

# DANMARKS NATIONALBANK

15 MARCH 2017 — NO. 2

MONETARY AND FINANCIAL TRENDS – MARCH 2017

## Stable krone and calm money market

- In recent months, the Danish krone has been stable vis-à-vis the euro on the strong side of the central rate. Due to heightened political uncertainty in Europe, demand for Danish kroner increased in February. This prompted Danmarks Nationalbank to intervene for a total of kr. 4.7 billion in February, and the foreign exchange reserve was kr. 466.6 billion at the end of the month.
- Danmarks Nationalbank has kept the rate of interest on certificates of deposit (CD rate) at -0.65 per cent since January 2016, and the ECB has kept its deposit rate at -0.4 per cent since March 2016. Hence, the monetary policy interest rate spread to the euro area remains unchanged at -0.25 percentage point.
- Short-term Danish money market interest rates have stabilised after Danmarks Nationalbank's introduction of daily purchases and sales of certificates of deposit.

### CONTACT

**Niels Lynggård Hansen**  
Director and head of  
Economics and Monetary  
Policy

*nlh@nationalbanken.dk*  
+45 3363 7125

ECONOMICS AND  
MONETARY POLICY



### Stable krone rate

The krone has been  
stable on the strong  
side of the central rate

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### Interest rates kept unchanged

CD rate unchanged  
at -0.65 per cent

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### Daily open mar- ket operations

Danish money market  
rates have stabilised

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## Foreign exchange market

### Stable krone rate

In recent months, the Danish krone has been stable vis-à-vis the euro at a level slightly stronger than its central rate in the European Exchange Rate Mechanism, ERM2, cf. Chart 1. In February, demand for kroner rose due to increased focus on uncertainty about the outcome of the upcoming elections in Europe, including the upcoming presidential election in France. Banks in the Danish foreign exchange market initially absorbed the increased demand by selling kroner and expanding their foreign exchange positions. That way, Danish banks helped to stabilise the krone. As demand for Danish kroner persisted, banks became less willing to assume further foreign exchange exposure. Therefore, Danmarks Nationalbank intervened in the foreign exchange market in February by buying euro for a total of kr. 4.7 billion. This is a familiar pattern. Banks increase and reduce their foreign exchange positions within a certain range, playing a stabilising role for the krone while trusting that Danmarks Nationalbank supports the fixed exchange rate of the krone vis-à-vis the euro.<sup>1</sup>

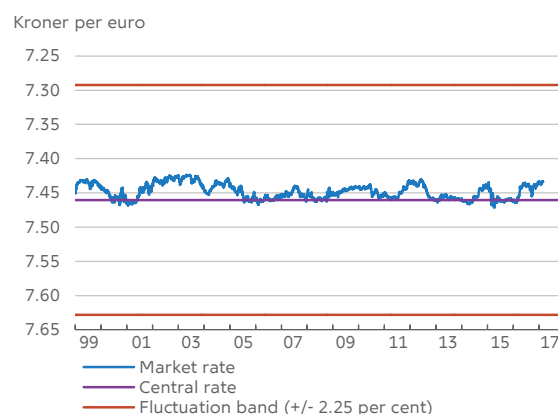
After the interventions, the foreign exchange reserve rose to kr. 466.6 billion at the end of February, cf. Chart 2, equivalent to 23 per cent of the gross domestic product (GDP). Danmarks Nationalbank has kept its monetary policy interest rates unchanged. The rate of interest on certificates of deposit (CD rate) thus remains unchanged at -0.65 per cent. The spread to the key interest rates of the European Central Bank (ECB) has been unchanged at -0.25 percentage point since March 2016.

### The dollar has strengthened and the pound sterling has weakened

Due to the Danish fixed exchange rate policy vis-à-vis the euro, fluctuations of the krone against other currencies follow those of the euro. The past year has seen substantial fluctuations in the pound sterling, which weakened sharply following the Brexit referendum, cf. Chart 3. The key drivers of the fluctuations in

**The krone is stable on the strong side of the central rate**

Chart 1

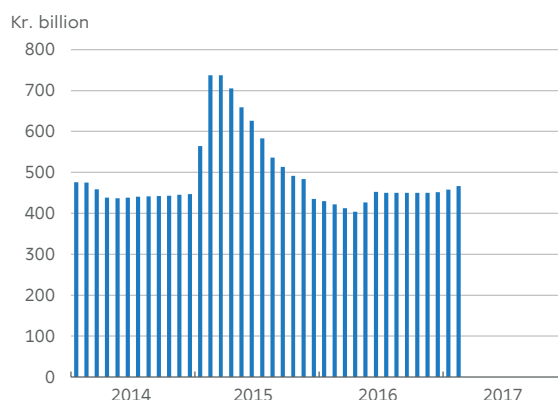


Note: Reverse scale.

Source: Danmarks Nationalbank.

**Foreign exchange reserve**

Chart 2



Source: Danmarks Nationalbank.

<sup>1</sup> Cf. Spange, Morten and Martin Wagner Toftdahl (2014), Fixed exchange rate policy in Denmark, Danmarks Nationalbank, *Monetary Review*, 1st Quarter.

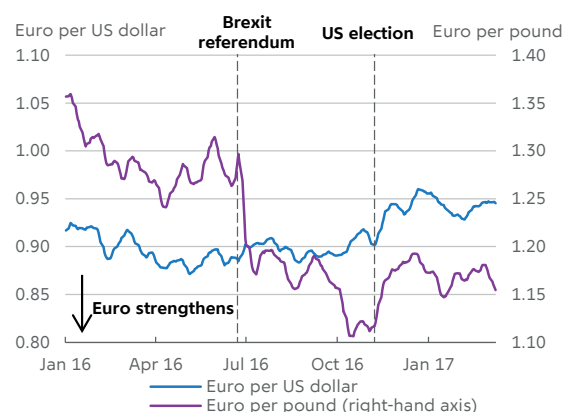
the pound sterling have been announcements about the exit agreement between the EU and the UK, including the prospects of a possible trade agreement with the EU.

