FIXED EXCHANGE RATE POLICY IN DENMARK

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INTRODUCTION AND SUMMARY

The purpose of Denmark's monetary policy is to ensure price stability. To this end Denmark has pursued a fixed exchange rate policy since 1982 – first against the D-Mark and from 1999 against the euro. This is done within the framework of the European Exchange Rate Mechanism, ERM II. In keeping with the fixed exchange rate policy, Danmarks Nationalbank maintains a fixed exchange rate against the euro. In the euro area, the purpose of monetary policy is to keep inflation below, but close to, 2 per cent in the medium term. Keeping the krone stable against the euro provides a framework for low inflation in Denmark. For many years, the overall economic policy – the fixed exchange rate policy and the stability oriented fiscal policy – has provided the basis for a stable economic development. This has been analysed by Christensen and Hansen (2014), among others, and will not be discussed in further detail here. This article reviews the main practical aspects of implementing the fixed exchange rate policy.[1]

It is a characteristic of Denmark's fixed exchange rate policy that the krone is kept stable within a narrow band. Officially, the krone may fluctuate by up to 2.25 per cent on either side of its central rate, but in reality the fluctuations are far smaller. This reflects the high credibility of the fixed exchange rate policy, but also the fact that Danmarks Nationalbank takes consistent action in response to deviations from the central rate. The fixed exchange rate policy entails that monetary policy is used solely to keep the krone stable against the euro, while other considerations – such as the cyclical development in Denmark – are not taken into account.

As a result of the fixed exchange rate policy, Danish monetary policy interest rates initially track euro area interest rates, which are set by the ECB. If the krone weakens by a certain amount, Danmarks Nationalbank's first response will normally be to intervene in the foreign exchange market by buying kroner to strengthen the currency. Danmarks Nationalbank holds a considerable foreign exchange reserve for intervention purposes. The only requirement for the size of the reserve is that it should be ample. If intervention in the foreign exchange market is not sufficient to stabilise the exchange rate of the krone against the euro, Danmarks Nationalbank will adjust its monetary policy interest rates.

Danmarks Nationalbank's reaction function is well-known to participants in the foreign exchange market for Danish kroner. The credibility of the regime means that market participants take positions which in themselves stabilise the exchange rate of the krone. However, it is vital that Danmarks Nationalbank has room for discretion in any given situation.

1 For a broader review of Danish monetary policy, see Danmarks Nationalbank (2009). Drejer et al. (2011) analyse the impact of monetary policy on households and firms.

Consequently, the level of the exchange rate at which Danmarks Nationalbank's intervenes in the foreign exchange market is not fixed, nor is it given how much intervention is needed to prompt an adjustment of Danish interest rates. This reason is that Danmarks Nationalbank regularly assesses which intervention measures are appropriate in the given foreign exchange market situation.

The monetary policy instruments applied by Danmarks Nationalbank to conduct monetary policy have been basically unchanged since April 1992, reflecting that these instruments have proved to be adequate to keep the krone close to its central rate. Moreover, the instruments have proved to be sufficiently robust to handle extraordinary situations such as, most recently, the implications of the 2008 financial crisis and the subsequent sovereign debt crisis in several euro area member states on the exchange rate of the krone, as well as the implications of the European currency crisis in 1992-93. The fixed exchange rate policy considerations also entail that the Danish monetary instruments are fairly unique in an international context and differ from the instruments applied by countries pursuing other monetary policy strategies, including the euro area.

Danmarks Nationalbank's reaction function is described in the following section. The reaction function consists partly of intervention in the foreign exchange market, partly of changes in monetary policy interest rates. Each of these parts will be elaborated on in the following sections, which include descriptions of both the construction of the regime and its implications, e.g. for developments in money market interest rates. In the last section, the particular elements of the instruments that reflect the fixed exchange rate policy will be emphasised.

DANMARKS NATIONALBANK'S REACTION FUNCTION

Danmarks Nationalbank conducts a fixed exchange rate policy within the framework of the European Exchange Rate Mechanism, ERM II. This entails that the exchange rate of the krone may fluctuate by up to 2.25 per cent on either side of its central rate, which is kr. 7.46038 per euro. In periods of calm foreign exchange markets, the exchange rate of the krone against the euro depends mainly on the relationship between slightly longer-term money market interest rates in Denmark and the euro area. Danmarks Nationalbank's interest rates have an impact on Danish money market interest rates and, hence, the spread to money market interest rates in the euro area.[2]

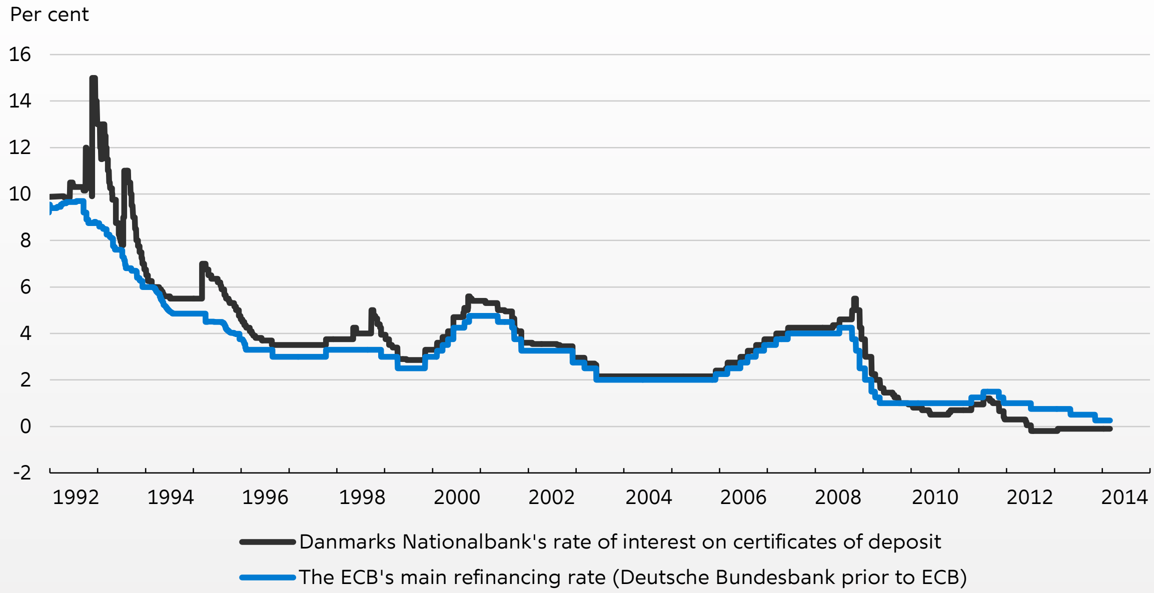
When the ECB changes its monetary policy interest rates, Danmarks Nationalbank typically responds by making similar changes. Danish interest rate changes are typically announced in the afternoon on the same day that the ECB announces its changes. Since the introduction of the euro in 1999, money market interest rates in Denmark have correlated closely with those of the euro area, cf. Chart 1.

