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Towards a neutral monetary policy in 2025

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Danmarks Nationalbank followed the European Central Bank's, ECB's, four interest rate cuts of 1 percentage point in total since the October meeting. Thus, the monetary policy rate spread to the euro area remains unchanged. It is the assessment of Danmarks Nationalbank that monetary policy and overall financial conditions in Denmark will be neutral for economic activity in 2025.

Monetary policy in the euro area and the US has become less restrictive

After further interest rate cuts in the euro area and the US, monetary policy has moved closer to a neutral level. This is especially true in the euro area, while the Federal Reserve still considers monetary policy in the US to be restrictive. Long-term government bond yields have also risen, especially in Europe, on the back of higher public investment prospects. Despite high geopolitical and trade policy uncertainty, the prospect of public investment has also contributed to equity price increases in Europe.

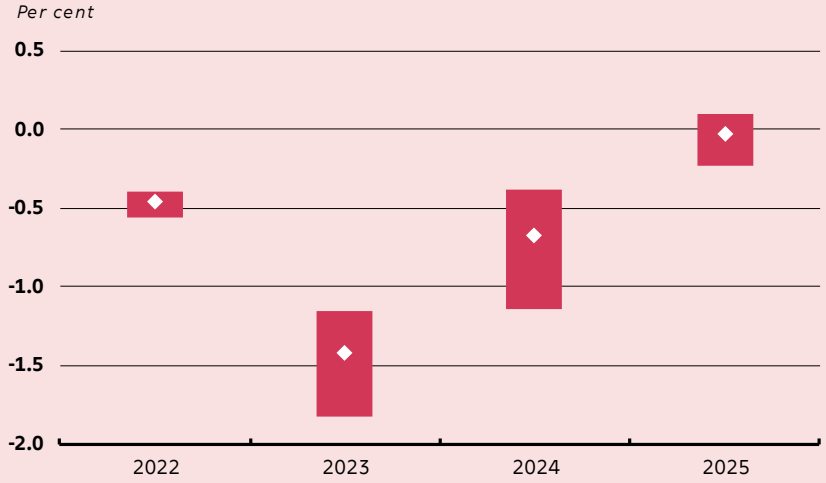
Stable krone and record-long period without intervention

The krone exchange rate against the euro has remained very close to the central rate. Danmarks Nationalbank has not intervened for over two years – the longest period since the fixed exchange rate policy was introduced in 1982. The stability of the Danish krone market reflects, among other factors, the -40 basis point yield spread between Danmarks Nationalbank and the ECB, which counteracts the capital inflow resulting from Denmark's current account surplus and large net foreign assets. The yield spread to the ECB has therefore remained unchanged.

Monetary policy is expected to have a neutral effect on the Danish economy in 2025

After a number of years with an activity-dampening monetary policy, it is the assessment of Danmarks Nationalbank that monetary policy and overall financial conditions will have a neutral effect on the Danish economy in 2025. This assessment is supported by several indicators, including the development of financial conditions and a comparison between the policy rate and estimates of the neutral interest rate level. A model-based analysis also shows that lagged effects from previous monetary policy tightening will fade this year.

Main chart
Monetary policy is expected to have a neutral effect on economic activity in Denmark in 2025

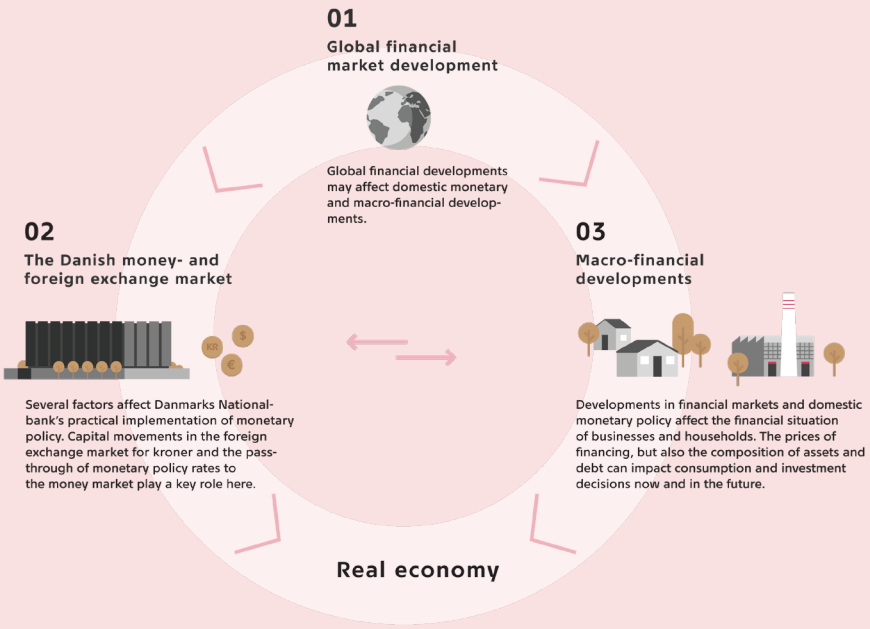


Note: The chart shows the accumulated effects of ECB interest rate changes since 2022 on Danish GDP relative to the structural level, according to Danmarks Nationalbank's DSGE model. The chart contributes to the overall assessment of the activity impact of monetary policy and general financial conditions in Denmark. Several indicators are included in this assessment. The white markings are mean estimates, while the red areas indicate 90 per cent confidence bands based on parameter uncertainty.
Source: Own calculations.

Why is it important?

The Danish fixed exchange rate policy means that monetary policy is tailored to ensuring a stable krone exchange rate against the euro. The fixed exchange rate policy means that Danmarks Nationalbank generally follows the interest rate decisions of the ECB. Therefore, the monetary policy of the euro area has a bearing on financial and economic developments in Denmark. So does global financial developments, as Denmark is a small open economy closely integrated into the international financial system. Both are analysed in chapter 1. Global financial developments may also affect the demand for kroner and thus Danmarks Nationalbank's execution of the fixed exchange rate policy. This is one of the elements touched upon in the second chapter. An important element in the third chapter of the analysis is the assessment of how the fixed exchange rate policy, interacting with global financial developments, affects macro-financial conditions in Denmark. These conditions are important for Danmarks Nationalbank's assessment of current and expected developments in the Danish economy.

The analysis is published twice a year.



Keywords

Monetary and financial trends | Banking and mortgage credit | Central banks | Fixed exchange rate policy | Financial markets | Households and corporations | Monetary policy | Foreign exchange market

01

Global financial market developments

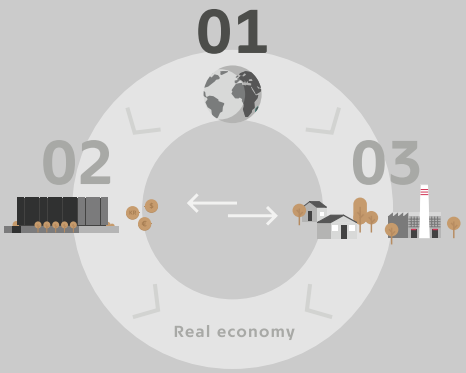
The period since the last release of Monetary and financial trends in September has been characterised by heightened geopolitical tensions and significant trade policy uncertainty.

Inflation has remained stable, close to, but still slightly above, the central banks' target in the euro area and the US. As a result, central banks have further reduced monetary policy rates and monetary policy, and overall financial conditions have become less restrictive for economic activity and inflation, especially in the euro area. Despite interest rate cuts by central banks, government bond yields have increased, mainly due to higher term premiums. The rise in European interest rates has been driven by the prospect of increased public spending on both defence and infrastructure investments.

European equity prices have risen substantially since September, primarily due to increased earnings expectations following announcements of higher public spending in Europe. US equity prices have remained broadly unchanged since September. This development reflects an initial increase until mid-February, driven by declining equity risk premia despite heightened geopolitical and trade policy uncertainty. However, in the subsequent period, US equity prices have declined substantially, following a weakening of macroeconomic indicators and the implementation of tariffs on close trading partners. The latter development has also led to substantial increases in measures of stock and bond market uncertainty.

Chapter 01 and how it relates to the rest of the publication

This chapter (01) provides an update on global financial market developments and monetary policy in the euro area and the US. In the light of inflation being closer to target, the ECB and Federal Reserve have lowered interest rates. The Danish fixed exchange rate policy (02) means that Danmarks Nationalbank has followed the ECB and reduced monetary policy rates. The fixed exchange rate policy and the fact that Denmark is a small open economy means that euro area monetary policy and global financial developments (01) are important for the financial and economic conditions of Danish households and companies (03).



Monetary policy has become less restrictive

The period since the last Monetary and financial trends in September 2024 has been characterised by an unpredictable and volatile geopolitical environment and high uncertainty about trade policy. European equity prices have risen substantially, largely driven by higher earnings expectations following announcements about increased public investment. Additionally, lower equity risk premia have contributed to this increase. In the United States, equity risk premia have also declined. However, lower earnings expectations, following from several releases of weak macroeconomic indicators and the implementation of tariffs on close trading partners, have led to a decline in US equity prices since mid-February. Consequently, US equity prices have remained broadly unchanged since September. Despite recent increases in measures of stock and bond market uncertainty, equity risk premia in both Europe and the US remain relatively low in a historical context.

The European Central Bank, ECB, and the US Federal Reserve have further reduced monetary policy rates and monetary policy, and overall financial conditions have become less restrictive for economic activity and inflation, especially in the euro area. However, despite the interest rate cuts, government bond yields have increased. German yields rose significantly following the proposal to ease the debt brake in order to boost German defence spending and invest in infrastructure.

The central banks have further lowered monetary policy rates in response to stable inflation figures

Since September 2024, both inflation and core inflation have been close to, but slightly above, the central banks' target in the euro area and the US, see chart 1.[1] In the euro area, inflation in February was 2.4 per cent, while core inflation was 2.6 per cent. By comparison, US inflation in January was 2.5 per cent, while core inflation was 2.6 per cent.

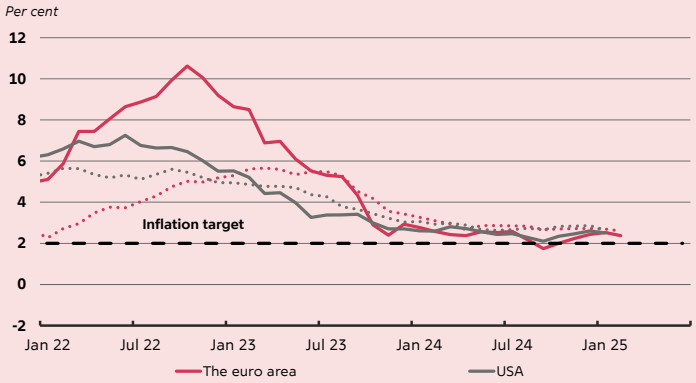
Since September, the ECB has reduced monetary policy rates by 1 percentage point, and the interest rate on the ECB's deposit facility is now 2.5 per cent. Danmarks Nationalbank has followed the ECB's interest rate cuts and has also reduced monetary policy rates by 1 percentage point, and Danmarks Nationalbank's monetary policy reference rate, the current account rate, is currently 2.1 per cent, see the chapter on *The Danish money and foreign exchange market.* In the US, the Federal Reserve has lowered monetary policy rates by 0.5 percentage points, and the central bank’s target range for the federal funds rate is now 4.25-4.50 per cent.