The US dollar strengthened against the euro after the US presidential election in early November 2016, reflecting market expectations that US interest rates will increase faster than expected before the election. In early March, the exchange rate of the dollar against the euro was more or less at the same level as at the end of 2016.

In recent years, it has become more expensive for foreign investors without direct access to borrowing in the US dollar market to obtain US dollars via FX or currency swaps. The result is large deviations from a normal situation in which the exchange rate between two currencies and the interest rate differential between them are fully reflected in the forward rate (the covered interest rate parity, CIP). This indicates a dollar shortage outside the USA. This might seem like an arbitrage opportunity, but in a global perspective banks have become less willing to conduct such transactions via their balance sheets. Moreover, far from all banks have access to the US money market, cf. Box 1.

### The dollar has strengthened and the pound sterling has weakened

Chart 3



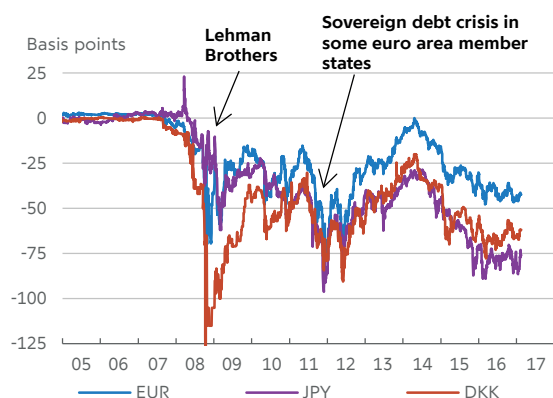
Note: Five trading days' moving average of exchange rates.  
Source: Bloomberg.

### More expensive dollar funding

Dollar funding via FX swaps and cross-currency basis swaps, i.e. contracts under which the investor's currency is exchanged for dollars for a given period with and without current interest payments, respectively, has become more expensive for Japanese and European investors. The cost of borrowing dollars against yen and euro has risen sharply since 2014. One reason is increased focus on the costs associated with the size and composition of bank balance sheets, another that many foreign banks find it more difficult to obtain dollars directly in the US money market.

The cost of borrowing dollars through cross-currency basis swaps can be measured by a basis. The basis is a premium received by investors when borrowing dollars against another currency. In early 2017, the basis in a 3-year cross-currency basis swap had declined to about -80 basis points for yen and -45 basis points for euro, cf. the chart. This means that investors were willing to receive 0.80 percentage point less in annual interest on the yen they lent in the cross-currency basis swap against dollars than if they had lent yen directly in the Japanese money market. A negative basis reflects a shortage of dollars outside the USA.

### More expensive to obtain US dollars via currency swaps in recent years



Note: Basis for 3-year cross-currency basis swaps against US dollars.  
Source: Bloomberg.

Box 1

Continues next page

## More expensive dollar funding (continued)

Box 1

Continues next page

### Substantial deviations from the covered interest rate parity

According to the covered interest rate parity (CIP), the basis should be close to zero. In theory, deviations provide arbitrage opportunities, given that the investor, e.g. a bank, could, in principle, raise loans directly in the dollar money market rather than via FX or currency swaps.

Until 2008, the basis was close to zero, but substantial deviations from the CIP occurred after the financial crisis, including between US dollars and Danish kroner. Deviations initially occurred as a result of increased counterparty risk during the financial crisis and a shortage of US dollars.<sup>1</sup> This entailed that US banks were less willing to lend dollars to e.g. European banks, which instead raised dollars by borrowing in other currencies and swapping to dollars. As a result, the basis fell well below zero. European banks were unable to take advantage of this arbitrage opportunity because they could not borrow US dollars directly in the US money market.

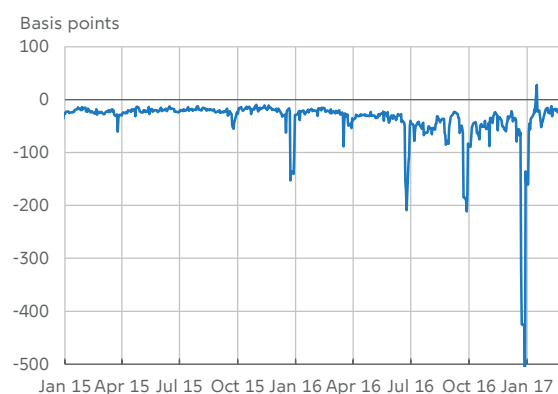
The deviation from the CIP also increased in connection with the sovereign debt crisis in some euro area member states in 2011-12. As the sovereign debt crisis abated, the basis gradually increased, to close to zero for euro in mid-2014. The decrease in the basis since then has occurred during a period of less turmoil in the financial markets and less doubt as to the creditworthiness of counterparties. This also applies to Danish kroner.

The deviation from the CIP in recent years should rather be seen in the light of banks' increased focus on the costs associated with the size and composition of their balance sheets, inter alia as a result of changed risk management and regulatory measures. If banks attempt to take advantage of this apparent arbitrage opportunity, their balance sheets expand. Since 2014, the basis has increased strongly at quarter and year-end for short-term FX or currency swaps, cf. the chart. Spikes in the basis at quarter and year-ends reflect that banks want to reduce the size of their balance sheets and reduce their risks in connection with public financial reporting.<sup>2,3</sup> This may be with regard to investors, regulators and other stakeholders. The phenomenon is known as window dressing.