In spite of the close correlation between monetary policy interest rates in Denmark and the euro area, a unilateral Danish response may be needed on some occasions. Danmarks Nationalbank regularly assesses whether the development in the exchange rate of the krone against the euro requires a response by Danmarks Nationalbank. For example, if the krone tends to weaken, Danmarks Nationalbank will initially seek to counter this by purchasing kroner against foreign exchange. For this purpose, Danmarks Nationalbank holds a sizable foreign exchange reserve.

If intervention in the foreign exchange market does not stabilise the exchange rate of the krone sufficiently against the euro, and if this appears to be a persistent trend, Danmarks Nationalbank will unilaterally adjust its monetary policy interest rates, i.e. without the ECB having done the same. For example, a persistent weakening of the krone may require a unilateral Danish interest rate increase, which results in an increase in Danish money market interest rates compared with those of the euro area. This will make it more attractive to invest in Danish

2 See Mindested et al. (2013).

Monetary policy interest rates in Denmark and the euro area Chart 1



Note: Danmarks Nationalbank's rate of interest on certificates of deposit is used in the chart because this has been the governing rate since 8 June 2009, when Danmarks Nationalbank introduced a spread between the lending rate and the rate of interest on certificates of deposit. For the euro area, the ECB's minimum bid rate in the main refinancing operations is used until 14 October 2008 and subsequently the fixed rate in the ECB's main refinancing operations is used. Deutsche Bundesbank's monetary policy rate is used for the period prior to the introduction of the euro on 1 January 1999. Since the ECB introduced fixed-rate tenders with full allotment in its main refinancing operations in October 2008, there has been a tendency for European money-market interest rates to be governed by the ECB's deposit rate in some periods.
Source: Danmarks Nationalbank.

assets and boost demand for the Danish krone, which is therefore strengthened.

Chart 2 shows an example of Danmarks Nationalbank's response to deviations from the central rate. In November 2011, the krone gradually strengthened, and on 1 December it reached an exchange rate of kr. 7.4330 per euro. To counter this, Danmarks Nationalbank made intervention purchases for around kr. 14 billion in the market, that is, Danmarks Nationalbank bought euro for kr. 14 billion. This slowed the strengthening temporarily. Following intervention purchases for another approximately kr. 4 billion, and with the krone having strengthened to kr. 7.4326 per euro, Danmarks Nationalbank on 15 December decided to lower its monetary policy interest rates.[3] Similarly, in May 2012 Danmarks Nationalbank announced two unilateral interest rate reductions as a result of intervention. This was enough to prevent the krone from strengthening further.

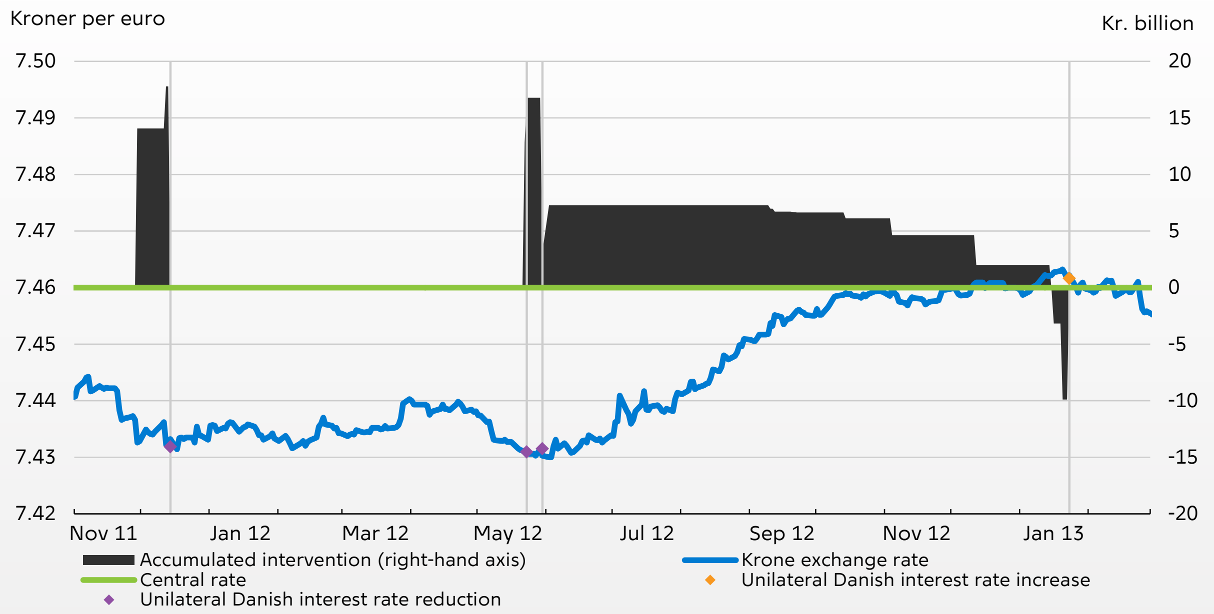
Although Danmarks Nationalbank's reaction function is known by market participants, some room for discretion is required. For example, the exchange rate at which Danmarks Nationalbank intervenes in the foreign exchange market is not known in advance and there are no specific rules for how much intervention is needed to prompt a change of Danish interest rates. Nor are there any specific rules for how much interest rates are adjusted, if need be. This is because Danmarks Nationalbank regularly assesses which measures are appropriate in the given foreign exchange market situation.

