

ARTICLE – The Riksbank’s development work

The Riksbank works constantly on improving its monetary policy analysis. A key issue to analyse in 2018 was the relationship between developments on the labour market and wage and price developments. As the Riksbank’s forecasts indicated a forthcoming repo rate increase, analyses of the possible consequences of such an increase for the economy were also published. Another issue, which the Riksbank has reiterated on many occasions, is the assessment of the krona’s development and its effects on inflation. The work on enhancing the inflation analysis also continued during the year. An issue that was analysed in particular was how different measures of underlying inflation forecast inflation, given that energy prices have had such a major impact on the development of inflation in recent years. The analysis of a possible e-krona included various feasible consequences for monetary policy, depending on how such an e-krona is designed.

The Riksbank works constantly on improving its monetary policy analysis and the impact of monetary policy on the economy. This work includes both the analysis of developments in the real and financial economy and the design of models that capture how the economy functions in a changing world.⁵⁰

In-depth analysis of the correlation between the labour market and wage and price developments

Despite falling unemployment and rising resource utilisation, wage and price growth has been subdued in recent years both internationally and in Sweden. In 2016 and 2017, the Riksbank had analysed feasible explanations to this development, and this work continued in 2018. One of the correlations analysed was between resource utilisation and inflation, referred to as the Phillips curve.⁵¹ This analysis found that the Riksbank’s forecasts should continue to be based on the fact that wage growth is affected by resource utilisation with a certain time lag, while taking into account the apparent weakening of the correlation. It was also pointed out that inflation is affected by several factors in addition to wage growth, including productivity growth, energy prices and the exchange rate. It is not possible therefore to automatically say in advance how monetary policy might change if wage increases turn out to be lower than forecast.

During the year, the Riksbank analysed the causes of the low wage growth in Sweden with the help of microdata on the individual level.⁵² One study analysed how a changed

composition of the labour force, towards a higher proportion of foreign-born persons and higher proportion of persons with post-secondary education, may have affected wage growth in Sweden over the last ten years. A larger proportion of highly educated persons in the labour force boosts wage growth, while the opposite is true regarding a higher proportion of foreign-born persons. In other words, the effects go in opposite directions and it was noted that they by and large cancel each other out. The conclusion was that the composition of the labour force seems in total to have had little effect on wage growth in Sweden in recent years.

Another study analysed the development of wage differentials between people who have switched jobs and people who have obtained work by having entered the labour force or moved into it from unemployment. It was shown that wage development is as a rule stronger for those who have switched jobs. It was also noted that this wage premium has not decreased in recent years in relation to developments during previous economic booms in Sweden and is hence does not explain the modest wage growth either.

How do future rate rises affect the economy?

An important issue to analyse during the year was how the economy might be affected by future repo rate rises.

An article in the Monetary Policy Report described how the cashflows and consumption of Swedish households might be affected by rising interest rates.⁵³ The fact that household debt has risen and that their mortgages have largely been

⁵⁰ Examples of this are “Reduced housing construction is subduing GDP growth”, article in Monetary Policy Report, February 2018 and L. Alexandersson “Liquidity premium in the Swedish inflation-indexed government bond market”, *Economic Review* No. 2, 2018:2.

⁵¹ See “The Phillips curve and monetary policy”, article in Monetary Policy Report, July 2018.

⁵² C. Flodberg “Has wage development been affected by changes in the composition of the group of employees?” No. *Economic Commentaries*, No. 1, 2018 and C. Flodberg, “Who switches jobs and is the wage premium for switching jobs cyclically normal?” *Economic Commentaries*, No. 10, 2018.

⁵³ “How are household cashflows and consumption affected by rising interest rates?” article in Monetary Policy Report, December 2018. This article was an update of the Riksbank’s more detailed analysis one year previously, see “How are households affected by rising interest rates?” article in Monetary Policy Report, December 2017 and P. Gustafsson, M. Hesselman and B. Lagerwall “How are household cashflows and consumption affected by higher interest rates?”, Staff Memo, December 2017.

taken out at a variable interest rate means that the effects of monetary policy on household consumption are greater than previously. The article notes that the increased interest-rate sensitivity of households has become a more important circumstance to consider in Swedish monetary policy. However, the Riksbank's repo rate path indicated that the rate would be increased at a slow pace, which suggested that the total effects on household cashflows would be limited. It was also noted that the Riksbank's monetary policy considerations are ultimately guided primarily by how the repo rate affects the entire macroeconomy and the prospects for inflation.