Another reason why the apparent arbitrage opportunity is not arbitrated away could be that banks have different funding costs. In order to take advantage of the arbitrage

opportunity, investors must be able to borrow dollars at the dollar-Libor rate and place euro at the Euribor rate. In practice, not all banks are able to borrow at the dollar-Libor rate and place at the Euribor rate. Foreign banks do not have access to cheap dollar funding through the bank deposits of retail customers – an opportunity open to US banks. Thus, they need to raise dollar liquidity for instance by issuing short-term debt instruments denominated in US dollars (e.g. Commercial Papers, CPs). Non-US banks and banks with low credit ratings, funding themselves through CPs, typically pay a higher rate of interest than the dollar-Libor rate. This means that, in reality, the arbitrage opportunity is much smaller or even non-existing for some banks.<sup>4</sup> Main buyers of the CPs issued by banks have been US money market funds. New US legislation introduced in October 2016 has resulted in a strong outflow of investments from money market funds. Due to this outflow, it has become more difficult to raise dollar liquidity through CPs, causing the basis to become even more negative since the summer of 2016.

### Greater deviations at quarter-ends



Note: Calculated basis based on a 1-week FX swap between the euro and US dollars and the spread between uncollateralised money market rates in the USA and the euro area. Annualised.

Source: Thomson Reuters Datastream and own calculations.

1. Jørgensen, Anders, Paul Lassenius Kramp, Carina Moselund Jensen and Lars Risbjerg (2011), The money and foreign-exchange markets during the crisis, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter.
2. Borio, Claudio, Robert McCauley, Patrick McGuire and Vladyslav Sushko (2016), Covered interest parity lost: understanding the cross-currency basis, BIS, *BIS Quarterly Review*, September 2016.
3. Arai, Fumihiko, Yoshitomi Makabe, Yasunori Okawara and Teppei Nagano (2016), Recent trends in cross-currency basis, *Bank of Japan Review*.
4. Rime, Dagfinn, Andreas Schrimpf and Olav Syrstad (2016), Segmented money markets and covered interest parity arbitrage, *Working paper*.

## More expensive dollar funding (continued)

Box 1

### Basis driven by demand for dollar hedges

When banks do not arbitrage away deviations from the CIP, changes in the demand for US dollars via FX or currency swaps pass through more directly to the basis. Diverging monetary policy stances in the USA, the euro area and Japan have changed the demand for US dollars. Low interest rates in Japan have induced Japanese investors to search for yield abroad.<sup>5</sup> As a result, the dollar assets of Japanese banks and institutional investors have grown considerably. However, the volume of dollar liabilities has not grown similarly. Therefore, the gap between the dollar assets and liabilities of Japanese banks and institutional investors increased from 900 billion dollars in 2009 to 1,200 billion in 2015.<sup>6</sup> This, in turn, has increased Japanese banks' demand for dollar-yen FX and currency swaps to hedge the increased currency risk, which contributes to driving down the dollar-yen basis.

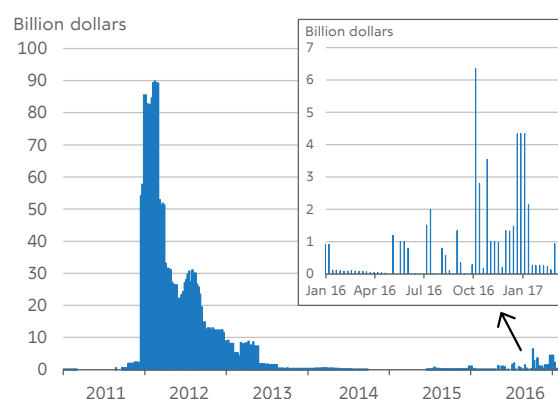
A relationship across currencies is observed between the size of the basis and the gap between banks' dollar assets and liabilities. In countries where banks have more dollar assets than dollar liabilities, and thus a greater need to hedge their dollar risk, the basis is substantially more negative. This especially applies in Japan and the euro area. In Australia, on the other hand, the banking system has fewer dollar assets than dollar liabilities, and the basis is positive.

### Increased use of the central bank dollar facility

To facilitate the dollar access of foreign investors, the US Federal Reserve introduced a dollar facility in 2008, giving other central banks, including the ECB, access to borrow US dollars. This has enabled European banks to borrow dollars directly from the ECB at a rate of interest 50 basis points above the dollar OIS swap rate, which is normally lower than

the Libor rate.<sup>7</sup> The dollar facility was widely used during the sovereign debt crisis in the euro area in 2012. In 2014 and 2015, the facility was largely unused, but at the end of 2016 the negative basis once again made it attractive to use the dollar facility. Drawings under the ECB dollar facility increased in 2016 at year-end, cf. the chart. Drawings under the Bank of Japan's dollar facility also increased in 2016. The dollar facility helps to impose a cap on how negative the basis can become. If the basis becomes sufficiently negative, it will be more attractive to borrow dollars under the central bank dollar facilities.

### Increased use of the ECB dollar facility in 2016



Note: Total drawings under the ECB dollar facility.  
Source: Federal Reserve.

<sup>5</sup> Du, Wenxin, Alexander Tepper and Adrien Verdelhan (2016), Deviations from covered interest rate parity, *NBER Working paper No. 23170*.

<sup>6</sup> Borio, Claudio, Robert McCauley, Patrick McGuire and Vladyslav Sushko (2016), Covered interest parity lost: understanding the cross-currency basis, BIS, *BIS Quarterly Review*, September 2016.