Even though the formal framework for the Danish fixed exchange rate policy entails that the krone may fluctuate by up to 2.25 per cent on either side of its central rate, it has in reality stayed within a significantly narrower range for many years, cf. Chart 3. This reduces the risk incurred by Danish households and firms in connection with payments in euro and thereby

3 Danmarks Nationalbank's lending rate and the rate of interest on certificates of deposit were reduced by 10 basis points and the current-account rate by 5 basis points.

Accumulated intervention and unilateral interest rate changes

Chart 2



Note: The accumulated intervention is reset to zero in the chart in connection with unilateral Danish interest rate changes. A positive value for accumulated intervention means that Danmarks Nationalbank has sold kroner and bought foreign exchange. As illustrated in the chart, in addition to making unilateral interest rate changes, Danmarks Nationalbank followed the ECB's interest rate reduction on 5 July 2012. The rate of interest on certificates of deposit was reduced to -0.20 per cent, resulting in a weakening of the krone against the euro.

Source: Danmarks Nationalbank.

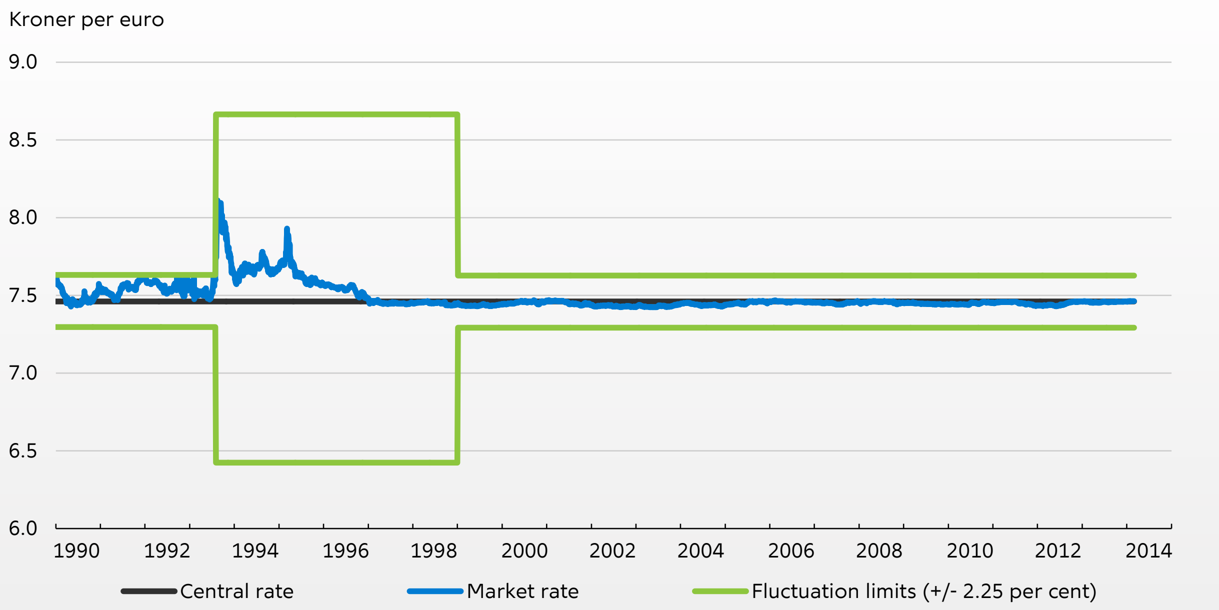
the need for obtaining hedging in the financial markets. Moreover, since the mid-1990s, the krone has stabilised on the strong side of its central rate.

CREDIBILITY

Having succeeded in keeping the krone stable for many years, Danmarks Nationalbank has earned strong credibility in its handling of mon-

Exchange rate of the krone against the euro

Chart 3



Source: Danmarks Nationalbank.

etary and foreign exchange policies. Participants in the financial markets are confident that the exchange rate of the krone will continue to fluctuate within a narrow band around the central rate. This means that in a weak krone scenario, the market will be expecting that the potential for further weakening is smaller than the potential for strengthening, while the opposite will be the case in a strong krone scenario. Market participants have tended to take positions on the basis of these expectations. In a weak krone scenario, positions are typically taken in expectation of a strengthening, which has contributed to stabilising the exchange rate of the krone close to the central rate.

The stabilising positions taken by market participants have reduced the need for intervention by Danmarks Nationalbank. However, Danmarks Nationalbank cannot base its monetary policy on the assumption that the positions always have a stabilising effect. The effect will occur only as long as market participants are confident that Danmarks Nationalbank has the will to stabilise the exchange rate of the krone around the central rate, and that the conditions for this exist.

The importance of credibility in respect of attaining the monetary policy objective is not unique for the fixed exchange rate policy. This also applies to countries where monetary policy is designed with a direct view to managing inflation. Here, credibility contributes to ensuring that, in the medium term, inflation expectations reflect the central bank's inflation target. Formation of expectations is a key element in the determination of prices and wages. If inflation is expected to exceed its target, wage earners will demand higher wages as compensation. As a result, expectations of higher inflation will in themselves drive up inflation.