The Riksbank has investigated the legal options for collecting or accessing more detailed information about households' assets and debts as such statistics would make it possible to analyse the problems of household debt more effectively. However, the legal issues have yet to be settled.

One study analysed the effects of repo rate rises on financial variables.⁵⁴ It presented a general review of previous repo rate hike periods in Sweden, focusing on the effects on longer-term interest rates, the exchange rate and household mortgage rates. The differences between these periods and the current situation in Sweden was also discussed, in light of today's historically unique scenario with a negative repo rate. It was noted that the financial conditions have gradually become less expansionary and have been closely followed by both market rates and interest rates for households and companies during earlier periods of interest rate rises.

Analysis of the krona's impact on inflation and a new assessment of the krona's long-term level

Because of the relatively sharp depreciation in the krona at the beginning of the year, the Riksbank published analyses of the effects that movements in the krona exchange rate have on inflation.⁵⁵ A clear finding in these analyses was that the effects on inflation of a change in the krona exchange rate may depend on two factors: firstly the cause of the change, and secondly how permanent the change is expected to be. As the article shows, this makes it difficult overall to assess the effects.

The Riksbank's forecasts for the exchange rate is based on an assessment of the long-term level of the real exchange rate. The real krona exchange rate reflects the price level in Sweden in relation to abroad, measured in common currency, which is the same as the nominal exchange rate adjusted for the relationship between the price level in Sweden and abroad. An updated assessment of the interval for the long-term real trade-weighted krona exchange rate,

measured using the KIX krona index, was published in an article.⁵⁶ The assessment showed that the long-term real krona exchange rate was weaker than the assessment that had previously formed the basis of the Riksbank's forecasts and was published in 2013. The work on these issues, as on many others, will continue in the period ahead.

Continued work on the analysis of inflation

One issue that has been in focus in the Riksbank's work on analysing inflation in recent years is the difference in the development of the Riksbank's target variable of inflation in terms of the CPIF and different measures of underlying inflation.⁵⁷ For example, energy prices often vary sharply and therefore have a major impact on measured inflation. Over time, however, the variations have a tendency to cancel each other out. Once prices that vary in the short term are adjusted for, a time series is derived that hopefully better reflects underlying inflation. Even though certain measures are more useful than others, the conclusion is that no one measure satisfactorily fulfils all the criteria during all time periods, indicating that the Riksbank should use a broad set of measures of underlying inflation.

Inflation in the trade and service sector has also been analysed using questions from the National Institute of Economic Research's Economic Tendency Survey.⁵⁸ The Riksbank had ordered these questions aimed at systematically gathering information at company level on prices and how they are determined. The survey responses indicated that foreign and domestic cost pressures have contributed to price increases in the trade sector. Higher demand and higher domestic costs have contributed to price increases in service branches. At the same time, competition has held back price pressures in these sectors. These results largely confirm the results from the Riksbank's macroeconomic models.

Monetary policy analysis of a possible e-krona

The monetary policy effects of introducing an e-krona have also been studied during the year.⁵⁹ One aspect analysed is the Riksbank's operational framework as an e-krona involves the Riksbank increasing its circle of counterparties to also include households and companies that are not credit institutions. The e-krona can be a potentially large and volatile item on the balance sheet and the operational framework may need to be adapted to it.

If the general public were to be given the opportunity to hold an unlimited quantity of e-krona that is not interest-bearing, it would probably no longer be possible to set

⁵⁴ "What usually happens when the repo rate is raised?" article in Monetary Policy Report, October 2018.

⁵⁵ "The exchange rate and inflation" article in Monetary Policy Report, April 2018 and V. Corbo and P. Di Casola "Conditional exchange rate pass-through: evidence from Sweden", Working paper series No. 352, 2018.

⁵⁶ "Development of the Swedish krona in the longer term", article in Monetary Policy Report, October 2018.

⁵⁷ "Why measures of core inflation?" article in Monetary Policy Report, October 2018 and J. Johansson, M. Löf, O. Sigrist and O. Tysklind "Measures of core inflation in Sweden", *Economic Commentaries* No. 11, 2018.

⁵⁸ E. Frohm, M. Löf and M. Tibblin "New survey data highlights company pricing", *Economic Commentaries* No. 8, 2018.