<sup>7</sup> The initial cost was 100 basis points above the OIS rate, but the cost was subsequently reduced to 50 basis points above the OIS rate.

## Money market

Denmark's fixed exchange rate policy against the euro entails that Danish monetary policy is closely linked to monetary policy in the euro area. There is direct pass-through from the spread for monetary policy interest rates in Denmark and the euro area to the spread for money market rates in Denmark and the euro area. The money market spread is key to ensuring the fixed exchange rate of the krone against the euro.

### The ECB has kept its interest rates unchanged, but has extended its asset purchase programme

At its most recent interest rate meeting in March, the ECB kept its monetary policy interest rates unchanged. The ECB's deposit rate was thus maintained at -0.4 per cent.

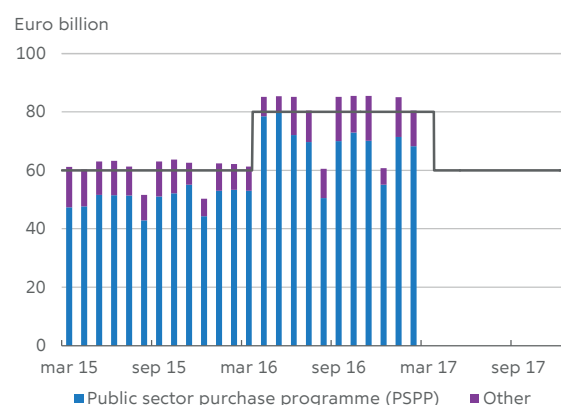
In December, the ECB announced an adjustment of its expanded asset purchase programme for, inter alia, government bonds and corporate bonds in the euro area. As a result, effective from April 2017, monthly net purchases of bonds will be reduced from 80 to 60 billion euro, cf. Chart 4. Since March 2015, most of the asset purchases have been conducted under the Public Sector Purchase Programme (PSPP), under which the ECB has been purchasing bonds issued by the public sector in the euro area, primarily government bonds.

The net asset purchases are intended to continue at a monthly volume of 60 billion euro until the end of December 2017 – or beyond, if necessary – and in any case until the ECB Governing Council sees a sustained adjustment in the path of inflation consistent with its inflation aim. The aim is to achieve inflation rates below, but close, to 2 per cent over the medium term.

The ECB decided to adjust some of the parameters of the asset purchase programme from January 2017 to support the implementation of the programme. The maturity range of eligible bonds under the PSPP

**The ECB has adjusted its asset purchase programme**

Chart 4



Note: ECB's purchases are lower in August and December due to a seasonal reduction in market liquidity. Therefore, purchases are typically slightly higher in the other months of the year.

Source: ECB.

was broadened from 2-30-year bonds to 1-30-year bonds. The ECB also allowed purchases of bonds under the PSPP with a yield to maturity below the ECB deposit rate of -0.4 per cent to the extent necessary to ensure the smooth implementation of the asset purchase programme.<sup>2</sup>

### The asset purchase programme substantially increases excess liquidity

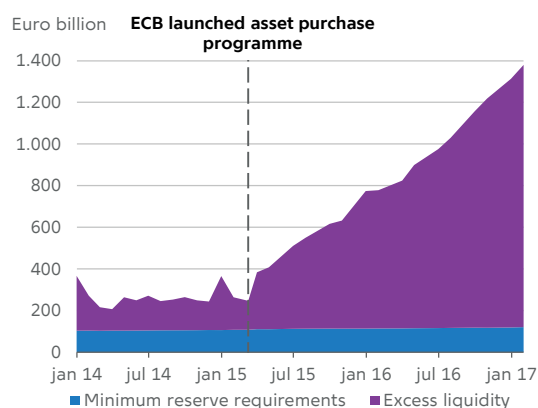
The ECB's bond purchases provide liquidity to the euro area banking sector. Excess liquidity in the euro area has increased by 1121 billion euro from March 2015, to 1260 billion euro at the end of January 2017, cf. Chart 5. Excess liquidity is the banks' total deposits with the central bank over and above the sum of the individual banks' minimum reserve requirements. The minimum reserve requirement is the amount of liquidity each bank in the euro area must hold in

2

The ECB prioritises purchases of assets with a yield to maturity above the deposit rate. Therefore, the volume of asset purchases at yields to maturity below the deposit rate will vary across countries. Moreover, the ECB has stressed that limited and temporary deviations from the capital key are inevitable.

### The ECB asset purchase programme increases excess liquidity in the euro area

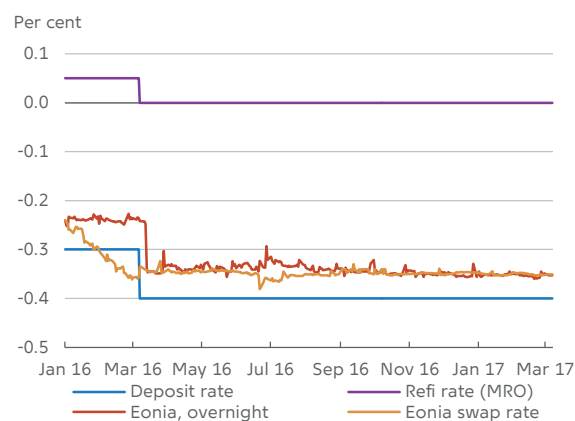
Chart 5



Source: ECB.

### Low and stable money market rates in the euro area

Chart 6



Note: The Eonia-swap rate shown is a 3-month rate.  
Source: ECB and Bloomberg.

reserve in their current accounts with the national central bank on average over a specified period, i.e. the reserve maintenance period.

