No. 11, Sveriges Riksbank, 2015.
[9] See, for instance, G.B. Eggertsson, R. E. Juelsrud, L. H. Summers and E. Gezt Wold, "Negative Nominal Interest Rates and the Bank Lending Channel", NBER Working Paper No, 25416, January 2019. They construct a model that they calibrate using Swedish data. They claim that a repo rate of –0.50 no longer reduces the lending rate, but increases it.
[10] H. Erikson and D. Vestin, "Pass-through at Mildly Negative Policy Rates: The Swedish Case", Staff Memo January 2019, Sveriges Riksbank.
[11] The Riksbank's Business Survey November 2019.
[12] "Unconventional Monetary Policy Tools: A Cross-Country Analysis", CGFS Papers No. 63, October 2019, Bank for International Settlements. Unconventional monetary policy means, in addition to a negative policy rate, for instance purchases of various assets and what is known as forward guidance.
[13] See also "Negative Interest Rate Policies—Initial Experiences and Assessments", IMF Policy Paper, August 2017, International Monetary Fund for an earlier review of international experiences.
[14] C. Altavilla, L. Burlon, M. Gianetti and S. Holton, "Is there a zero lower bound? The effects of negative policy rates on banks and firms", ECB Working Paper Series No. 2289, 2019.
[15] See also M. Rostagno, C. Altavilla, G. Carboni, W. Lemke, R. Motto, A. Saint Guilhem and J. Yiangou, "A tale of two decades: the ECB's monetary policy at 20, ECB Working Paper Series, No. 2346, December 2019, for a review of the euro area's experiences of unconventional monetary policy in general.
[16] M.K. Brunnermeier and Y. Koby, "The Reversal Interest Rate", NBER Working Paper 25406, December 2018. The mechanism in brief means that the banks cease lending money in consideration of their own financial situation.

Side effects – of a *negative* interest rate or *low* interest rate?

The Riksbank's analysis from 2015 also emphasised that a negative interest rate could have undesired side-effects. Here it is important to distinguish between the effects of the repo rate being *low* and monetary policy being expansionary in general, and the repo rate being *negative*. A negative policy rate is of course an especially low interest rate, but there are nevertheless reasons for distinguishing between low and negative rates. The extent to which, for instance, the krona depreciation in recent years is due to monetary policy concerns monetary policy being expansionary, rather than the repo rate being negative, per se. That the exchange rate is considered as too weak is thus not an argument against a *negative* policy rate.

Negative repo rate has not led to large cash withdrawals

One side-effect that specifically concerns the negative interest rate is that if deposit rates become sufficiently negative for large groups, especially households, they may decide to withdraw their savings from the banks and hold them in cash instead. The reason is that the return on cash is zero, so it would then be higher than the negative interest rate on deposits. If such a situation were to arise, it would mean that the central bank can no longer use the policy rate to stimulate demand.

Large withdrawals of cash could also lead to a liquidity risk for the banks in that parts of their financing disappear and must be replaced by wholesale funding. If the outward flows become large or very sudden, the banks might have difficulty coping with them.

However, during the period with a negative repo rate, households in Sweden have not experience a negative interest rate on their bank deposits. The problem of extensive cash withdrawals therefore never arose. It is possible that the risk of this is not as great in Sweden as in many other countries. As Swedes have largely abandoned cash in favour of other payment methods, such as charge cards and Swish (mobile payment app), the cost of holding cash is probably perceived as higher. It is therefore conceivable that it would take longer for Swedish households to react to a negative deposit rate than households in many other countries. It is also worth noting that companies and municipalities have had negative deposit rates with the banks, but have not withdrawn large amounts of cash.