Monetary policy credibility is obtained by demonstrating, over a long period, the will to do what it takes to attain the announced objectives. Since 1996, Danmarks Nationalbank has kept the krone within a very narrow band around the central rate.

ECONOMIC POLICY: DISTRIBUTION OF RESPONSIBILITIES

In Denmark, monetary policy is not conducted with a view to stabilising the business cycle. Instead, because of the fixed exchange rate policy, Denmark mirrors the monetary policy stance of the euro area. Since the Danish business cycle to some extent reflects that of the euro area, monetary policy will usually match the domestic economic development, although that is not always the case. Consequently, it is important that fiscal policy takes the business cycle into account. It is particularly important that it does not contribute to intensifying an economic boom, to the effect that a subsequent downturn becomes similarly strong.

Danmarks Nationalbank provides regular assessments of the fiscal policy stance. For instance, in the mid-2000s, Danmarks Nationalbank cautioned that fiscal policy was too accommodative in view of the lack of spare capacity in the economy.[4] The loose fiscal policy fuelled the economic boom and in this way intensified the subsequent downturn. This was harmful for both households and firms but did not spur the market to question the fixed exchange rate policy.

An inappropriate fiscal policy that amplifies cyclical fluctuations – and results in periods of strongly eroded competitiveness and high unemployment – involves the risk that the market questions the political support for the fixed exchange rate policy. Such a scenario may put downward pressure on the krone and, in consequence, necessitate a unilateral Danish interest rate increase. Such interest rate increases result in further weakening of the economy.[5]

In addition, appropriate use of macroprudential instruments can reduce the risk that the economic downturn is intensified by financial turmoil. As opposed to fiscal policy, macroprudential policy is aimed mainly at preventing imbalances in the financial system rather

4 See e.g. Monetary Review, 3rd Quarter 2006, in which it is recommended that in 2007 public finances should dampen domestic activity by around 0.5 per cent, cf. Danmarks Nationalbank (2006).

5 Moreover, like any other monetary policy regime, the fixed exchange rate policy is at risk of being undermined if fiscal policy is outright unsustainable.

than stabilising the economy on an ongoing basis.

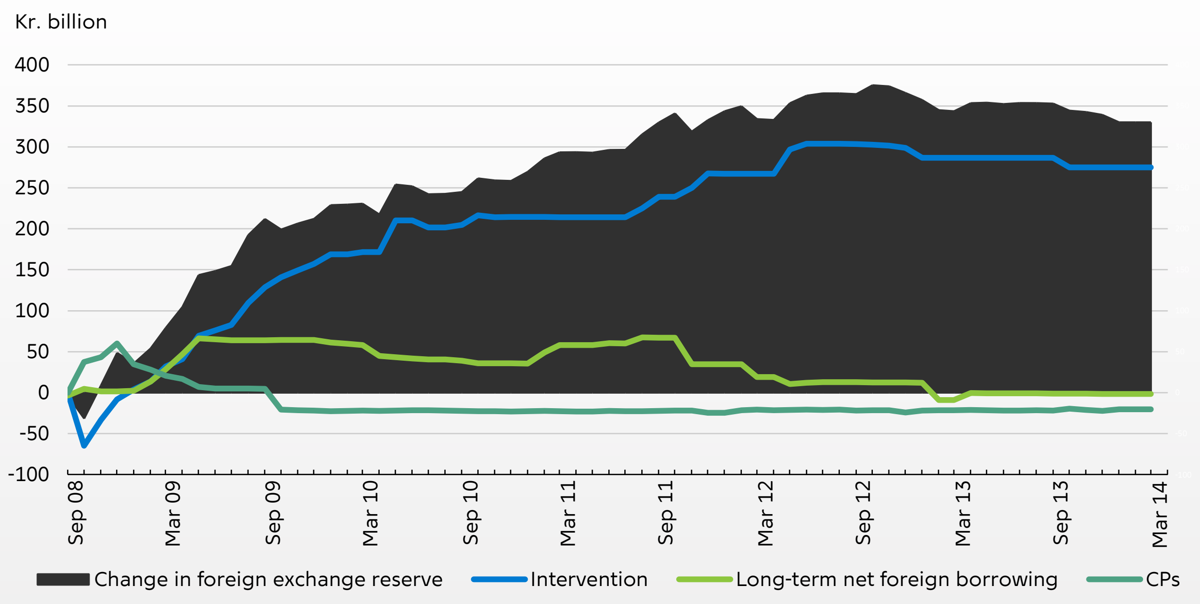
INTERVENTION AND FOREIGN EXCHANGE RESERVE

As a result of the high credibility in the fixed exchange rate policy, transactions between market participants will typically be sufficient to keep the krone close to its central rate. However, situations regularly occur that require a response from Danmarks Nationalbank. Usually, the first step is to intervene in the foreign exchange market. Intervention is undertaken by Banking and Markets, which has unlimited authority to intervene to the extent necessary. The Board of Governors is regularly informed about the intervention.

Danmarks Nationalbank holds a considerable foreign exchange reserve for intervention purposes. At the beginning of 2014, the value of the foreign exchange reserve was close to kr. 500 billion, mainly held in euro and largely consisting of deposits in foreign banks and foreign securities that can be sold or pledged as collateral. Danmarks Nationalbank has not set a target for the size of the foreign exchange reserve. The only requirement is that it should be ample. An insufficient reserve would limit Danmarks Nationalbank's scope for intervention, entailing that it would have to resort to interest rate increases sooner in the event of pressure on the krone. Moreover, a small reserve could signal that Danmarks Nationalbank was not sufficiently poised to defend the krone in case of pressure. This would weaken credibility and could in itself fuel the risk of speculation against the krone.