Both the ECB and the Federal Reserve have further reduced their balance sheets by allowing bonds from their bond portfolio to mature without reinvesting coupon and principal payments. Since the end of 2024, the ECB has stopped reinvesting the maturing bonds from the pandemic-related purchase programme, PEPP, and no longer makes bond purchases. As a consequence of the balance sheet deleveraging, the excess liquidity in the banking systems in the euro area and the US has decreased significantly but is still considered sufficient to ensure the pass-through of monetary policy rates, see box 1.

[1] Both the ECB and the Federal Reserve have mandates to ensure price stability. The ECB aims for an inflation rate of 2 per cent in the medium term (measured by the Harmonised Index of Consumer Prices, HICP). The Federal Reserve has a dual mandate, emphasising both low inflation and high employment. The Federal Reserve aims for an inflation rate of 2 per cent (measured by the Personal Consumption Expenditure Price Index, PCE).

CHART 1

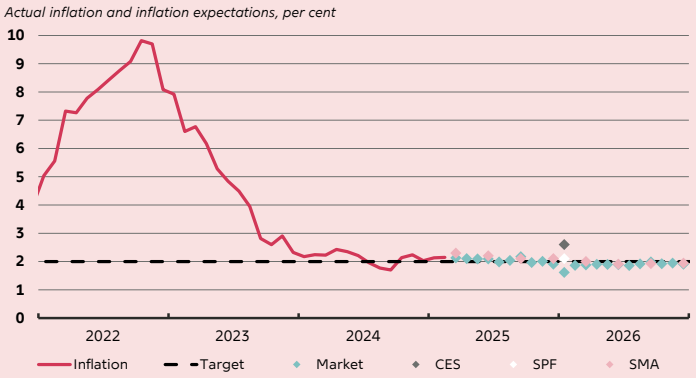
Inflation has been close to the central banks' target since September



Note: The chart shows inflation (line) and core inflation (dots) in the euro area and the US. Core inflation measures general price increases, minus direct effects of energy and food, and is often used as the most common measure of underlying price pressures. For the euro area, HICP excluding energy and food is used, and for the US, PCE excluding energy and food is used. The dashed line indicates the inflation target of 2 per cent. The latest observation is January 2025 (US) and February 2025 (euro area).
Source: Macrobond and Danmarks Nationalbank.

CHART 2

Inflation expectations in the euro area are close to the ECB's target of 2 per cent



Note: The chart shows the annual inflation rate in the euro area, as measured by the HICP index, alongside four different measures of expectations for the same index. The latest observation for the HICP index is February 2025. "CES", "SMA" and "SPF" refer to responses from the ECB's Consumer Expectations Survey, Survey of Monetary Analysts and Survey of Professional Forecasters questionnaires from January, March and Q1 2025 respectively. "Market" indicates market prices to hedge inflation risk using inflation fixings. The most recent observation for market prices is from 12 March 2025.
Source: Bloomberg, Macrobond and Danmarks Nationalbank

BOX 1

The central banks' balance sheet deleveraging has reduced the amount of excess liquidity for banks in the euro area and the US

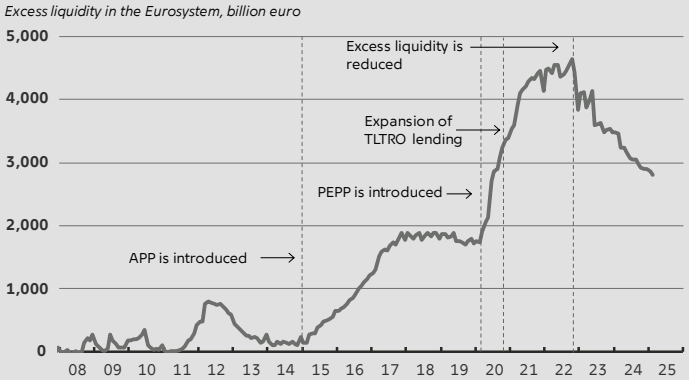
ECB has stopped reinvesting maturing bonds from its pandemic-related purchase programme, PEPP

As part of the tightening of monetary policy, the ECB has reduced its balance sheet, partly by reducing the holdings of bonds purchased in connection with the bond purchase programmes and partly by redeeming long-term loans to banks, TLTROs. Thus, in March 2023, the ECB started scaling down the holdings of bonds from its first bond purchase programme, the APP, and since July 2023, the ECB has allowed all bonds from the APP to mature without reinvesting coupon and principal payments. Similarly, in the second half of 2024, the ECB started scaling down the holdings in the pandemic-related purchase programme, PEPP, and since the end of 2024, the ECB has also allowed all bonds from the PEPP holdings to mature without reinvesting principal and coupon payments. Since September, the ECB's bond holdings have been reduced by an average of approximately 40 billion euro per month.

As a consequence of the balance sheet deleveraging, the amount of excess liquidity in the Eurosystem has decreased by 40 per cent since its peak in October 2022, see chart A. In March 2024, the ECB adjusted its operational framework for the implementation of monetary policy to ensure its pass-through in line with the balance sheet deleveraging.[1] The ECB considers that the amount of excess liquidity in the Eurosystem is ample and hence sufficient in order to ensure the pass-through of monetary policy rates. The balance sheet deleveraging has progressed as intended and has helped improve market functionality with clear signs of increased market activity and reallocation of reserves across banks and borders.[2]

CHART A

The excess amount of liquidity in the Eurosystem has decreased significantly since the end of 2022



Note: Excess liquidity in the Eurosystem is defined as the difference between the total liquidity supplied to the banking system and the banks' reserve requirements. The latest data point is for February 2025.
Source: Bloomberg and Danmarks Nationalbank.

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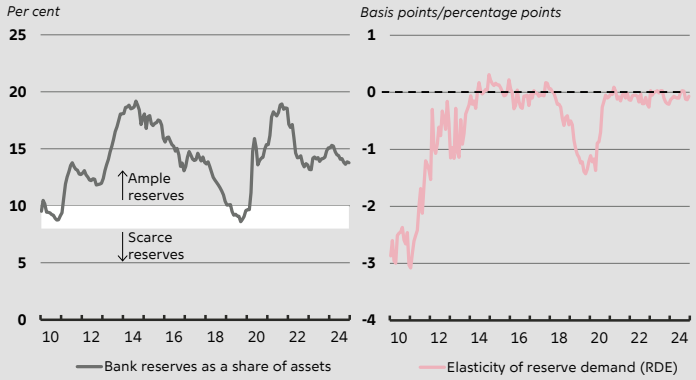
The Federal Reserve has also reduced the size of its balance sheet

The Federal Reserve began the reduction of its balance sheet in May 2022 by allowing a portion of the bonds from its bond portfolio to mature without reinvesting principal and coupon payments. The effect of this has primarily been reflected in a significant decrease in the use of the central bank's reverse repo facility, RRP, which, in addition to banks and credit institutions, is also available to money market funds and other financial institutions.[3] By contrast, the level of bank reserves as a share of total bank assets has remained fairly stable over the same period at around 13-15 per cent, see the left panel in chart B. The Federal Reserve Bank of New York has constructed a measure of the elasticity of demand for bank reserves, illustrated in the right panel of chart B, and uses this as an indicator of reserve ampleness. Based on this, they find that the amount of reserves available at present can still be interpreted as being ample and thus sufficient in order to ensure the pass-through of monetary policy rates.[4,5]

[1] See ECB announcement (*link*) and A.M. Grønlund, G. Kidd and N. Loncar, The ECB's new monetary policy framework has no impact on the implementation of the fixed exchange rate policy, *Danmarks Nationalbank Analysis*, no. 9, May 2024.
[2] See the speech by Isabel Schnabel from 7 November 2024 (*link*).
[3] The Federal Reserve has used RRP as a tool to manage liquidity in the financial system and help keep the policy rate within the target range. In a reverse repo transaction, the Federal Reserve sells securities to a counterparty with an agreement to buy them back at a set price at a future date, allowing counterparties, such as banks, to invest their excess liquidity in a safe and short-term manner. A decrease in RPP activity can therefore be interpreted as a decrease in the excess amount of liquidity among monetary policy counterparties. Activity in the RRP facility has decreased to approximately 131 billion dollars from approximately [2,500] billion dollars at the end of 2022.
[4] The Federal Reserve operates a so-called *supply-driven* floor system for implementing monetary policy, where short-term money market rates are managed by adjusting the amount of reserves available in the banking system. To ensure smooth transitions between policy stages, the central bank must determine the appropriate level of bank reserves.
[5] The volatility of the SOFR (money market reference rate) has risen sharply since September, and on some days in September and December 2024, it exceeded the Federal Reserve's IORB (interest on bank reserves) rate, which may indicate a liquidity shortage. However, the development of SOFR is also affected by other factors, such as changes in the weighted average maturity of US Treasuries. The Federal Reserve considers a number of other measures in addition to the RDE when assessing liquidity ampleness (*link*).

CHART B

Continued signs of an ample amount of excess liquidity available to banks in the US



Note: Left panel: bank reserves as a percentage of total bank assets. The latest data point is for January 2025. Right panel: The Federal Reserve Bank of New York's measure of the elasticity of demand for bank reserves (Reserve Demand Elasticity, "RDE"). See G. Afonso, D. Giannone, G. La Spada and J.C. Williams, Scarce, Abundant, or Ample? A Time-Varying Model of the Reserve Demand Curve, *Federal Reserve Bank of New York Staff Reports*, no. 1019, April 2024. The paper estimates that the transition from ample reserves to scarce reserves occurs when bank reserves as a share of total bank assets is between 8 and 10 per cent (white area in the left panel) and when the RDE becomes sufficiently negative. The latest data point for RDE is January 2025.
Source: Haver Analytics, Federal Reserve Bank of St. Louis, Federal Reserve Bank of New York and Danmarks Nationalbank.

Measures of inflation expectations point to inflation close to 2 per cent in the euro area and above-target inflation in the US in the coming year

Indicators point to euro area inflation in 2025 being close to the ECB's 2 per cent inflation target, including survey-based inflation expectations for professional forecasters ("SPF"), analysts ("SMA") and households ("CES"), as well as market-based indicators of inflation expectations, see chart 2.