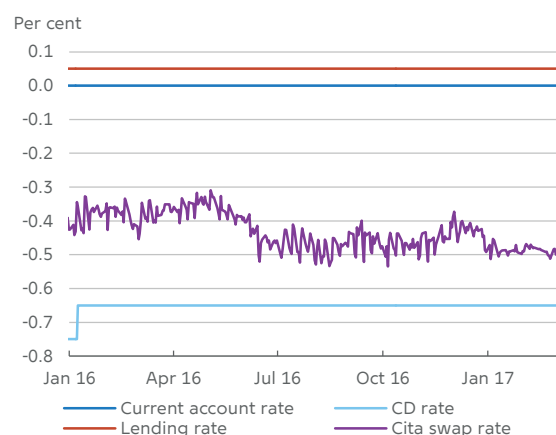
### Stable money market rates in Denmark and the euro area

The high level of excess liquidity help to keep money market rates in the euro area at a stable, low level close to the deposit rate, cf. Chart 6. Expectations of short-term money market rates, expressed by the 3-month Eonia swap rate, are also stable at the same level.

Danish money market rates have also been very stable, at a level of around -50 basis points, for an extended period of time, cf. Chart 7. Just as in the euro area, this should be seen in the light of the ample krone liquidity in the Danish banking sector. In recent months, Danish banks' net position vis-à-vis Danmarks Nationalbank has been around kr. 200 billion, cf. Chart 8. The net position is mainly influenced by central government payments and Danmarks Nationalbank's foreign exchange interventions. Given the low amount of interventions, the fluctuations in the net position in recent months are due primarily to central government payments. With a total current account limit of approximately kr. 31 billion, the level of the net position entails that most of the excess liquidity in the Danish banking sector is placed in certificates of deposit at a rate of interest of -0.65 per cent.

### Danish money market rates at a stable level

Chart 7



Note: The 1-month Cita swap rate shown is a market-based indication of expectations of the overnight money market rate (T/N rate) for the coming month.  
Source: Thomson Reuters and Danmarks Nationalbank.

### Money market spread remains negative

Due to low volatility in money market rates both in Denmark and in the euro area, the money market spread has been very stable at a level of around -10 basis points for an extended period of time, cf. Chart 9, contributing to a calm period in the Danish foreign exchange market.

Current long-term interest rates indicate market expectations of a slow normalisation of monetary policy interest rates in the euro area, with negative interest rates until 2020. The same applies in Denmark. Current market prices indicate an expectation that the spread between 3-month money market rates in Denmark and the euro area will be slightly negative in the coming years.

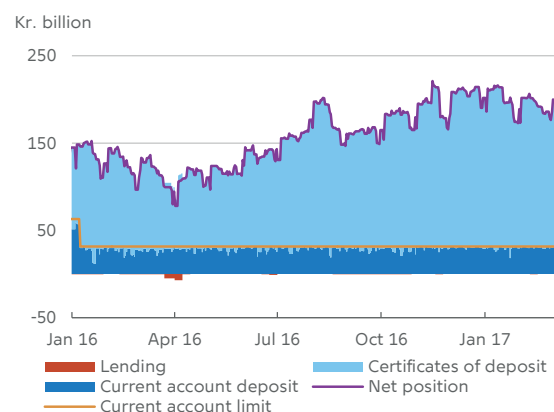
### Daily open market operations

As of February, Danmarks Nationalbank introduced daily purchases and sales of certificates of deposit. This enables the banking sector to obtain or place liquidity at Danmarks Nationalbank on a daily basis, supporting a smooth exchange of liquidity. At the same time, the repurchase premium was increased from 0.05 percentage point to 0.10 percentage point to encourage banks to even out liquidity fluctuations among themselves. The introduction of daily operations followed an extended period of a large number of extraordinary open market operations, cf. Box 2, and positive experience from a three-week period around the turn of the year during which banks had access to daily buying and selling certificates of deposit at Danmarks Nationalbank.

As a result of Danmarks Nationalbank's daily buying and selling of certificates of deposit, the reference rate for money market lending – the T/N rate – has stabilised, cf. Chart 10. Technical volatility<sup>3</sup> related to days of the week has been removed and the weekly average T/N rate has stabilised. The stability of the T/N rate is also reflected in the Cita interest rate swap market<sup>4</sup>, which during the period of daily open market operations has not exhibited the fluctuations previously seen.

Net position

Chart 8

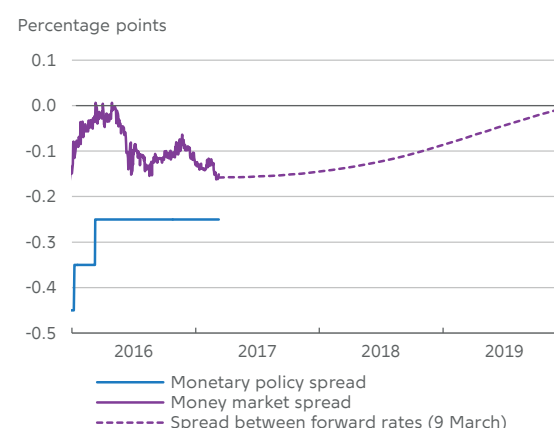


Note: The net position is the monetary policy counterparties' total net account in kroner with Danmarks Nationalbank. It is defined as the counterparties' holdings of certificates of deposit and current account deposits less monetary policy loans.

Source: Danmarks Nationalbank.