If the reserve is deemed to be insufficient, Danmarks Nationalbank has options for building up a larger reserve. This was seen in connection with the currency unrest in the autumn of 2008, when the central government resorted to foreign borrowing, cf. Chart 4. Initially, short-term loans were raised within the framework of the central government's Commercial Paper (CP) programmes in order to quickly boost the foreign exchange reserve. The purpose of these programmes is to ensure a liquidity contingency for rapid adjustment of the level of the foreign exchange reserve or

Development in the foreign exchange reserve after the outbreak of the financial crisis Chart 4



Note: The difference between the total change in the foreign exchange reserve and the sum of the changes in intervention, long-term foreign borrowing and CPs covers, inter alia, value adjustment of the gold stock, interest income on the foreign exchange reserve and the central government's net foreign exchange payments.
Source: Danmarks Nationalbank.

the central government's account at Danmarks Nationalbank. However, the central government's opportunities for raising loans abroad depend on well-functioning markets. When the crisis peaked, it was not possible to raise loans abroad for a brief period of time.

In the 1st half of 2009, the central government raised a considerable volume of medium- -term and long-term debt denominated in foreign currency.

While foreign borrowing is the most efficient way to quickly increase the foreign exchange reserve during periods of pressure on the krone, the reserve can be built up in the longer term by market intervention. For example, in the period following the currency unrest in 2008, Danmarks Nationalbank maintained a relatively wide interest rate spread to support an inflow of foreign exchange, and then gradually built up the foreign exchange reserve again through intervention.

The cost of maintaining an ample foreign exchange reserve is assessed to be moderate compared with the advantages of a credible fixed exchange rate policy. Roughly, the cost is given as the difference between short-term interest rates in Denmark and the euro area multiplied by the size of the reserve. In the current situation, with Danish short-term interest rates being the lowest, the return is positive, while in situations with a moderately positive interest rate spread to the euro area it will be negative.

ADJUSTMENTS OF MONETARY POLICY INTEREST RATES

The fixed exchange rate policy entails that Danmarks Nationalbank's monetary policy interest rates are used solely to keep the krone close to its central rate. If intervention in the foreign exchange market is not sufficient to stabilise the exchange rate of the krone, Danmarks Nationalbank's next move will be to adjust its monetary policy interest rates, comprising the lending rate, the rate of interest on certificates of deposit, the current account rate and the discount rate. This is also usually done in connection with the ECB's interest rate adjustments.[6] Danmarks Nationalbank's monetary policy instruments – the lending and deposit facilities made available by Danmarks Nationalbank to its monetary policy counterparties – accrue interest at the monetary policy interest rates.[7]

THE SIGNIFICANCE OF SECTOR LIQUIDITY TO MONEY MARKET INTEREST RATES

The pass-through from monetary policy interest rates to the exchange rate of the krone takes place through money market interest rates. Which of the monetary policy interest rates that governs the money market interest rates depends on the net position of the banks[8] vis-à-vis Danmarks Nationalbank. In the event of a large positive net position the sector as a whole will have a need to deposit funds with Danmarks Nationalbank, and in this situation short-term money market interest rates usually follow the rate of interest on certificates of deposit. This has been the general trend in the last few years, cf. Chart 5.

In periods when the net position is declining, money market interest rates tend to approach Danmarks Nationalbank's lending rate. The reason is that the volume of krone liquidity decreases and, as a result, the price of krone liquidity rises. In the event of a negative net position, money market interest rates will typically be governed by Danmarks Nationalbank's lending rate.

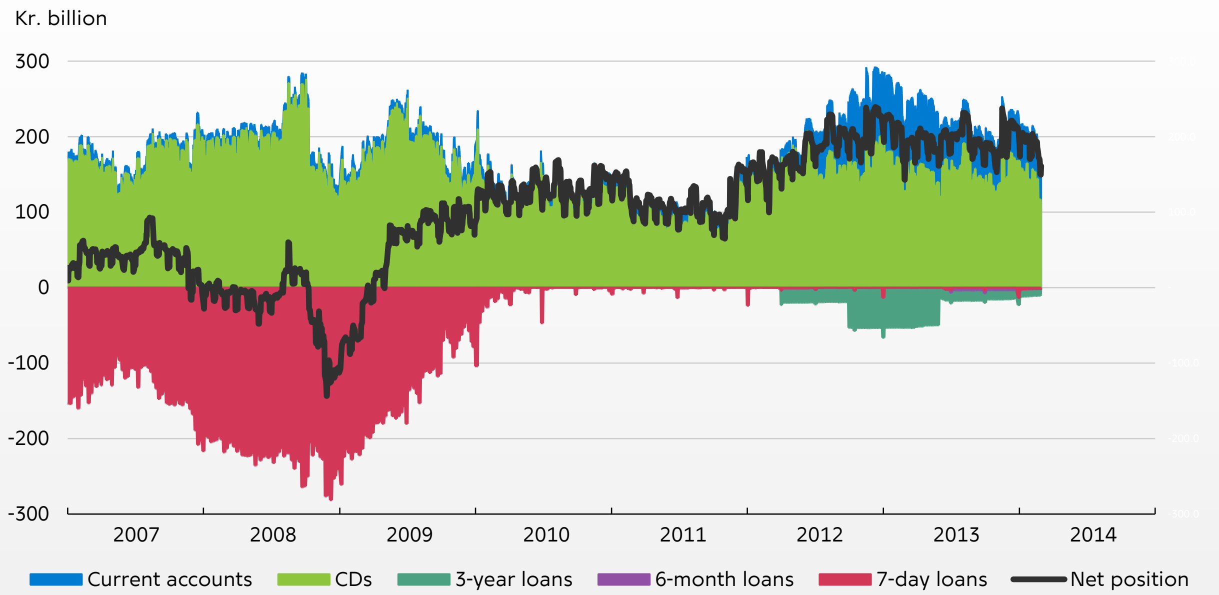
The net position is impacted by the autonomous factors in Danmarks Nationalbank's balance sheet. Payments to and from the central government's account at Danmarks Nationalbank and intervention by Danmarks Nationalbank make the greatest impact. For example, the net position declines when Danmarks Nationalbank buys kroner in the market in order to counter the weakening of the krone. This has a tendency to push up money market

6 The discount rate does not refer directly to monetary policy facilities but acts as a signal rate.

7 See e.g. Danmarks Nationalbank (2009) for a more detailed description of the monetary policy instruments.

8 The net position is calculated as the monetary policy counterparties' deposits in current accounts and certificates of deposit less their loans from Danmarks Nationalbank.