For the US, inflation over the coming year is expected to be above the Federal Reserve's target of 2 per cent. Thus, in February 2025, professional forecasters expected[2] inflation to be 2.8 per cent[3] by the end of 2025, while market

[2] CPI (Consumer Price Index) inflation.
[3] Professional forecasters' expectations are from the Philidelphia Federal Reserve Bank Survey of Professional Forecasters (*link*).

participants expect inflation to be 2.9 per cent over the coming year. According to surveys, US households expect inflation to be between 3.1 and 4.3 per cent.[4,5]

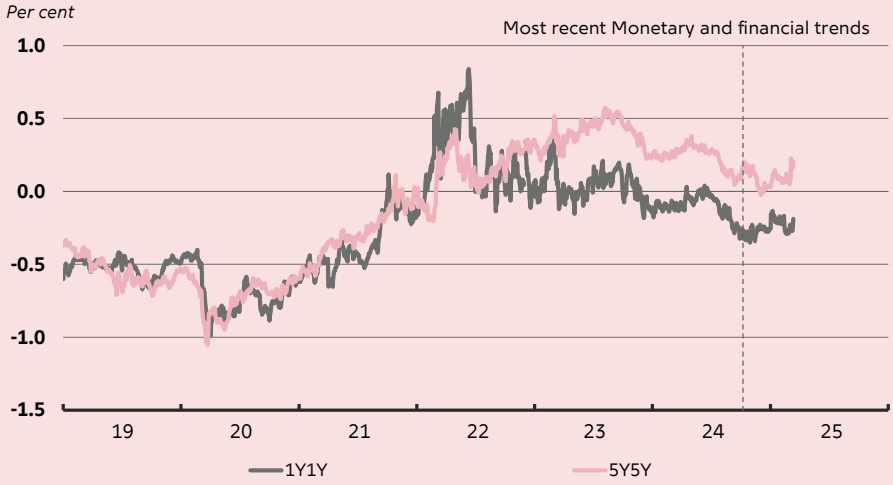
Inflation risks for the euro area are more balanced compared to autumn 2024

The ECB now considers risks to inflation in the euro area to be balanced, in contrast to autumn 2024, when upside risks to inflation were considered to dominate. At the same time, according to ECB assessment, the large inflationary shocks over the past few years no longer have a significant impact on inflation in the euro area.

A model-based decomposition of market-based inflation compensation[6] suggests that the inflation risk premium is negative over the next two years and that short-term inflation risk premia have decreased during 2024, although they remain at a higher level than in the period before the covid-19 pandemic, see chart 3. This suggests that market participants view short-term inflation risks in the euro area as being tilted to the downside. Long-term inflation risk premia have increased in the period since September, and the increase in March followed after the announcements of fiscal policy easing in Europe with the aim of increasing defence spending, among other things.

CHART 3

The short-term inflation risk premia declined in 2024 but remain above pre-covid-19 levels



Note: Inflation risk premium for inflation in the euro area. The inflation risk premium is an average of Danmarks Nationalbank's two term structure models (Arbitrage-free Nelson Siegel and Joshlin, Singleton & Zhu (2011)). XyZy indicates the Z-year inflation rate in X years. The latest data point is from 12 March 2025.
Source: LSEG Workspace and Danmarks Nationalbank.

A similar decomposition for the US indicates that inflation risk premia have increased since September. In December, the Federal Reserve revised its inflation

[4] Based on responses to surveys conducted by the Federal Reserve Bank of New York (*link*) and the University of Michigan (*link*).
[5] The December FOMC forecast showed that the US Federal Reserve expects its preferred inflation target, Personal Consumption Expenditures, PCE, inflation, to be 2.5 per cent in 2025 (*link*). By comparison, professional forecasters in February 2025 expected PCE inflation of 2.4 per cent by the end of 2025.
[6] Inflation compensation can be broken down into market participants' expectations of future inflation and an inflation risk premium, which indicates the compensation investors require for taking on the risk associated with future inflation levels.

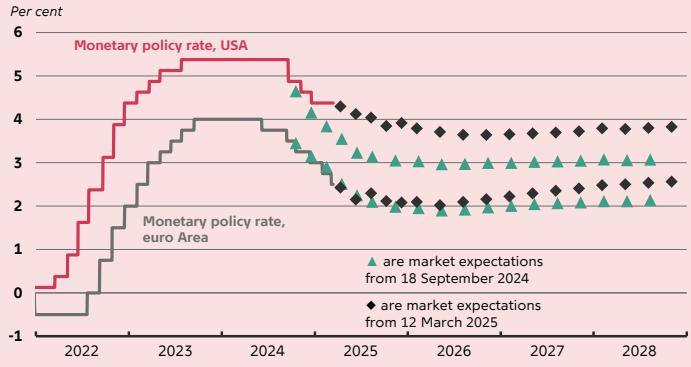
forecast upwards and considered the risks to inflation to be tilted to the upside, partly due to generally strong macroeconomic developments[7] and possible effects of trade restrictions.[8]

The market has significantly downgraded expectations for the number of interest rate cuts from the Federal Reserve, and slightly from the ECB

Since September, market participants have significantly downgraded their expectations for the number of interest rate cuts by the Federal Reserve and now expect further interest rate cuts totalling 0.5 percentage points during 2025, compared to an expectation of 1.3 percentage points in September, see chart 4.[9] Market participants' expectations for the number of interest rate cuts by the ECB have also fallen since September, although to a lesser extent than for the Federal Reserve, see chart 4. Expectations for the ECB's interest rates rose, partly due to the proposal to relax fiscal policy rules in Germany, see below. Market participants expect the ECB to cut monetary policy rates by a further approximately 0.4 percentage points during 2025.

CHART 4

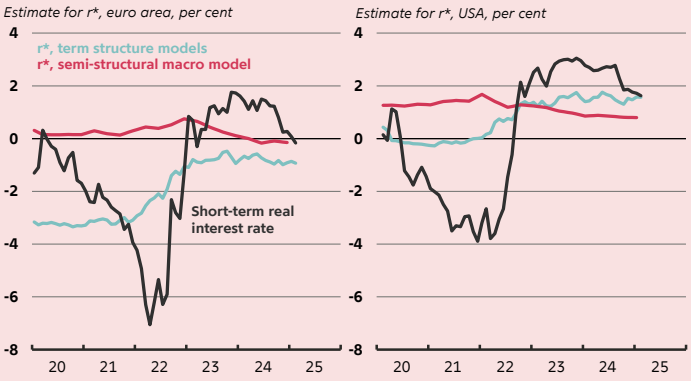
Market participants expect fewer interest rate cuts by the Federal Reserve and the ECB compared to September



Note: The chart shows the ECB deposit facility rate (grey line), the midpoint of the Federal Reserve's federal funds target range (red line), the currently expected interest rate paths (black diamonds) and the expected interest rate paths at the release of the most recent Monetary and financial trends analysis on 18 September 2024 (green triangles). The expected paths for monetary policy rates are based on €STR swaps and SOFR swaps. The current interest rate path is from 12 March 2025.
Source: LSEG Workspace and Danmarks Nationalbank.

CHART 5

Monetary policy has moved closer to being neutral in the euro area and the US over the past six months



Note: The chart shows a 1-year expected real interest rate and estimated neutral real rates for the euro area and the US respectively, labelled r*. The one-year real interest rates are calculated as the interest rate on a one-year overnight indexed swap minus the interest rate on a one-year inflation swap. The chart contains two sets of natural real interest rates based on term structure models and a semi-structural macro model. The r* estimates from the term structure models are based on a German and a US government bond yield starting in five years and expiring in 10 years, respectively. The interest rate is adjusted for an estimated term premium calculated as the average of two different term structure models and subtracted from the ECB and Federal Reserve inflation targets of 2 per cent. Observations for the short-term real interest rate and the term structure models are end-of-month, and the semi-structural macro model is quarterly. The dashed red lines are a flat projection from the latest estimate. The latest observation is February 2025 (term structure model and short real interest rate) and December 2024 (semi-structural model) respectively.
Source: LSEG Workspace, San Francisco Federal Reserve, New York Federal Reserve Bank and Danmarks Nationalbank.

[7] Economic growth in the US continued to outperform the euro area during the period, and US economic key performance indicators surprised positively until February, after which a number of key performance indicators surprised negatively (based on the development of the Citi Economic Surprise Index for the US).
[8] See the minutes of the December monetary policy meeting (*link*).
[9] At the most recent FOMC meeting in January, monetary policy rates were unchanged and the central bank signalled that inflation must fall further and the labour market must become less tight before further rate cuts will be considered.

Monetary policy has become less restrictive since September

As monetary policy rates in the euro area and the US have been reduced, monetary policy and overall financial conditions have become less restrictive for economic activity and inflation, especially in the euro area.[10] Monetary policy has thus moved closer to being neutral.[11,12]

The assessment of the monetary policy stance is based on a number of indicators. One of the indicators is the level of the real interest rate compared to estimates of the equilibrium real interest rate (also called the natural real interest rate and r*). Short-term market-based real interest rates in the euro area and the US have fallen and approached the estimated equilibrium real interest rates[13], although they are still higher, see chart 5.[14] This suggests that monetary policy has moved closer to neutral territory since the autumn. However, the estimates for the equilibrium real interest rate remain very uncertain.

Past monetary tightening continues to affect financing conditions in the euro area. Although financing costs for households and businesses in the euro area have fallen further as a result of the ECB's monetary policy rate cuts since September, they remain elevated in a historical context. At the same time, the overall tightening of banks' credit standards since the start of interest rate hikes in 2022 remains significant. By contrast, borrowing by businesses and households in the euro area has started to increase, although overall borrowing remains subdued.[15]

Substantial increase in long-term yields

Despite the monetary policy rate cuts, risk-free rates have increased since September. Long-term government bond yields in particular have risen, which can largely be attributed to increased term premiums. European interest rates have risen significantly due to the proposal to ease the debt brake in Germany in order to increase investments in German defence and other infrastructure, among other things. In addition, the European Commission, in collaboration with EU countries, has unveiled a plan to strengthen the EU's defence with billions of euros.