Money market spread remains negative

Chart 9



Note: The monetary policy spread is the spread between Danmarks Nationalbank's rate of interest on certificates of deposit (CD rate) and the ECB's deposit rate. The money market spread is based on 3-month Cita and Eonia swap rates and the broken line indicates the spread between forward rates based on Cita and Eonia swap rates.

Source: Scanrate Rio, Thomson Reuters and Danmarks Nationalbank.

3 For a description of technical volatility, see Andresen, Morten Fremmich, Mark Strøm Kristoffersen and Lars Risbjerg (2015), The money market at pressure on the Danish krone and negative interest rates, Danmarks Nationalbank, *Monetary Review*, 4th Quarter.

4 In a Cita interest rate swap, one party pays the average of the T/N rate over the period and receives a fixed rate agreed at the conclusion of the swap.

## Danmarks Nationalbank's extraordinary open market operations

Box 2

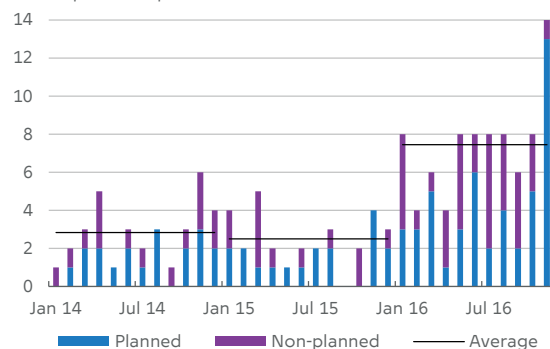
On the last banking day of each week, Danmarks Nationalbank conducts open market operations, in which banks may raise monetary policy loans against collateral and make deposits by purchasing certificates of deposit issued by Danmarks Nationalbank. In the event of large fluctuations in liquidity, Danmarks Nationalbank has offered to buy back or sell certificates of deposit outside the regular weekly open market operations.

In recent years, it has been increasingly necessary to conduct extraordinary open market operations – both planned and non-planned, cf. the chart. This means that banks have had more frequent access to trading certificates of deposit with Danmarks Nationalbank. Danmarks Nationalbank's increased use of extraordinary open market operations should be seen in the context of changed payments patterns from firms to the central government in step with the introduction of negative bank deposit rates for some firms. During a period of changed payment patterns, liquidity fluctuations in the banking sector have been less predictable. At the same time, banks have had an interest rate incentive to place as much liquidity as possible in their current accounts. Consequently, it requires only small liquidity provisions for the current account limit to be exceeded, and Danmarks Nationalbank needs to open for extraordinary sale of certificates of deposit.

For a three-week period around the turn of the year, banks extraordinarily had access to daily buying and selling of certificates of deposit at Danmarks Nationalbank. The introduction of daily buying and selling of certificates of deposits from early February was based, inter alia, on positive experience from this period.

## Extraordinary open market operations

Number of extraordinary open market operations per month

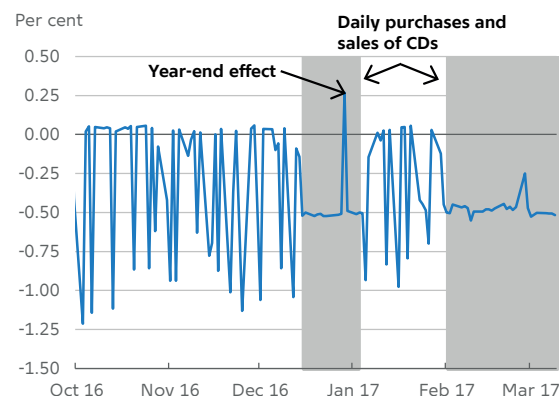


Note: Number of extraordinary open market operations per month. Extraordinary open market operations are either purchases and/or sales of certificates of deposit.

Source: Danmarks Nationalbank.

## Day-to-day money market rate

Chart 10

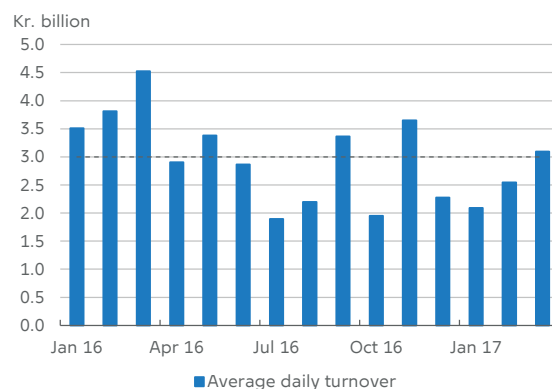


Note: The T/N rate. The large fluctuations reflect technical volatility.

Source: Finans Danmark.

## Turnover in the T/N market

Chart 11



Note: On days with turnover below kr. 3 billion, T/N rate setting is supplemented by quoted rates. For March 2017, average daily turnover up to and including 9 March is shown.

Source: Finans Danmark.

The new measures do not seem to have affected the interbank exchange of liquidity in the day-to-day money market, cf. Chart 11. Average daily turnover in the T/N market in February 2017 was almost at the same level as in the 2nd half of 2016. On days with turnover below kr. 3 billion, the T/N rate is set on the basis of rates of interest on the actual turnover, and on the quoted rates reported by a panel of banks. The quoted rates help to ensure appropriate T/N interest rate setting on days of low turnover. During the period of daily open market operations, there was less dispersion in banks' T/N quotations, indicating broad consensus on the market price of the T/N rate.