Monetary policy counterparties' net position vis-à-vis Danmarks Nationalbank Chart 5



Note: Until June 2009, the lending rate and the rate of interest on certificates of deposit were identical. Consequently, the monetary policy counterparties to a greater extent built up gross positions vis-à-vis Danmarks Nationalbank by raising monetary policy loans and placing liquidity in current accounts and certificates of deposit (CDs). The larger gross positions contributed to expanding Danmarks Nationalbank's balance sheet.
Source: Danmarks Nationalbank.

interest rates, which has a further stabilising effect on the exchange rate of the krone on top of the direct effect of intervention.

In addition to the net position, the daily volume of current account liquidity is also of significance to the pass-through from monetary policy interest rates to short-term money market interest rates. Money market interest rates tend to display a negative correlation with the daily liquidity balance in current accounts, cf. Chart 6. The latter depends on the difference between the rate of interest on certificates of deposit and the current account rate, among other factors. The monetary policy counterparties have a greater incentive to buy certificates of deposit than to place funds in current accounts when the rate of interest on certificates of deposits is higher than the current account rate. Other things being equal, the wider the spread, the smaller the current account deposits. A wider spread will encourage the counterparties to increasingly exchange liquidity among themselves, but will also result in higher money market interest rates.[9]

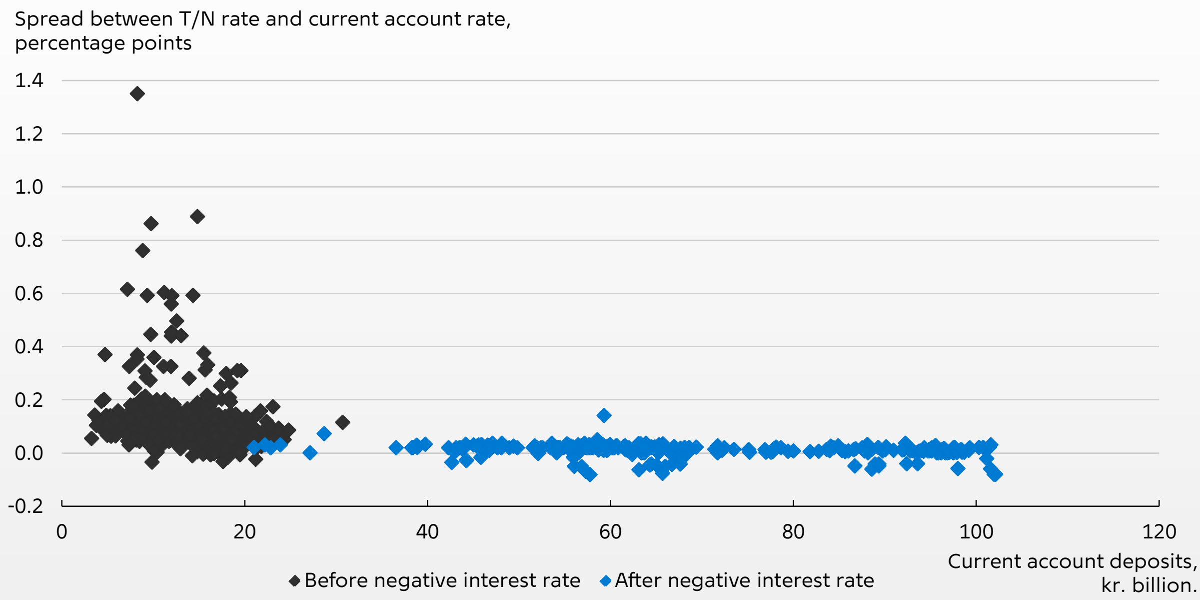
SIGNIFICANCE OF MONETARY POLICY INSTRUMENTS TO MONEY MARKET INTEREST RATES

The impact of monetary policy interest rates on the overnight rate is the first step in the transmission to the longer-term money market interest rates, which govern the exchange rate of the krone. The overnight rate fluctuates considerably, cf. Chart 7. Most of the fluctuations are technical and relate to the design of Danmarks Nationalbank's monetary policy instruments. Fluctuations occur in connection with Danmarks Nationalbank's open market operations. On days when Danmarks Nationalbank is open

9 After the introduction of a negative rate of interest on certificates of deposit, which is lower than the current-account rate, the counterparties have both an interest incentive and a liquidity incentive to place funds in current accounts rather than in certificates of deposit. Moreover, the expansion of the current-account limits increased the opportunity to do this. The larger current-account deposits entail that the difference between the overnight rate and the current-account rate is smaller on days without open market operations. See e.g. Mindested et al. (2013) for a more detailed explanation.