Prospects of higher public spending in Europe led to a significant shift in risk-free rates

Since September, the euro area 10-year risk-free interest rate, the swap rate, has increased by 0.3 percentage points. This only reflects a development from the end of February, for example after the elections in Germany, see chart 6. During this period, several European politicians made statements on a need for increased public spending on defence due to the changed geopolitical security situation after the US election, as well as infrastructure investments following the recommendations of the Draghi report in September. The 5 March proposal to

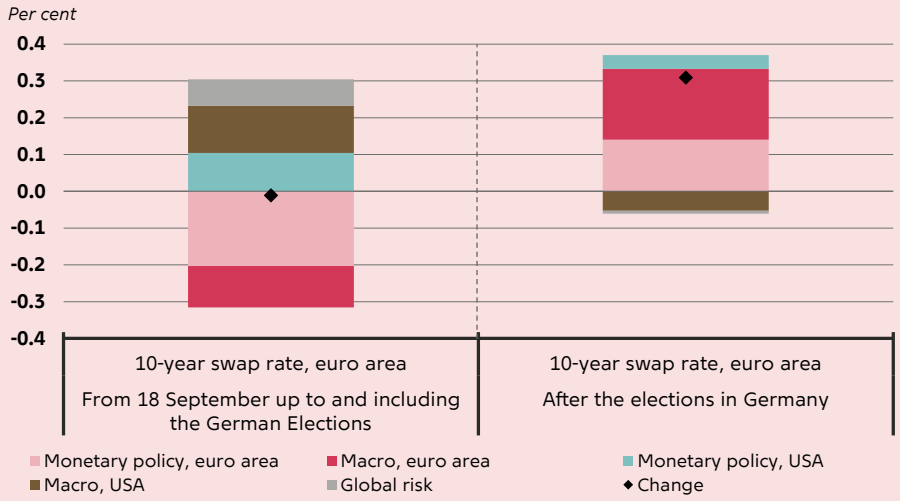
[10] See the press release from the latest ECB monetary policy meeting on 6 March 2025 (*link*).
[11] The Federal Reserve continues to assess that monetary policy and overall financial conditions are restrictive to economic activity and inflation in the US. See the press release from the January FOMC meeting (*link*).
[12] See the transcript from the interview with Isabel Schnabel from 14 February 2025 (*link*).
[13] The equilibrium real interest rate is the real interest rate that is compatible with stable price and wage development when actual economic activity is at its structural level. If the short-term real interest rate is higher (lower) than the equilibrium real interest rate, it is an indication that monetary policy is restrictive (supportive) of economic activity, see for example S.T. Hetland, R.B. Larsen, M.M. Ingholt and M. Spange, Real interest rates in the context of inflation and higher government debt, *Danmarks Nationalbank Analysis*, no. 2, February 2023.
[14] A recent ECB analysis suggests that the natural real interest rate in the euro area is between -0.25 and 0.25 per cent based on a wider range of models than the two models shown in chart 5, and that the estimates have remained largely unchanged since late 2023 (*link*).
[15] See the press release from the latest ECB monetary policy meeting on 6 March 2025 (*link*).

ease the debt brake in Germany had a particularly strong impact on European long-term rates. The debt brake puts a cap on how much debt the German government can take on. The purpose of the relaxation is to increase German defence spending and invest in German infrastructure to promote German growth, among other things. Furthermore, the European Commission, in collaboration with EU countries, has presented a plan to rearm the EU's defence with 800 billion euro, partly by taking on common EU debt and relaxing EU budgetary rules.[16] A model-based decomposition of the swap rate thus attributes the rise in interest rates since the end of February to higher growth expectations in the euro area and higher expectations for euro area monetary policy rates, see chart 6 (right panel).

This contrasts with the period from September to February, when subdued euro area growth and ECB monetary easing generally contributed negatively to European interest rates, see chart 6 (left panel). During that period, European interest rates were held up by spillover effects from strong growth in the US and expectations of fewer interest rate cuts by the Federal Reserve.

CHART 6

Higher growth expectations contributed to the rise in the euro area 10-year risk-free rate since end of February



Note: Left panel: indicates changes since 18 September 2024 up to and including the German elections on 23 February 2025. Right panel: indicates changes since the German elections up to and including 12 March 2025. The decomposition is based on the model in L. Brandt, A.S. Guilhem, M. Schröder and I.V. Robays, What drives euro area financial market developments? The role of the US spillovers and global risk, *ECB Working Paper Series*, no. 2560, May 2021. The model identifies five structural shocks that can be used to decompose the development of the euro area 10-year swap rate. A positive contribution from e.g. "monetary policy, USA" means that news about monetary policy in the US has led to overall expectations among market participants of higher monetary policy rates going forward.
Source: Danmarks Nationalbank.

Higher term premium contributed to the sharp rise in German long-term government bond yields

Since September, the interest rate on the 10-year government bond in Germany has increased by 0.7 percentage points whereas the 2-year government bond

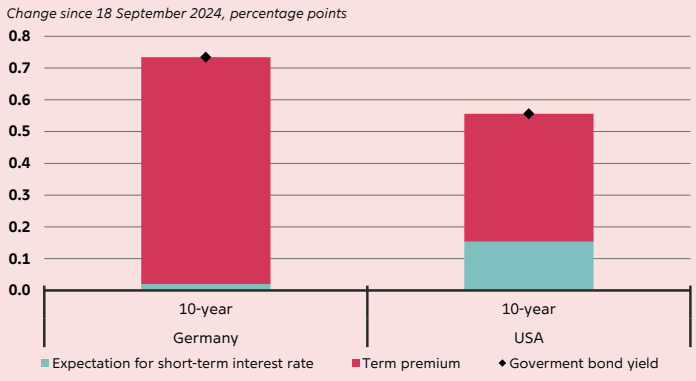
[16] See press commentary from EU Commission President Ursula von der Leyen from 4 March 2025 (*link*).

yield has remained unchanged. The increase in the 10-year German government bond yield since September has been driven by an increase in the term premium, see chart 7. The term premium is the compensation that investors require for holding long bonds over short bonds. The spread between the 10-year German government bond yield and a euro interest rate swap with the same maturity meant that the yield spread turned positive in October, after previously being negative, see chart 8.

From September to the end of February, the increase in term premiums and spreads to euro interest rate swaps should be seen especially in light of the combination of the ECB's rollback of the asset purchase programmes[17] and increased issuance of German government bonds. This combination has significantly increased the availability and supply of German government bonds, reducing their scarcity and special status[18] in the money and bond markets. In the wake of the proposal of an easing of the German debt brake, term premiums and spreads to euro interest rate swaps increased further, especially for 10-year German government bonds. In addition to leading to higher expectations for the future supply of German government bonds, the announcement also led to higher long-term inflation risk premiums in the euro area, as mentioned earlier. As a result of the German interest rate increases, the spread between Danish and German 10-year government bond yields has also fallen to a negative level, see chapter 2 on *The Danish money and foreign exchange market.*

CHART 7

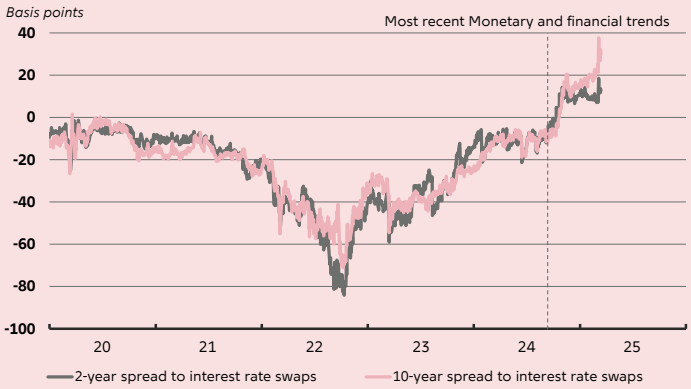
Increasing term premiums have contributed to an increase in long-term government bond yields since September



Note: The change in 10-year zero-coupon government bond yields decomposed into an interest rate risk premium (term premium) and the expectation for the average short-term interest rate. The decomposition is an average of two dynamic interest rate models. See J. Christensen, F.X. Diebold and G.D. Rudebusch, The arbitrage-free class of Nelson-Siegel term structure models, *Journal of Econometrics*, 164.1, pp. 4-20, 2011, and T. Adrian, R.K. Crump and E. Moench, Pricing the term structure with linear regressions, *Journal of Financial Economics*, 110.1, pp. 110-138, 2013 (ACM). The most recent observation is 12 March 2025 for Germany and 10 March 2025 for the US.
Source: LSEG Workspace, San Francisco Federal Reserve Bank, New York Federal Reserve Bank and own calculations.

CHART 8

German yield spreads to euro swap rates have narrowed significantly and have gone from negative to positive territory



Note: Yield spread between 2- and 10-year German government bonds and ESTR swap rates with the same maturities. The latest data point is 12 March 2025.
Source: LSEG Workspace and Danmarks Nationalbank.

[17] The ECB's quantitative tightening also affected yields on government bonds in other euro area countries, see the chapter on *The Danish money and foreign exchange market.*
[18] See Danmarks Nationalbank, Interest rates have been cut, but monetary policy remains tight, *Danmarks Nationalbank Analysis (Monetary and financial trends)*, no. 13, September 2024.

Increased term premiums have also contributed significantly to the rise in US government yields

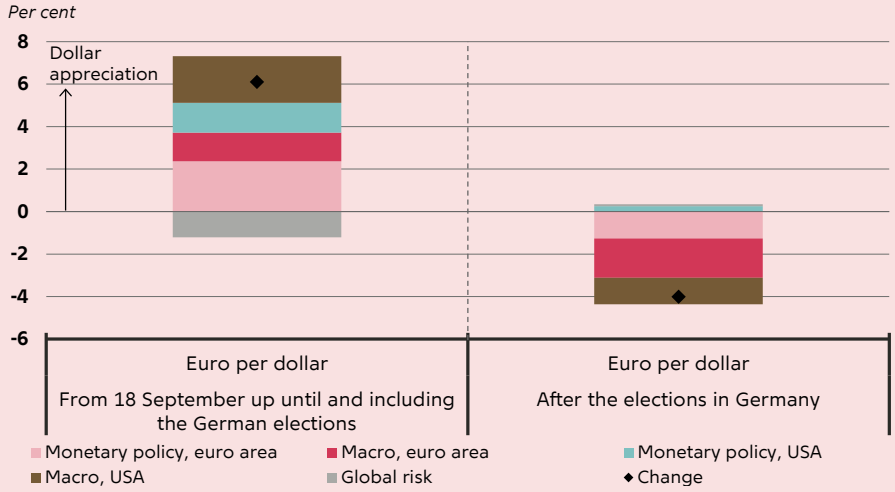
The yield on the 10-year US government bond has increased by 0.6 percentage points since September, while the 2-year has increased by 0.4 percentage points. The expectation of fewer interest rate cuts by the Federal Reserve has helped boost US government yields since September. However, the interest rate increases are also largely due to an increase in the term premium. The increase has been a trend in recent years, with the Federal Reserve gradually rolling back quantitative easing, see box 1. In the years leading up to 2022, quantitative easing helped push the term premium down to a historically low level. The increase in the term premium in the US since September should also be seen in light of other factors. For example, the strong macroeconomic indicators until mid-February and expectations of the new US administration's policy measures have contributed to an increase in the inflation risk premium, as mentioned earlier, which increases the risk of higher interest rates going forward.

The dollar appreciation reversed following prospects of increased public investments in Europe

The period from September until the end of February was characterised by a strong appreciation of the dollar against the euro, see chart 9 (left panel). A model-based decomposition of the development suggests that differences in macroeconomic and monetary policy expectations in the US and the euro area during this period contributed to this. Some of the dollar's appreciation has subsequently reversed, marked by developments since the German election on 23 February in chart 9 (right panel). During this period, the dollar has weakened by 4 per cent against the euro. This development should be seen in light of the prospects for significant fiscal easing in Europe, which has contributed to a sharp rise in European interest rates, as mentioned earlier. Overall, the dollar has strengthened by 2.1 per cent against the euro since September.

CHART 9

The dollar has strengthened overall against the euro since September



Note: Left panel: indicates changes since 18 September 2024 up to and including the German elections on 23 February 2025. Right panel: indicates changes since the German elections up to and including 12 March 2025. The decomposition is based on the model in L. Brandt, A.S. Guilhem, M. Schröder and I.V. Robays, What drives euro area financial market developments? The role of the US spillovers and global risk, *ECB Working Paper Series*, no. 2560, May 2021. The model identifies five structural shocks that can be used to decompose the development of the US dollar against the euro.