### No signs of extraordinary demand for cash

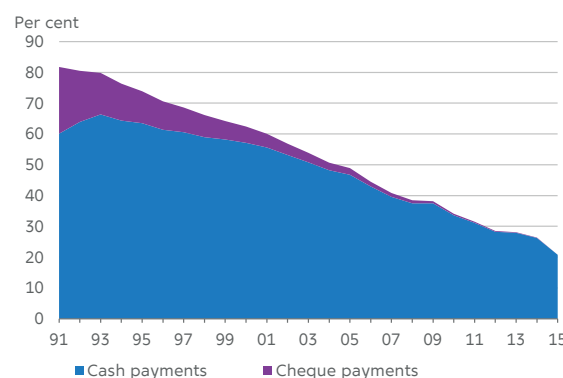
There are still no indications that the negative deposit rates for certain customer segments have led to an extraordinary increase in demand for cash. No notable increase in demand for cash has been observed from customer segments subject to negative interest rates, e.g. insurance and pension companies and large corporates. Household bank deposits are exempt from negative interest rates. Moreover, electronic payments are typically a considerably cheaper and easier means of payment for banks, retailers and consumers. This is reflected, inter alia, in a steady decrease in cash as a share of private payments over recent decades, cf. Chart 12.

## Government and mortgage bonds

In the autumn of 2016, long-term government bond yields increased in several advanced economies, especially in the period around the US presidential election, cf. Chart 13, reflecting improved growth prospects and higher expected inflation. The latter is evidenced by the rise in market-derived long-term inflation expectations, cf. Chart 14.

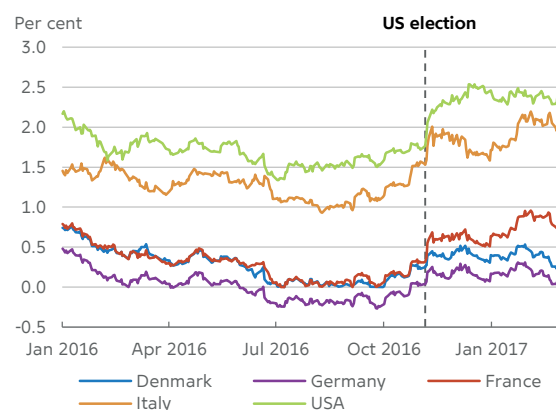
Nevertheless, long-term interest rates remain low, viewed in a longer perspective. One reason is a large, global savings surplus. Inflation expectations are also low relative to the level of the 2000s. In the euro area, this leads to market expectations of an extended period of accommodative monetary policy.

**Cash as a share of private payments is steadily decreasing** Chart 12



Note: Estimates of cash payments as a share of total retail turnover.  
Source: Report on the role of cash in society, Danish Payments Council.

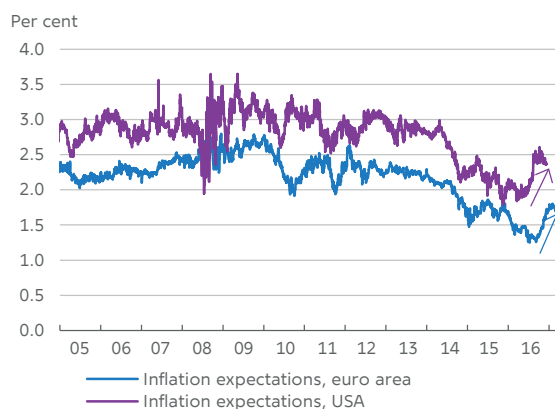
**Higher long-term interest rates in the advanced economies** Chart 13



Note: To ensure cross-country comparability, 9-year par yields are shown.  
Source: Nordea Analytics.

**Inflation expectations have risen**

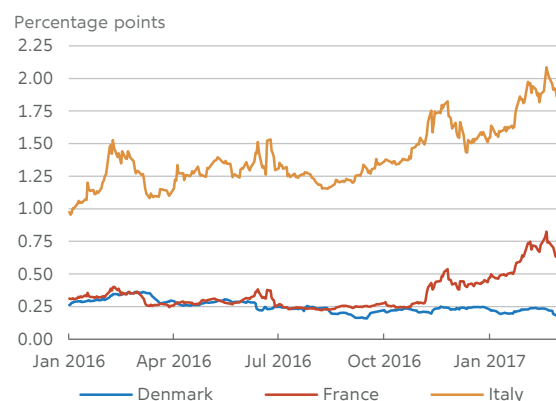
Chart 14



Note: 5-year inflation expectations 5 years ahead are derived from inflation swaps (5Y5Y).  
Source: Bloomberg.

**Government yield spread to Germany**

Chart 15



Note: To ensure cross-country comparability, 9-year par yields are shown.  
Source: Nordea Analytics.

Government bond yields have risen more in Italy than in the other euro area member states, and the spread to long-term German government bonds has widened by more than 50 basis points since the autumn of 2016, cf. Chart 15. This reflects increased focus on problems in several of Italy's banks and political uncertainty following the resignation of Prime Minister Matteo Renzi over the rejection of his proposed constitutional amendment in December's referendum. The French-German yield spread has also widened, possibly as a result of one of the candidates in the French presidential election having questioned the French euro area membership.

The 10-year Danish government bond yield has followed the German yield, increasing by approximately 30 basis points since the autumn of 2016. The 2-year Danish government bond yield has been unchanged at around -0.60 per cent for an extended period of time. Thus, the Danish government yield curve has steepened since the autumn.