Correlation between current account deposits and spread between T/N rate and current account rate

Chart 6

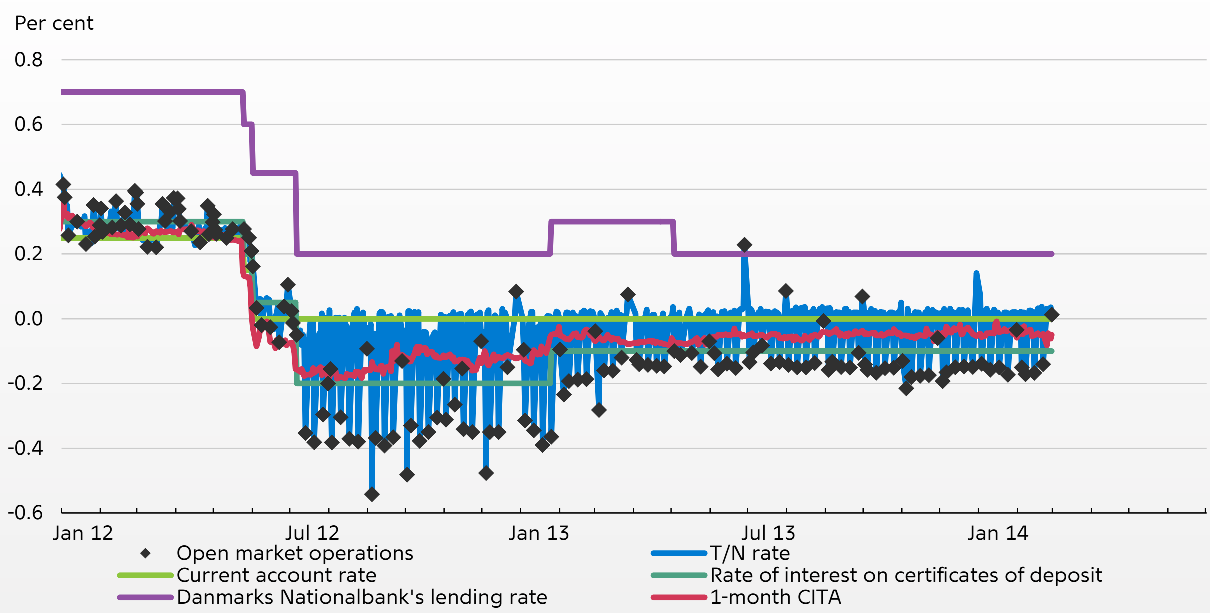


Note.: Daily observations for the period 2 July 2007 – 18 February 2014. Observations from days when Danmarks Nationalbank does not carry out open market operations.
Source: Danmarks Nationalbank.

for sale of certificates of deposit, the monetary policy counterparties can place funds in certificates of deposit at a different interest rate and with longer maturities than on days with-

Monetary policy interest rates and market rates

Chart 7



Note: The T/N rate is affected on the day prior to Danmarks Nationalbank's open market operations. The reason is that T/N loans are overnight loans which start the day after conclusion. As a result, open market operations denote the value of the T/N rate the day before the open market operation is takes place. CITA swaps (Copenhagen Interbank T/N Average) are short-term interest rate swaps. A variable rate of interest (the T/N rate) is swapped for a fixed rate of interest determined at the start of the agreement. On expiry of the agreement, the difference between the agreed fixed rate and the average T/N rate over the term of the agreement is settled.
Source: Danmarks Nationalbank and Reuters.

out open market operations, when the current account rate is the alternative rate.[10]

The technical volatility of the overnight rate is predictable and known by market participants and does not translate into volatility for the longer money market interest rates, cf. Chart 7. This predictability ensures a clear pass-through from Danmarks Nationalbank's monetary policy interest rates to the longer-term money market interest rates and, hence, the exchange rate of the krone.

THE INSTRUMENTS ARE DESIGNED WITH A VIEW TO THE FIXED EXCHANGE RATE POLICY

The monetary policy instruments are designed with a view to ensuring a flexible and robust implementation of the fixed exchange rate policy. This objective has been met. Within the framework of the current instruments, Danmarks Nationalbank has, for example, been able to introduce a negative rate of interest on certificates of deposit in order to keep the krone stable against the euro.[11] Moreover, maintaining the framework for the implementation of monetary policy on the introduction of a negative interest rate makes the instruments robust in respect of a future normalisation of monetary policy interest rates.

The fixed exchange rate policy considerations entail that Danmarks Nationalbank's instruments differ from those of other central banks, including those of the ECB (see Table 1 for a comparison). Danmarks Nationalbank typically mirrors the monetary policy measures of the ECB, not only its interest rate changes but

Overview of Danmarks Nationalbank's and the ECB's main monetary policy instruments Table 1

Main refinancing operations	ECB	Danmarks Nationalbank
Collateralised lending[1]	• Full allotment[2] • 1-week maturity • Weekly open market operations	• Full allotment • 1-week maturity • Weekly open market operations
Purchase and sale of certificates of deposit	Not part of main refinancing operations[3]	• Full allotment • Expiry on last banking day of the week • Weekly ordinary market operations supplemented with extraordinary operations as required
Standing facilities[4]		
Marginal lending facility[1]	• Unlimited access • 1-day maturity	Not part of Danmarks Nationalbank's instruments
Deposit facility	• Current account • Minimum reserve requirements	• Current account • Current account limits cap total current account deposits

Note: Only the main refinancing operations and facilities of Danmarks Nationalbank and the ECB are included. Extraordinary facilities such as collateralised lending with longer-term maturities and liquidity adjusting instruments are not included.
Source: Danmarks Nationalbank and ECB.
1. All monetary policy lending by Danmarks Nationalbank and the ECB is collateralised.
2. As one of a number of extraordinary measures taken in connection with the financial crisis, the ECB began to carry out its main refinancing operations with full allotment from 15 October 2008. The ECB will continue to carry out its weekly main refinancing operations with full allotment for as long as deemed necessary and at least until 7 July 2015, cf. ECB (2014). Prior to October 2008 allotment took place via tender.
3. As part of its structural operations, the ECB can issue certificates of deposit, cf. ECB (2012). However, these operations are not used at the moment.
4. Standing facilities may be used at any time during the central banks' opening hours.