Source: Danmarks Nationalbank.

Import tariffs, a key element of the new US administration's policy, typically lead to a short-term strengthening of the currency of the party imposing them, though the effect depends, among other factors, on whether there are retaliatory actions by other countries.[19] In the event that demand for imported goods decreases following the introduction of import tariffs, this could strengthen the dollar in the short term due to lower demand for foreign currency relative to the US dollar.[20] Furthermore, import tariffs could strengthen the dollar against the euro if they lead to expectations of higher interest rates in the US. Import tariffs can also strengthen the dollar through safe haven flows if it leads to financial market uncertainty. Global uncertainty is estimated, in isolation, to have weakened the dollar since September.

Rising European equity prices and substaintial volatility in US equities

The current geopolitical environment is the most unpredictable and volatile in decades, with significant uncertainty about global trade policy, particularly following the US presidential election. European equity prices have risen substantially since September, primarily due to increased earnings expectations following announcements of higher public spending aimed at boosting deference and other infrastructure investments in Europe. By contrast, US equity prices have remained broadly unchanged since September, see chart 10. This development reflects an increase from September until mid-February, driven by a decline in equity risk premia despite heightened geopolitical and trade policy uncertainty. However, this increase has reversed in the subsequent period, following a weakening of macroeconomic indicators and the implementation of tariffs on close trading partners.

European equity prices have risen substantially, while US equity prices have been volatile

Since the latest Monetary and financial trends in September, the European Euro Stoxx index has increased by 10.9 per cent, while the leading US stock index, the S&P500, has increased only marginally by 0.3 per cent overall. This development follows an extended period of increases in US equity prices which surpassed those in Europe, driven primarily by technology stocks in the US.

In Europe, the increase in the equity prices since September has primarily been driven by higher earnings expectations for European companies, see chart 11. This should be viewed in the context of a change in European growth prospects following from political proposals since the end of February, as mentioned earlier. A slightly lower risk premium, which is the additional return that investors demand as compensation for investing in a share rather than, for example, a government bond, has also contributed to the increase in European equity prices since September.

US equity prices also increased substantially from September until mid-February. The increase was driven by a decline in the equity risk premium, see chart 12. The decline in equity risk premia in the US and in Europe took place despite heightened geopolitical and trade policy uncertainty, primarily following from the US presidential election in November. Historically, the impact of rising uncertainty about US trade policy has only had a limited effect on equity prices in

[19] See blog by P. Bergin and G. Corsetti, "Monetary policy in response to tariff shocks", from 27 November 2024 (*link*).
[20] See blog from The Budget Lab, "Tariffs, the Dollar, and the Fed" (*link*).

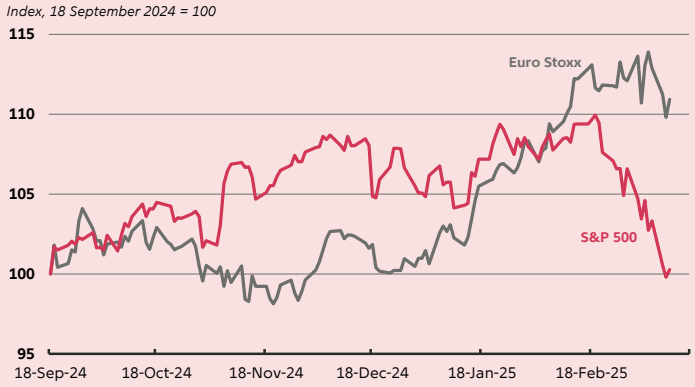
the US and the euro area, and the effect tends to come with some delay, see box 2.

Since mid-February, US equity prices have declined substantially, almost reversing the prior increase, see chart 10. The decline in US equity prices since mid-February reflects lower earnings expectations for US companies, see chart 11. This should be viewed in the context of the release of several weak macroeconomic indicators, along with the implementation of tariffs on close trading partners, who retaliated with tariffs on US goods. This latter development has contributed to a substantial increase in measures of stock and bond market uncertainty since mid-February.

Despite the latest increase in measures of uncertainty in the stock and bond markets and generally high uncertainty about geopolitics and global trade policy, equity risk premia in both Europe and in the US are still at low levels when comparing to the past 15 years, see chart 12. This is particularly the case in the US, where the equity risk premium has, on average, been approximately 3 to 4 percentage points below that of the European risk premium since the beginning of the previous decade. Credit spreads in Europe and in the US also remain low relative to historical averages.

CHART 10

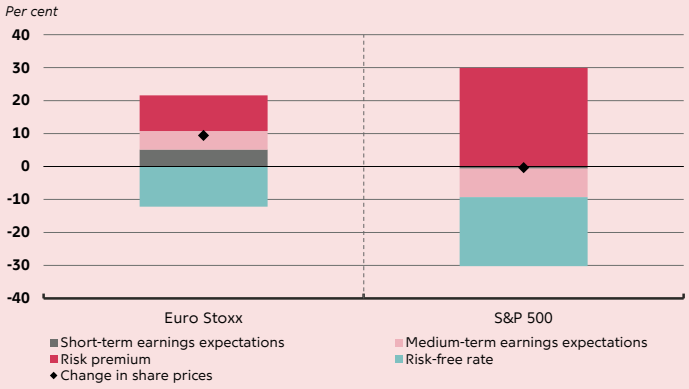
US equity prices have declined substantially since mid-February



Note: The chart shows the development in the leading European Euro Stoxx index and the leading US S&P 500 index since 18 September 2024. The latest data point is for 12 March 2025.
Source: LSEG Workspace and Danmarks Nationalbank.

CHART 11

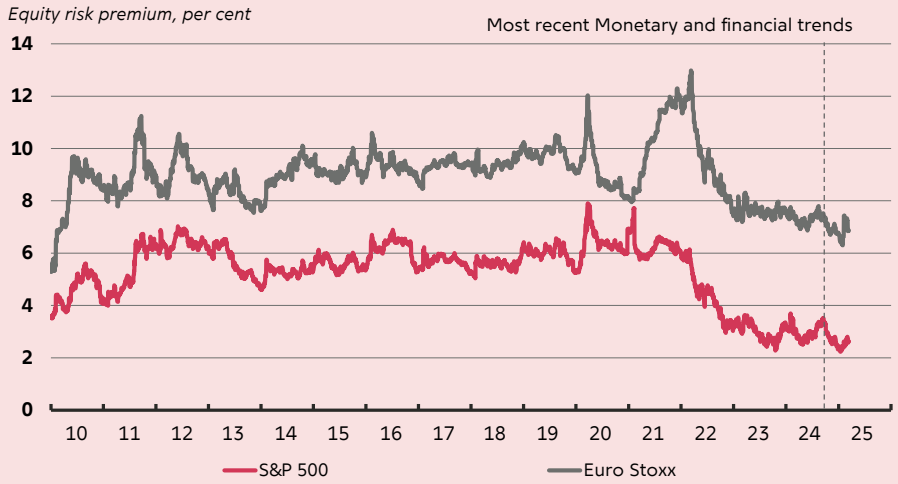
Higher earnings expectations have supported the rise in European equity prices since September



Note: The chart decomposes the change in the two stock indices from 18 September 2024 to 12 March 2025. The contributions from the individual factors add up to the black square, which shows the total return over the period. The risk premium and the risk-free interest rate, here represented as the interest rate on a 10-year government bond, reflect the total discount rate used to discount the future expected profits. The equity risk premium and decomposition are calculated using a 3-phase dividend discount model from Fuller and Hsia, A Simplified Common Stock Valuation Model, *Financial Analysts Journal*, Vol. 40, no. 5, Sep.-Oct., 1984.
Source: LSEG Workspace and Danmarks Nationalbank.

CHART 12

Equity risk premia in both the US and in Europe have declined since September



Note: Equity risk premia for the US and Europe are measured as described in the note for chart 11.
Source: LSEG Workspace and Danmarks Nationalbank.

BOX 2

Trade policy uncertainty has historically had limited effect on equity prices

This box examines how uncertainty around US trade policy has historically affected leading stock indices in the US and in Europe. The Trade Policy Uncertainty Index is used as a measure of trade policy uncertainty.[1] The index is a text-based index based on coverage of the political debate on trade barriers in seven major US newspapers and is therefore an indicator of uncertainty about changes in US trade policy. Thus, the average effects of changes in this index on the S&P 500 and Euro Stoxx 600 indices measured in US dollars are estimated on monthly data from January 1990 to October 2024.[2]

Historically, an increase in uncertainty around US trade policy has generally had limited impact on equity prices, see chart A. In the US, there is a tendency for a very small increase in equity prices in the same month that uncertainty arises and a slight decrease after six months and a year. However, the effects are small and statistically insignificant. In Europe, it has historically had a negative effect on equity prices when uncertainty around US trade policy increases. However, the effect is delayed and only becomes statistically significant after six months. The effect of an increase in trade uncertainty, similar to the record-breaking increase in the uncertainty index after the US presidential election in 2024, is a 3.9 per cent equity price drop after one year in Europe.

The limited effect of trade uncertainty on equity prices may reflect uncertainty about whether potential trade measures from the US will be implemented and whether restrictions will have major effects on companies' profits, for example, due to changes in macroeconomic developments. The uncertainty surrounding the effects of potential trade barriers on the macroeconomy is partly because they depend on several factors, including potential changes in complex trade patterns.[3] The lagged effects suggest that equity prices are affected when the economic effects become clearer. In general, macroeconomic effects in scenarios with trade barriers are also lower in the US than in the euro area, and in the US, the macroeconomic effects are less clear-cut in the short term, as they will depend on whether other countries will match any trade barriers from the US.[4]

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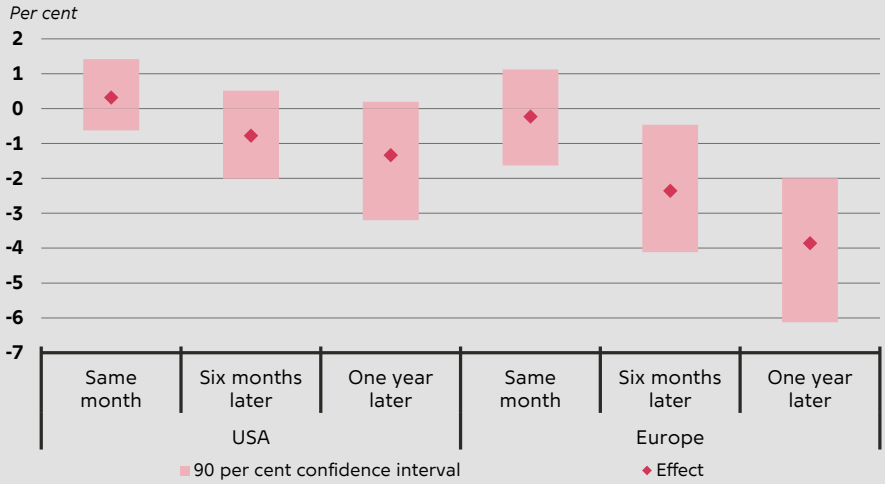
Chart A

Uncertainty about US trade policy has had a limited and delayed effect on equity prices

Effect on equity prices after a change in uncertainty corresponding to December 2024



Note: Impulse response functions and confidence bands are estimated with the Smooth Local Projections method, see R. Barnichon and C. Brownless, Impulse response estimation by smooth local projections, *Review of Economics and Statistics*, 101(3), pp. 522-530, 2019.
Source: LSEG Workspace, Haver Analytics, Macrobond and own calculations.