... or to weaker banks

Another effect that specifically concerns a negative interest rate is if the banks choose *not* to allow deposit rates to go below zero, their profitability will decline. This is because their interest income declines when interest rates fall, while the cost of financing through deposits does not fall to the same extent. The problem of a decline in profitability is that, for instance, it limits the banks' resilience to future losses and thus can contribute to financial instability, and it can also lead to a reduction in their credit granting. However, the major Swedish banks have had a good level of profitability throughout the period with a negative repo rate. One reason has been the high demand for mortgages, which has generated substantial profits.

The report from CGFS at the BIS on international experiences also draws the conclusion that this type of side-effect has been manageable so far. It concludes that the banks' mortgage margins have fallen, but this is linked to the low interest rates and not specifically to negative interest rates. There has not been any extensive hoarding of cash abroad, which in turn is linked to deposit rates not falling below zero for very many groups.

Longer period with a negative interest rate can change incentives

It should be pointed out that the experiences both with regard to households' deposit rates and the banks' profitability of course refer to the period so far with a negative interest rate. In a hypothetical situation where the interest rate would be negative for a longer period of time, or be much more negative, it is possible that the conditions and incentives would change. For instance, several banks in Denmark and Germany have now introduced negative deposit rates for households. With regard to Sweden, one must also bear in mind that the competition on the Swedish mortgage market has increased in recent years, in that more participants have entered the market.[17] This could mean that the banks' profitability declines going forward, which in turn could affect their incentives to allow households' deposit rates to become negative.

Negative interest rate can be perceived as unnatural

Another potential problem with a negative interest rate is that it can be perceived as unnatural and difficult to relate to. This is partly because a negative interest rate is perceived as abnormal in the good economic situation we have had. But there also appears to be a more general scepticism towards negative interest rates as such.

A negative nominal rate is a new phenomenon in historical terms, and it is not especially remarkable that it is perceived as abnormal. On the other hand, it has not been unusual for the *real* return on, for instance, bank accounts, that is the return adjusted for inflation, periodically being negative, even when the nominal interest rate has been positive. As it is the real yield that determines people's purchasing power and it is usually purchasing power that one

[17] See N. Engström, "New challengers on the mortgage market – Increased competition and possible pressure on interest rates", Economic Commentaries No. 1 2020, Sveriges Riksbank.

is concerned about, the view that a negative nominal rate is more special than a negative real rate can to some extent be regarded as an example of a so-called “money illusion”.[18]

One sign that a negative interest rate is perceived as unnatural is that arguments are often put forward in the Riksbank’s Business Survey that a negative interest rate for various reasons “intuitively feels wrong”, despite the economic effects on the whole being regarded as positive. It is possible that the main complications with negative rates are not so much a question of purely economic aspects, but rather of what is feasible according to social conventions and possible to create understanding for.

... but could become more common

Global real interest rates will probably remain low for the foreseeable future. It is therefore possible that policy rates below zero will be relatively common in coming decades. One therefore cannot rule out the possibility of economic agents’ views of what is normal also gradually changing.

It is however important that even if the agents were to begin to regard it as more normal that nominal interest rates now and then are negative, they do not begin to perceive an *inflation rate* significantly below 2 per cent as normal. If this were the case, and inflation and inflation expectations became entrenched at a very low level, monetary policy would become less effective and the policy rate would be negative even more often.

Side-effects of *expansionary policy* are unavoidable

Other possible side-effects essentially concern the fact that monetary policy has been expansionary, rather than that the repo rate has been negative. For example, household debts have increased and many asset prices have risen, which may have led to wealth gaps increasing.

The fact that an expansionary monetary policy has effects on asset prices and debts is a part of the monetary policy transmission mechanism, in roughly the same way as monetary policy affects the krona exchange rate via the exchange rate channel.

When it comes to the distributional effects of monetary policy, one must of course also take into account the positive effects of an expansionary monetary policy contributing to higher employment and for instance higher equity prices benefiting many through the widespread saving in pension funds and mutual funds.