10 See Mindested et al. (2013).

11 See e.g. Jørgensen and Risbjerg (2012) for a detailed description of the introduction of a negative rate of interest on certificates of deposit.

also the introduction of unconventional measures such as 3-year loans. This is done in order to ensure the stability of the krone against the euro by creating interest rate and liquidity conditions comparable to those in the euro area. However, given the differences between Danmarks Nationalbank's and the ECB's monetary policy instruments and the implementation of monetary policy, Danmarks Nationalbank does not mirror the ECB's monetary policy measures at all times.

OPEN WINDOW IN OPEN MARKET OPERATIONS

Danmarks Nationalbank uses an "open window" in its open market operations. This means that Danmarks Nationalbank determines the rate of interest in its monetary policy operations while the monetary policy counterparties determine the volume. This applies both to lending and to certificates of deposit. However, Danmarks Nationalbank limits the monetary policy counterparties' current account deposits.

As one of a number of extraordinary measures taken in connection with the financial crisis, the ECB began to carry out its weekly main refinancing operations as fixed rate tenders with full allotment in October 2008. Prior to that, the ECB managed the volume of liquidity allotted in its lending operations via weekly tenders. This has made the weekly open market operations of Danmarks Nationalbank and the ECB more comparable. The ECB will continue to carry out its weekly main refinancing operations with full allotment for as long as deemed necessary.

CURRENT ACCOUNT LIMITS

While the ECB via reserve requirements determines the average deposit that the Eurosystem banks *must* hold in their deposit facility, Danmarks Nationalbank determines the maximum deposit that banks and mortgage banks *may* hold in their current accounts.

The purpose of the current account limits is to prevent the build-up of large current account deposits with Danmarks Nationalbank that may be used for speculation against the krone. The current account limits do not restrict the amount that can be used for speculation, but enables Danmarks Nationalbank to manage the price of the liquidity that the banks can make available to customers for speculation. Danmarks Nationalbank can set a sufficiently high rate of interest on liquidity to eliminate any speculative gains. This was seen in connection with, for instance, the currency crisis in 1992-93, cf. Box 1.

STANDING FACILITIES

While the ECB has two standing facilities – a deposit facility and a marginal lending facility – Danmarks Nationalbank only has a deposit facility in the form of current accounts. A marginal lending facility caps the potential rise in short-term money market interest rates, since the banks can always raise loans from the central bank instead of in the money market at the

Speculation against the krone in 1993 Box 1

In connection with the currency crisis of 1992-93, speculative pressures were building up against the Danish krone in early 1993 amid extensive speculation against the ERM. This created a need for extensive intervention in support of the krone against the D-Mark, the Dutch guilder and the Irish pound. In order to counter the speculative pressure, the Danish government at the time made a firm statement about its determination to continue to pursue the fixed exchange rate policy.

Irrespective of the government's statement, the krone continued to be under substantial pressure, and on 3 February 1993 intervention purchases of kr. 24 billion were made in support of the krone, accounting for around half of Danmarks Nationalbank's foreign exchange reserve. On 4 February 1993, the discount rate was raised by 2 percentage points to 11.5 per cent and, as agreed with the central banks of Belgium, France, the Netherlands, Spain and Germany, coordinated intervention in support of the krone was carried out within the intervention limits. The concerted action took the market by surprise. The krone was stabilised and strengthened further when on the same day Deutsche Bundesbank announced an interest rate reduction. The banks' additional need for krone liquidity as a result of the outflow of foreign exchange was covered by Danmarks Nationalbank via collateralised loans with a maturity of 17 days at an interest rate of 40 per cent. Towards the end of the month, Danish 3-month money market interest rates had dropped to 14 per cent, the krone had strengthened and a significant inflow of foreign exchange took place. In the latter part of February, Danmarks Nationalbank began to reduce its interest rates again.

1. See Abildgren et al. (2010) for a detailed description of the monetary history of Denmark 1990-2005.

marginal lending rate. The fact that Danmarks Nationalbank does not have a marginal lending facility implies that money market interest rates can rise freely when the krone weakens against the euro. A situation may occur in which Danmarks Nationalbank intervenes to buy kroner in order to prevent the krone from weakening against the euro. This absorbs krone liquidity, which may cause money market interest rates to rise and thereby contribute to stabilising the krone against the euro.

LITERATURE

Abildgren, Kim, Bodil Nyboe Andersen and Jens Thomsen (2010), *Monetary history of Denmark 1990-2005*, Danmarks Nationalbank.

Christensen, Anders Møller and Niels Lynggård Hansen (2014), What scope for monetary policy? Experiences from the Nordic countries after the financial crisis, to be published as a chapter in Torben M. Andersen, Michael Bergman and Svend E. Hougaard Jensen (2014), *Reform Capacity and Macroeconomic Performance in the Nordic Countries*, Oxford University Press.

Danmarks Nationalbank (2006), Recent economic and monetary trends, *Monetary Review*, 3rd Quarter.

Danmarks Nationalbank (2009), *Monetary policy in Denmark*.

Drejer, Peter A., Marianne C. Koch, Morten H. Rasmussen, Morten Spange and Søren V. Sørensen (2011), The effects of monetary policy in Denmark, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter, Part 2.

ECB (2012),The implementation of monetary policy in the euro area: General Documentation on Eurosystem monetary policy instruments and procedures.

ECB (2014), Recent developments in excess liquidity and money market rates, *Monthly Bulletin*, January 2014.

Jørgensen, Anders and Lars Risbjerg (2012), Negative interest rates, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter, Part 1.

Mindested, Palle Bach, Martin Wagner Toftdahl and Lars Risbjerg (2013), Lower turnover in the Danish money market, Danmarks Nationalbank, *Monetary Review*, 4th Quarter, Part 1.