[1] See D. Caldara, M. Iacoviello, P. Molligo, A. Prestipino and A. Raffo, The economic effects of trade policy uncertainty, *Journal of Monetary Economics*, 109, pp. 38-59, 2020.
[2] The effect of changes in 10-year interest rates in the US and Germany, consumer prices and industrial production on stock indices is controlled for based on OECD data, and a six-month lag is included in the estimation model. The results are robust to excluding data from the covid-19 pandemic and to including both more and fewer lags in the model.
[3] See box 4 in Danmarks Nationalbank, Prospect of lower wage increases and stable inflation despite uncertain times, *Danmarks Nationalbank Analysis (Outlook for the Danish economy)*, no. 9, 19 March 2025.
[4] See also V.H. Branner, O.H. Bentsen, M.S. van Deurs and A.Y. Zhuang, Fragmentation of global trade could challenge the Danish economy, *Danmarks Nationalbank Analysis*, no. 16, October 2024.

02

The Danish money and foreign exchange market

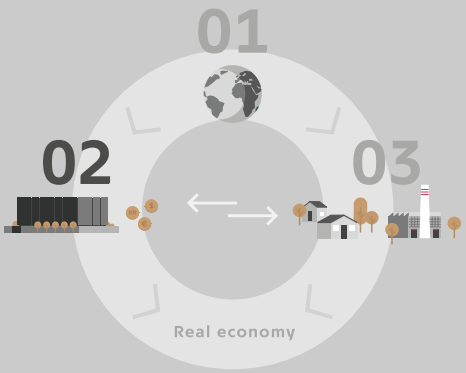
Since the latest Monetary and financial trends analysis in September, the krone's exchange rate against the euro has been very close to the central rate. At the end of February, Danmarks Nationalbank had not intervened in the foreign exchange market since December 2022, the longest period without intervention since the fixed exchange rate policy was introduced in 1982.

Danmarks Nationalbank has followed the ECB's four interest rate cuts of 1 percentage point in total since the October meeting. The interest rate cuts have had a full pass-through to overnight interest rates in the Danish money market. While spreads to short-term euro rates have remained unchanged over the period, the Danish 10-year yield spread to Germany has fallen and turned negative for the first time since 2020. The decrease in the long-term government yield spread has been partly driven by a reduced shortage of German government bonds as a result of the rollback of the ECB's asset purchase programmes.

Danish non-financial corporations have accounted for the majority of krone purchases over the period. The sector's krone purchases are, among other things, related to their high net exports of goods, which has also contributed to a record-high level of the current account surplus. However, at the same time, companies have been involved in the largest foreign acquisitions in Danish history since September, which has left them in need of more currency than usual. The Danish pension sector has also bought kroner. The sector manages a large part of the Danes' foreign asset holdings and has in particular been buying kroner to increase currency hedging as their assets have increased in value. During the period, foreign market participants have accounted for a significant share of krone sales.

Chapter 02 and how it relates to the rest of the publication

This chapter (02) provides an update on the development of the Danish krone exchange rate and the Danish fixed exchange rate policy. The chapter analyses, in part, how the latest monetary policy easing (01) has affected the Danish money market. The pass-through to the money market is crucial for the transmission to the broader economy; this is analysed in chapter (03). Due to Denmark's fixed exchange rate policy, developments in the Danish krone market are key to how the ECB's monetary policy affects Danish financial conditions. Therefore, chapter (02) also analyses the movement of capital in the foreign exchange market.



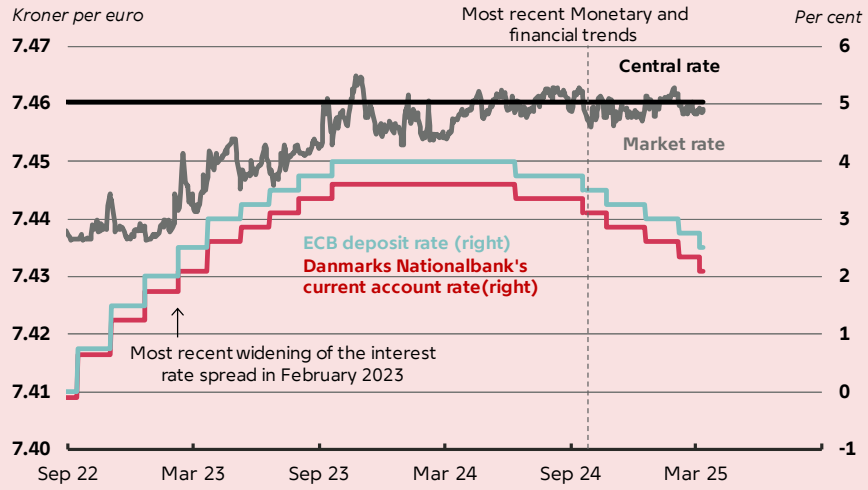
Monetary policy easing has led to a drop in short-term Danish market rates

The krone exchange rate against the euro has remained stable and the yield spread to the ECB unchanged

Since the release of the most recent Monetary and financial trends in September, the krone exchange rate has remained stable and traded within a narrow range close to the central rate, see chart 13. At the end of February, Danmarks Nationalbank had not intervened in the foreign exchange market since December 2022, while the yield spread has been maintained at -40 basis points.

CHART 13

The krone's exchange rate against the euro has remained stable around the central rate



Note: Exchange rate of the krone against the euro. The official fluctuation bands for the exchange rate are 7.62824 and 7.29252 kroner per euro as per the ERM2 agreement. The most recent observation is 12 March 2025.
Source: LSEG Workspace and Danmarks Nationalbank.

Interest rate cuts have had a full pass-through to short-term Danish market rates

Danmarks Nationalbank followed the ECB's interest rate cuts at the four interest rate meetings since October and has reduced monetary policy rates by a total of 1 percentage point. Danmarks Nationalbank's key interest rate, the current account rate, has subsequently been 2.1 per cent, see chart 13. The interest rate cuts have had a full pass-through to the very short-term Danish money market interest rates, see chart 14. The overnight reference rate on unsecured deposits (DESTR) and interest rates on secured loans (repo rates) had therefore fallen approximately one-to-one with the current account rate at the editorial cut-off date. Short-term risk-free interest rates (swap rates) have also fallen during the period as market participants' expectations of interest rate cuts have materialised and they also expect more interest rate cuts over the next year.

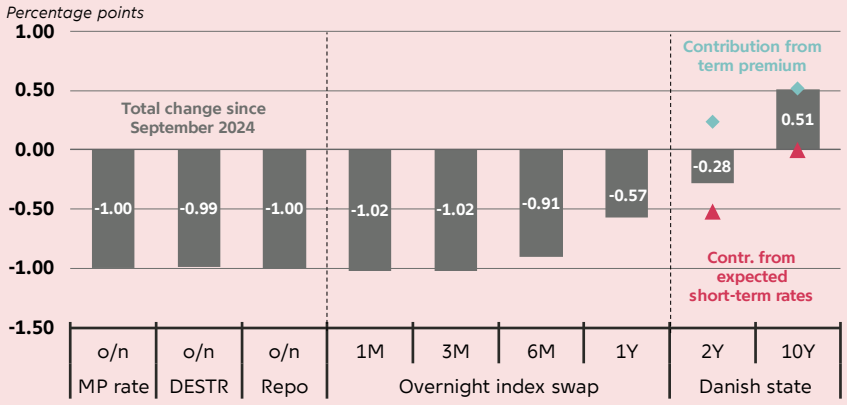
Monetary policy has pushed short-term government yields down by more than long-term government yields.

The lower risk-free interest rates have also pushed down Danish government bond yields with shorter maturities, such as 2-year government bond yields, as

shown in the model-based decomposition in chart 14 (right panel). By contrast, 10-year government yields have risen slightly since September due to a higher term premium, as in the US and the euro area, see the chapter on *Global financial market developments*.

CHART 14

Interest rate cuts have translated into shorter Danish market rates



Note: Change in interest rates from September 18, 2024, to March 12, 2025. *MP interest rate* indicates the Danmarks Nationalbank's current account rate. Overnight (o/n) refers to overnight rates. In an Overnight Index Swap in kroner, a fixed interest rate is exchanged for DESTR over a given period. The decomposition of the development in government yields is based on an average of two interest rate structure models in the same way as explained in the note to chart 7 in the chapter *Global financial market developments*.
Source: LSEG Workspace, Macrobond, Danmarks Nationalbank and own calculations.

Unchanged short-term yield spreads to the euro area but with fluctuations along the way

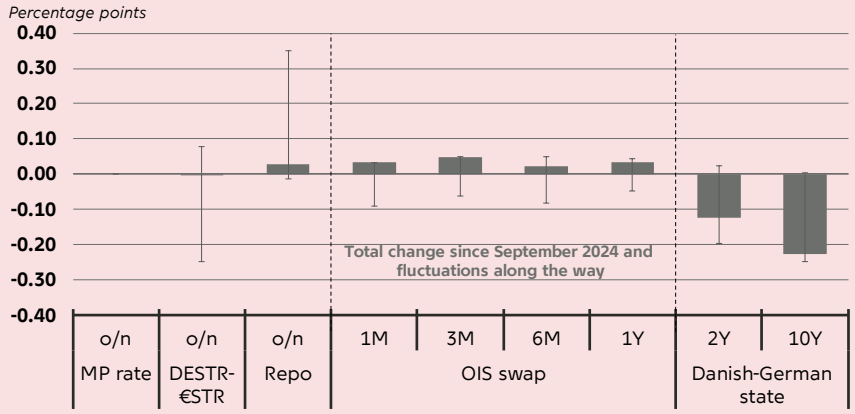
Yields with up to one year maturity have developed similarly in Denmark and the euro area, which is why the yield spread was roughly unchanged at the editorial cut-off date compared to September, see chart 15. However, in December there were a few days where the overnight DESTR-€STR spread was at a lower level. This was driven by a decline in the DESTR rate as a result of higher than normal investment needs from some market participants. By contrast, the repo spread increased due to higher Danish repo rates at both quarter-ends, which can partly be attributed to banks adjusting their balance sheets in connection with financial reporting and calculations of regulatory key performance indicators.[21] Revenue on these days was significantly lower than usual in the Danish repo market. The temporary fluctuations in short-term yield spreads had no effect on the Danish krone market.