⁵⁹ Special edition on the e-krona, *Economic Review* No. 3, 2018.

negative rates on monetary policy instruments, for example a negative policy rate. Even the effects of quantitative easing may also decrease. The purpose of such easing is to push down interest rates with longer maturities. These rates reflect expected future short-term rates. The introduction of a non-interest-bearing e-krona may prevent the expected future repo rate from being negative, which could mean that long-term interest rates cannot be pushed down to the same extent. On the other hand, if the e-krona were to be interest-bearing, no such limitations arise and the monetary policy impact may instead increase under certain circumstances. The Riksbank's balance sheet, the monetary policy operational framework and the impact of monetary policy are important, ever-present items on the Riksbank's agenda.

Consequences of global warming

Global warming could also have consequences for monetary policy. An economic commentary published in 2018 discussed whether central banks should have a greater focus on understanding the effects of climate change.⁶⁰ The conclusion is that global warming and its consequences are relevant for central banks as these consequences may conceivably have an impact on monetary policy in the longer run. The financial risks for Sweden are uncertain as Sweden itself is less exposed to climate risks than many other countries, but at the same time is a small open economy that is heavily dependent on what happens in the rest of the world. In the conclusions, it is noted the primary contribution that central banks can make to sustainability is to help ensure a successful stabilisation policy.

Table 4:1. Monetary policy-related studies published in 2018⁶¹

Articles in Monetary Policy Reports

"Reduced housing construction is subduing GDP growth", February.

"The exchange rate and inflation", April.

"The Phillips curve and monetary policy", July.

"Small effects on production and inflation of the summer's drought and forest fires", September.

"Development of the Swedish krona in the longer term", October.

"What usually happens when the repo rate is raised?", October.

"Why measures of core inflation?" October.

"How are household cashflows and consumption affected by rising interest rates?", December.

Economic Commentaries

C. Flodberg "Has wage development has been affected by changes in the composition of the group of employees?", No. 1.

E. Frohm, M. Löf and M. Tibblin "New survey data highlights company pricing", No. 8.

E. Frohm "How do global value chains influence the effects of the krona exchange rate on exports?", No. 9.

C. Flodberg "Who switches jobs and is the wage premium for switching jobs cyclically normal?", No. 10.

J. Johansson, M. Löf, O. Sigrist and O. Tysklind "Measures of core inflation in Sweden", No. 11.

C. Olovsson "Is climate change relevant for central banks?", No. 13.

R. Emanuelsson, G. Katinic, and E. Spector "Developments in the housing market and their effect on household debt", No. 14.

Articles in Sveriges Riksbank Economic Review

L. Alexandersson "Liquidity premium in the Swedish inflation-indexed government bond market", No. 2.

M. Nessén, P. Sellin and P. Åsberg Sommar "The implications of an e-krona for the Riksbank's framework for implementing monetary policy", No. 3.

H. Armelius, P. Boel, C. A. Claussen and M. Nessén "The e-krona and the macroeconomy", No. 3.

C. Berg, P. Meyersson and J. Molin "Dramatic years in Sweden and globally – Economic developments 2006–2017", No. 4.

J. Hansson, M. Nessén and A. Vredin "The storm after the calm – lessons for monetary policy analysis", No. 4.

Working Paper series

M. Sandström "The impact of monetary policy on household borrowing – a high-frequency IV identification", No. 351.

V. Corbo and P. Di Casola "Conditional exchange rate pass-through: evidence from Sweden", No. 352.

K. Walentin and A. Westermark "Learning on the Job and the Cost of Business Cycles", No. 353.

R. De Rezende and A. Ristinieni "A shadow rate without a lower bound constraint", No. 355.

S. Franco and E. Frohm "Reduced "Border Effects", FTAs and International Trade", No. 356.

H. Armelius, C. Bertsch, I. Hull and X. Zhang "Spread the Word: International Spillovers from Central Bank Communication", No. 357.

P. Di Casola and S. Sichlimiris, "Towards Technology-News-Driven Business Cycles", No. 360.

Riksbank studies

Evaluation of the Riksbank's forecasts, March 2018.

⁶⁰ C. Olovsson "Is climate change relevant for central banks?" *Economic Commentaries* No. 13, 2018.

⁶¹ The table also contains policy-related studies not mentioned in the text above.