The yield curve for Danish mortgage bonds has also steepened. Yields on 1-year fixed bullets decreased at the beginning of the year to a level of around -0.50 per cent in early March. Thus, the spread to 1-year government bond yields was close to the lowest level since the financial crisis, cf. Chart 16. One reason for the low spread is a gradual decline in the supply of the shortest-term fixed bullets as changes in Danish mortgage banks' administration margins

**Reduced spreads between government bond yields and mortgage bond yields**

Chart 16



Note: Spread between mortgage bond yields and government bond yields. Based on 1 and 5-year par yields.  
Source: Nordea Analytics.

have increasingly given borrowers an incentive to choose loans with longer fixed-interest periods. Medium-term and long-term mortgage bond yields have increased at a slightly lower rate than yields on government bonds with equivalent maturities. The 5-year spread between mortgage bond yields and government bond yields has been gradually reduced over the past year and is currently on a par with the average for the past 10 years.

## Lending to the Danish corporate sector and households

### Modest growth in lending to households and the corporate sector

Bank lending to households continued the downward trend in 2016, while bank lending to the corporate sector was virtually unchanged in 2015 and 2016, cf. Chart 17. Mortgage lending to both households and the corporate sector continued to grow at modest, but stable rates of 1.8 and 2.8 per cent, respectively, in 2016 relative to 2015. Overall, the development in lending to both households and the corporate sector has been very stable for many years.

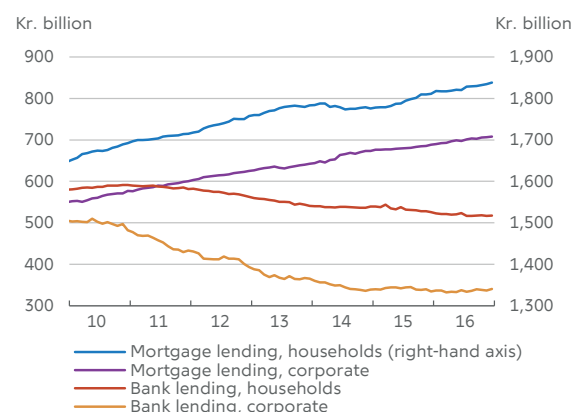
Mortgage loans for private homes are increasingly with amortisation. For the first time since 2009, mortgage loans with amortisation for owner-occupied housing and summer cottages account for more than half of total mortgage lending to private borrowers, cf. Chart 18. This is a natural consequence of the changes in mortgage banks' administration margins that give homeowners an incentive to choose loans with amortisation.

### Danish banks' interest rate margin for households continues to compress

In 2016, banks' average interest rates on consumer loans continued to fall. At the same time, deposit rates decreased only slightly in 2016. This should be seen in the context that Danish banks have not imposed negative interest rates on deposit accounts for households. As a result, the banks' interest rate margin for households continued to compress.

**Slight increase in total lending to households and the corporate sector**

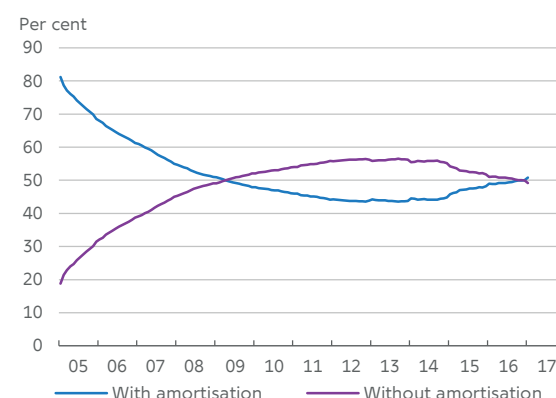
Chart 17



Note: Seasonally adjusted data at nominal value.  
Source: Danmarks Nationalbank.

**Mortgage loans with amortisation back at the level of loans with deferred amortisation**

Chart 18



Note: Mortgage loans for owner-occupied housing and summer cottages.  
Source: Danmarks Nationalbank.

### Mortgage banks continue tightening credit standards for households

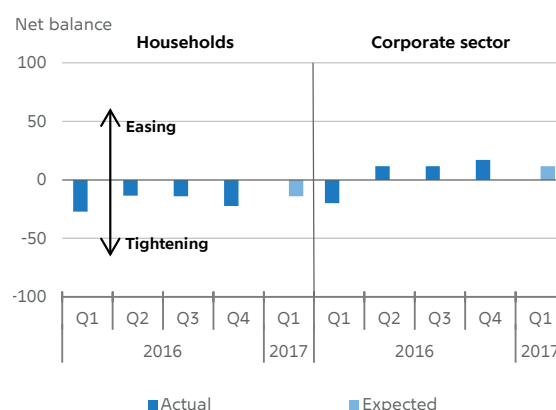
In Danmarks Nationalbank's most recent lending survey, mortgage banks stated that they tightened their credit standards for households slightly in the 4th quarter of 2016, while easing standards for the corporate sector, cf. Chart 19. In the 1st quarter of 2017, mortgage banks generally expect this trend to continue.

The tightening for households is broad-based, with mortgage banks taking turns in tightening standards a little since the end of 2015. The reason given for the tightening for households is still the January 2016 guidelines from the Danish Financial Supervisory Authority on prudent credit assessment when granting housing loans in growth areas.

The easing of credit standards for the corporate sector is concentrated on a few mortgage banks. For the corporate sector, the reasons given for the easing include, as previously, competitor behaviour and expectations of economic growth. Banks are also reporting a slight easing of credit standards for the corporate sector due to competitor behaviour.

**Easing of mortgage bank credit standards for the corporate sector, tightening for households**

Chart 19



**Note:** The lending survey provides qualitative statistical data based on responses from the largest Danish banks and mortgage banks. A negative figure indicates a tightening and a positive figure an easing of credit standards. For example, a net balance of -100 (100) means that all institutions have tightened (eased) their credit standards considerably, while a net balance of -50 (50) means that they have tightened (eased) them a little.

**Source:** Danmarks Nationalbank.