In the weeks leading up to the editorial cut-off date on 12 March, the forward spread between the krone and the euro rose from being close to the monetary policy rate spread of -40 basis points. The increase in the forward spread may, among other things, be related to the prospect of a lower net position following corporate tax payments in March.

[21] See e.g. box 5 in Danmarks Nationalbank, Rising inflation and Russian invasion have increased volatility, *Danmarks Nationalbank Analysis (Monetary and financial trends)*, no. 4, March 2022.

CHART 15

Yield spreads to the euro area are unchanged out to the one-year point compared to September



Note: Change in interest rates from September 18, 2024, to March 12, 2025. The lines indicate the maximum fluctuations in yield spreads during the period. *MP interest rate* indicates the spread between Danmarks Nationalbank's current account rate and the ECB's deposit rate. Overnight (o/n) refers to spreads on DKK and EUR overnight rates. Differences in when interest rate changes take effect are ignored.
Source: LSEG Workspace, Macrobond, Danmarks Nationalbank and own calculations.

10-year government yield spread to Germany is negative

Both the 2- and 10-year Danish government yields to Germany have fallen, see chart 15. The 10-year yield spread started to decrease steadily from August 2024 and has since decreased by 26 basis points. This makes the 10-year spread negative for the first time since January 2020, and it was around -29 basis points at its peak around the turn of the year.

The spread to Germany for other highly rated countries such as the Netherlands, Finland, and Austria (referred to as EA* hereafter) has also decreased during the period by an average of 19 basis points, see chart 16. This means that a large part (19 of 26 basis points) of the overall decrease in the Danish-German yield spread can be attributed to a specific development in German yields, which may be driven by a reduced shortage of German bonds. In addition, German interest rates have risen more than other European government yields since 5 March due to the prospect that an easing of the debt brake could lead to significantly higher government debt issuance in Germany, see the chapter on *Global financial market developments*.

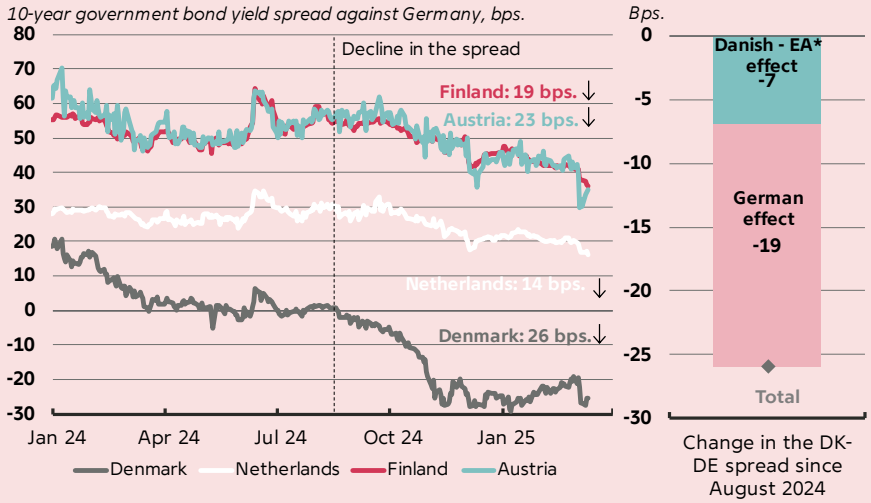
The remaining 7 basis points of the spread narrowing reflects the fact that Danish government yields have declined relative to a broader basket of long-term government yields in the euro area (EA*). The decline is due to several factors, especially the rollback of the ECB's asset purchase programmes. The rollback is assessed to have increased yields on Eurobonds more than the spillover effects on Danish government bond yields.[22] In addition, Denmark

[22] Spillover effects on Danish bonds, albeit more subdued, should be seen in light of investors' preferences for certain bonds and home bias, see S.L. Autrup and J.R. Jensen, QE in a quasi-preferred habitat: The case of the Danish pension sector and the ECB asset purchase programme, *Danmarks Nationalbank Working Paper*, no. 167, January 2021.

continues to have a strong macroeconomic position with healthy public finances, a declining net debt and the prospect of low issuance needs.[23]

CHART 16

The 10-year government yield to Germany has turned negative



Note: Calculated 10-year zero-coupon interest rates. The indicated declines in government yields are measured from the point at which they began a sustained decline. The period of decrease is 21 August 2024 to 12 March 2025. "EA*" stands for the average of Finland, Austria and the Netherlands. The chart on the right measures a "German effect" as the development in the spread between EA* and Germany, while the "Danish - EA* effect" is measured as the development in the spread between Denmark and EA*.
Source: LSEG Workspace and own calculations.

Current account surplus and company acquisitions affected the krone market

Longest period without intervention in the lifetime of the fixed exchange rate policy

The krone exchange rate has continued to be stable. At the end of February, Danmarks Nationalbank had not intervened in the foreign exchange market for 26 months, the longest period without intervention since the introduction of the fixed exchange rate policy in 1982, see chart 17. Similarly, it is one of the longest periods of unchanged yield spread.

The intervention pause reflects a high degree of self-stabilisation in the krone market. Self-stabilisation follows from confidence in the fixed exchange rate policy and the predictability of Danmarks Nationalbank's reaction function to market developments among market participants.

A major reason for the long period without intervention is that there have been no abrupt changes in demand for the krone, such as during the financial crisis, the krone crisis in 2015 and the covid-19 crisis, see chart 18. The krone has also

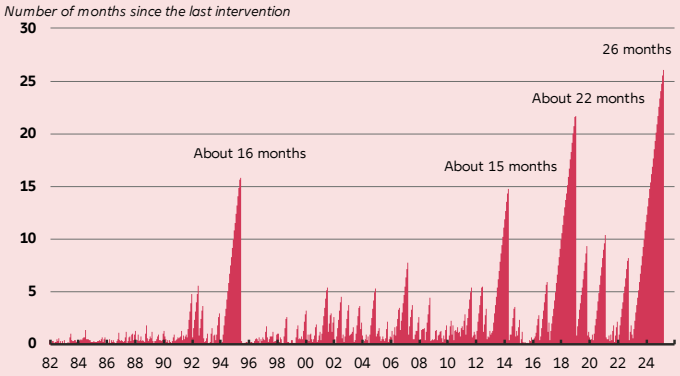
[23] See Danmarks Nationalbank, Central government borrowing and debt 2024, *Danmarks Nationalbank Report*, no. 1, February 2025.

remained stable during the last two year-end transitions. This contrasts with previous years when there was a short-term demand for kroner from foreign investors that necessitated intervention.[24]

The long intervention pause also reflects that the negative monetary policy rate spread to the ECB of -40 basis points has been effectively and steadily transmitted to the Danish krone market. The negative yield spread counteracts the capital inflow to Denmark which result from the persistent current account surplus and Denmark's international investment position, see below.

CHART 17

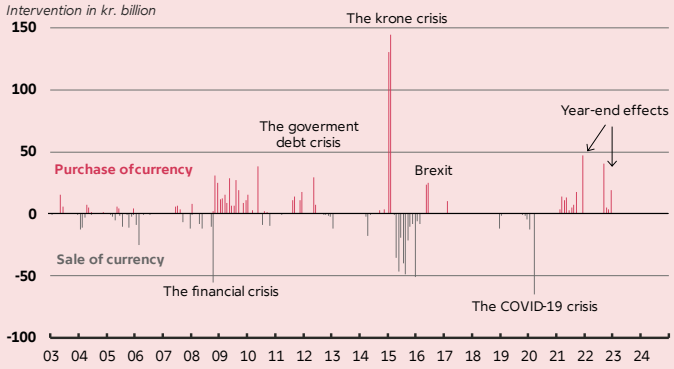
Record long period without intervention



Note: At each time point the number of months since the last intervention is being counted.
Source: Danmarks Nationalbank and own calculations.

CHART 18

Last intervention was due to year-end effects



Note: Monthly intervention figures.
Source: Danmarks Nationalbank.

Danish non-financial corporations have been the largest buyers of kroner and Danish holding companies and foreign market participants the largest sellers

Since September, Danish non-financial corporations have been the largest net buyers of kroner through Danish banks, see chart 19 (left bars). The Danish pension sector also bought kroner, while foreign market participants[25] and other Danish market participants sold kroner. The sectors' krone trades over the past six months has largely followed the pattern of the past few years. However, sales from other Danish market participants were higher than in previous periods, especially from Danish holding companies that have been involved in corporate transactions in foreign currencies. So have Danish non-financial corporations, which have reduced their net krone purchases compared to the past.

The sectors' krone trades follow a relatively fixed pattern, which is not only implied by Denmark's balance of payments surplus and net foreign assets

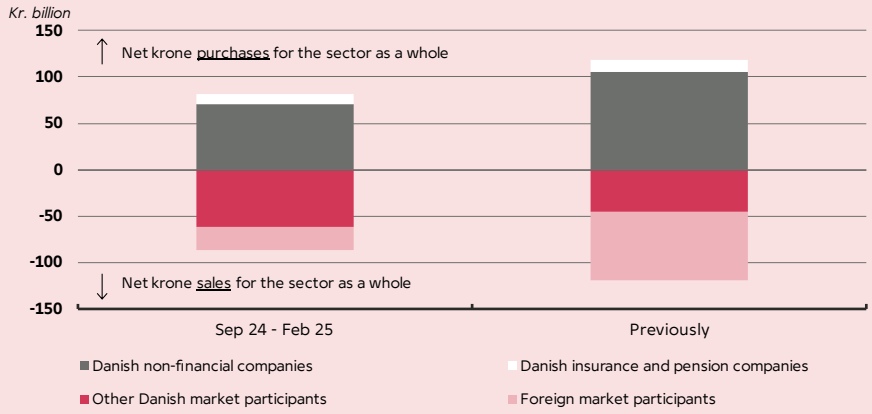
The trade patterns of domestic krone purchases and foreign krone sales have been relatively stable over a longer period . For Denmark, the observed trade patterns partly reflect Denmark's close integration into the global economy, with Denmark trading goods and services extensively with foreign countries and Danes owning foreign assets and vice versa. This means that even if Denmark's net exports and net foreign assets were zero, one would still expect to have the

[24] Read more about these so-called year-end effects in box 5 in Danmarks Nationalbank, Rising inflation and Russian invasion have increased volatility, *Danmarks Nationalbank Analysis (Monetary and financial trends)*, no. 4, March 2022.
[25] The foreign market participants' krone trades, shown in chart 19, consist of all currency trades in krone that Danish banks make with a counterparty registered abroad. Some of the counterparties are foreign banks that trade krone on behalf of both Danish and foreign customers.

same sector distribution in the statistics.[26] The sectors' krone trade in this hypothetical situation is illustrated on the left in chart 20, where net exports and net assets are ignored.