One can of course make the assessment that the negative effects have been so great that the Riksbank should not have conducted such an expansionary monetary policy. In practice, this means that the Riksbank should not have tried to maintain confidence in the inflation target, but should instead have focussed on other factors that are not the statutory objectives of monetary policy.[19]

Strong political support for the inflation target

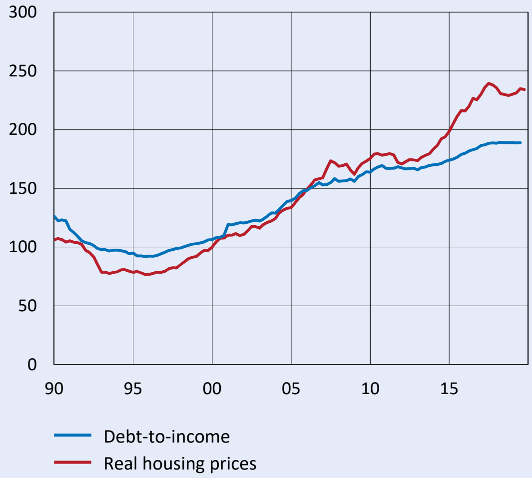
As observed in Chapter 4, there is broad political support for the Riksbank’s main task being to maintain confidence in the inflation target of 2 per cent. There are also good economic reasons for the Riksbank having this task. Nor does the Riksbank differ in this respect, but has largely the same framework as all other central banks in countries with floating exchange rates.

In the economic-political role allocation adopted in Sweden, this is the task allocated to the Riksbank. Finansinspektionen has been given the responsibility for macroprudential policy and is to, among other things, prevent the build-up of excessive debt among households. Income and wealth distribution in society is part of the Government's remit.

Low real interest rates important explanation for high debts and housing prices

As noted above, the general interest rates have fallen around the world. This has also had effects other than central bank policy rates in a neutral position having to follow these rates downwards, as in Figure 2:14. For example, it is one explanation why housing prices and household debt in many countries, including Sweden, have increased in parallel and almost constantly for more than twenty years (see Figure 2:16). During this period, monetary policy has been both expansionary and contractionary, that is, in terms of Figure 2:14, the repo rate have been both below and above its neutral position.

Figure 2:16. Households' debt-to-income ratio and real housing prices
Per cent and index, 2000 Q1 = 100



Note. The debt-to-income ratio refers to the percentage of households’ debts in relation to their annual disposable incomes. Real house prices refer to the property index (single-family dwellings) deflated using the CPIF.

Sources: Statistics Sweden and the Riksbank

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[18] Money illusion is a tendency to think in nominal terms instead of real terms, and thereby disregard the fact that inflation affects purchasing power.

[19] Alternatively, one can hypothesise that confidence could have been maintained even if the policy has been less expansionary than it was. This is of course difficult to either reject or confirm in formal terms. But given that inflation was below 1 per cent at the beginning of 2015 and long-term inflation expectations were at record-low levels, and that the policy conducted has had an effect, it is reasonable to assume that it would have been difficult to maintain confidence in the target with a less expansionary policy.

The expansionary monetary policy in recent years has contributed to pushing up asset prices and debts further. But the trend fall in the real interest rate, in combination with structural problems on the housing market, is probably a more important contributory factor for why housing prices and debt are on the level they are today. However, developments on the housing market have been calmer since 2017 and the increase in household debt has also slowed in recent years, precisely because structural factors have changed while monetary policy has remained expansionary.

Summary

The Riksbank's assessment is that the negative policy rate has had an expansionary effect and contributed to inflation being close to the target in recent years. The potential problems of a *negative* interest rate specifically – widespread cash withdrawals and weakened banks – have not materialised. International experiences also suggest that a negative interest rate is an effective measure.

The fact that the repo rate was increased to zero was not because of bad experiences of a policy rate lower than zero, but because the Riksbank made the assessment that the repo rate no longer needed to be negative. Cutting the repo rate below zero is a monetary policy measure that can be relevant also in the future.