CHART 19

Non-financial corporations continue to account for the majority of net krone purchases, but have bought fewer kroner than in previous periods



Note: Total net krone trading in kr. billion. The net kroner purchase is based on spot and forward trades made through Danish banks that report to the money and foreign exchange market statistics. The category "Foreign market participants" consists primarily of foreign banks and companies. The category "Other Danish market participants" includes Danish investment funds, Danish banks, etc. Deviations between purchases and sales are due to rounding. "*Previous*" covers the average krone trade summed over a corresponding six-month period based on data for January 2023 to August 2024.
Source: LSEG Workspace and Danmarks Nationalbank.

With a balance between exports and imports, Danish non-financial corporations would be expected to be buyers of Danish kroner and foreign companies sellers of kroner. This is because Danish companies buy kroner when income from exports in foreign currency is repatriated (i.e. exchanged for kroner), see chart 20. This reflects the fact that Danish companies' exports are usually settled in foreign currency and that they need kroner to cover domestic operating expenses, tax and dividend payments.

Danish companies account for a smaller share of Danish imports compared to exports. As imports give rise to sales of Danish kroner, Danish companies' krone purchases from exports are only partially offset by their imports settled in foreign currency.[27] Foreign companies account for the remainder of Danish imports, illustrated by the grey section of imports in chart 20. For example, this could be foreign car manufacturers selling cars to Danes, where the transactions are settled in Danish kroner. Foreign companies will ultimately convert these kroner into their home currency, which is one of the reasons of foreign market participants being krone sellers.

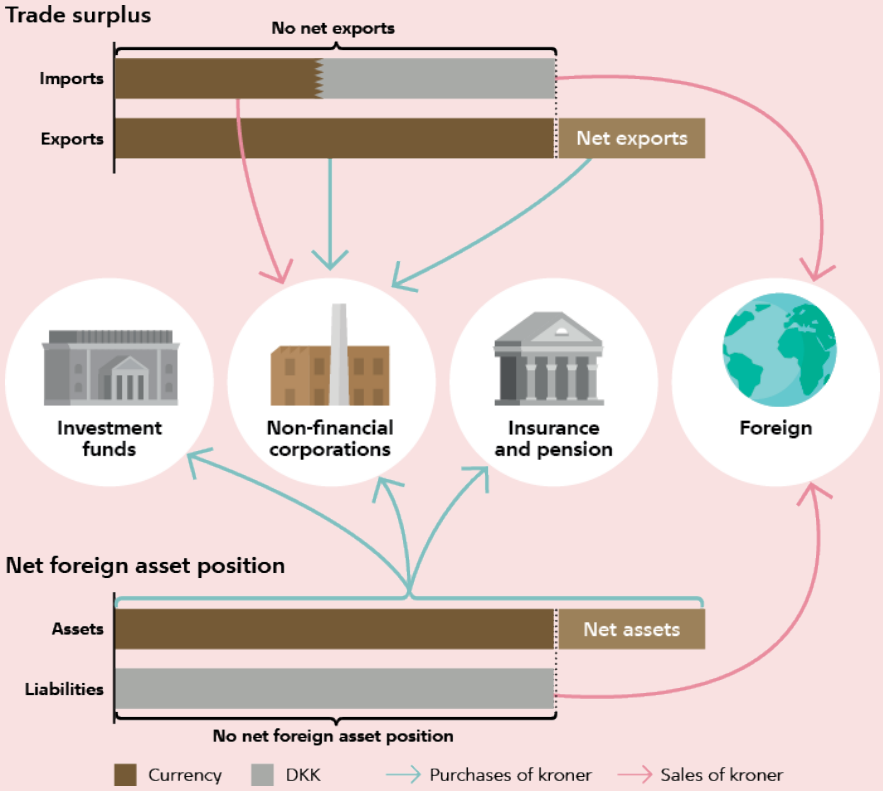
In a financially integrated economy like Denmark, Danish holdings of assets abroad and foreigners' holdings of Danish assets will also contribute to the pattern of domestic krone purchases and foreign krone sales. This will also be

[26] The sector breakdown in this counterfactual situation cannot be illustrated with data.
[27] See chart 20, where the dark brown area under imports is smaller than the dark brown area under exports.

the case if net foreign assets were zero. This is because Danish residents will repatriate part of the investment income generated by their foreign assets. Similarly, foreign countries will exchange parts of the income they receive from their Danish assets.

CHART 20

The trade patterns in the Danish krone market reflect that Denmark is a small open economy and additionally has a trade surplus and foreign assets



Note: Stylised illustration. The exact distribution of which currency Danish imports are settled in is not known. The illustration ignores the fact that there may also be other Danish residents who import directly from abroad, as their share is estimated to be limited.
Source: Authors' own illustration.

Domestic demand for the krone is further strengthened by the current account surplus and the large foreign assets

Denmark's persistent current account surplus[28] and positive net foreign assets strengthen domestic demand for the krone compared to the previously mentioned situation of a neutral current account balance and net foreign assets of zero, see box 3.

In the equilibrium of the Danish krone market, the total supply and demand for kroner by market participants equal out. If there is excess demand for kroner, Danmarks Nationalbank ensures equilibrium by having a negative yield spread to the ECB, which encourages both domestic and foreign market participants to sell kroner.

[28] "Current account surplus" is equivalent to "surplus of the current account of the balance of payments".

BOX 3

The current account surplus and foreign assets increase domestic demand for the krone

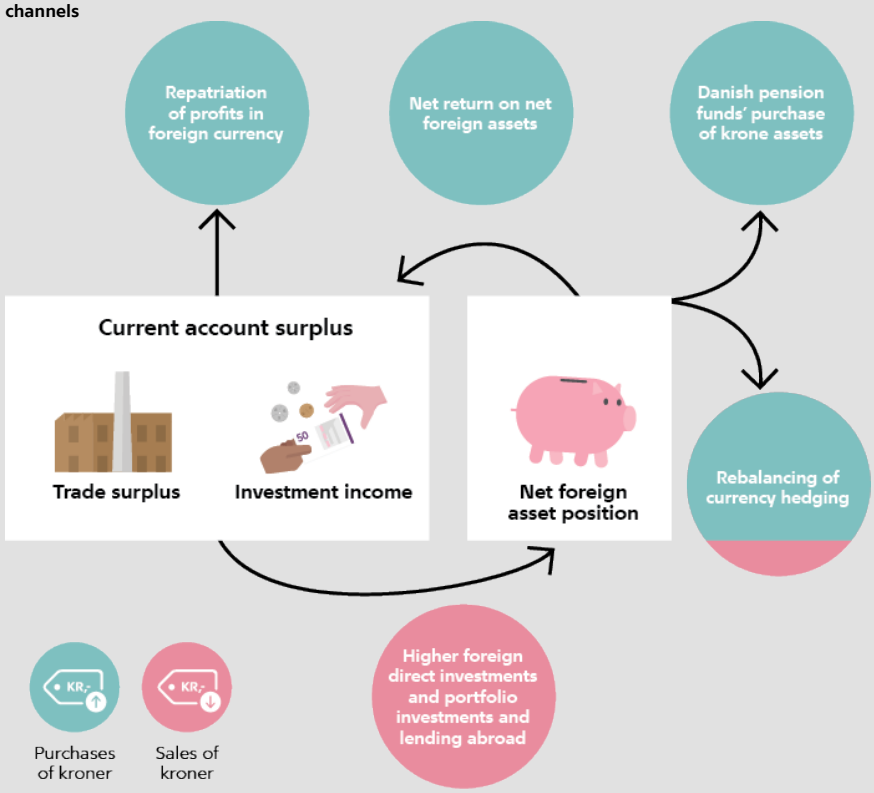
To understand and monitor developments in the Danish krone market, Danmarks Nationalbank analyses the behaviour of market participants and the drivers of that behaviour. For this purpose, Danmarks Nationalbank's money and foreign exchange market statistics, FXMMSR, are used, which is based on Danish banks' reporting of their trades with all types of counterparties. The data coverage is considered to provide an accurate representation of the behaviour of the most important market participants in the Danish krone market, even though the data does not include domestic participants' trades outside Danish banks and trades between foreign participants.

In recent years, the distribution of the sectors' net trade in the krone foreign exchange market has been relatively stable, with Danish non-financial corporations and Danish pension funds buying Danish kroner, while foreign companies and investors have been the biggest net sellers, see chart 19. The domestic demand for kroner is a result of Denmark being a small open economy, see the main text, and is reinforced by Denmark's current account surplus and net foreign assets.

The current account surplus increases demand for kroner from some domestic residents
Most of the current account surplus comes from net exports of goods and services. The positive net exports lead to a larger purchase of Danish kroner from Danish non-financial corporations than in a case where net exports were zero. This is because there is more income from abroad that need to be repatriated, see chart A. However, in recent years their kroner purchases have been lower than net exports, as surplus in foreign exchange can also be used for transactions that are denominated in foreign currency, such as investments and debt repayments abroad.

CHART A

Current account surplus and foreign assets increase domestic demand for kroner through multiple channels



Note: Stylised illustration of the most important correlations between the current account, foreign assets and the Danish krone market. Partial drivers are shown, not the full economic cycle. It abstracts from the derived effects of the current account surplus, for example, that a surplus may result in higher Danish imports.
Source: Authors' own illustration.

Continues ...

... continued

Denmark's substantial foreign assets continuously generate net investment income in the form of, for example, dividends and interest payments, which contribute to the surplus on the current account balance. Domestic market participants who receive investment income in foreign currency may choose to convert the income into Danish kroner to honour payment obligations in Danish kroner, such as pension payments or dividend payments. In that case, the positive net investment income will also, all else being equal, increase the demand for kroner from domestic investors compared to a situation where net investment income for Denmark was zero.

All else being equal, net foreign assets increase the demand for kroner, as Danes prefer krone exposure
There is a tendency for Danish residents and their asset managers to prefer having a relatively high proportion of their wealth in krone assets – a so-called "home bias".[1] The preference for krone exposure is partly implied by domestic investors primarily having their liabilities in kroner. Similarly, foreign investors tend to favour exposures in their own currency. The preference is partly reflected in the fact that a high Danish wealth level leads to a high demand for investing in domestic assets. In addition, Danish pension companies, which manage a large share of the assets[2], hedge a large part of the currency risk of their foreign assets to kroner.[3] When hedging currency risk, they buy kroner in the forward market. Currency hedging thus limits the sale of kroner when pension companies buy foreign assets. Furthermore, on average over the past several years, there have been positive changes in the value of the pension sector's foreign assets, which results in a krone purchase when they rebalance the hedge to kroner.

Danmarks Nationalbank ensures the equilibrium of the Danish krone market using monetary policy instruments
In a situation with excess demand for the krone, the equilibrium in the Danish krone market is ensured by Danmarks Nationalbank's negative monetary policy rate spread to the ECB. The yield spread can be seen as the cost of holding kroner against the euro. This reduces the actual demand for kroner from some of the domestic investors while in addition giving foreign market participants an incentive to sell kroner.[4] This reflects, among other things, that the negative spread encourages less currency hedging to kroner of Danes' foreign investments and correspondingly a higher hedging of krone exposures to foreign currency by foreigners.

[1] "Home bias" reflects that domestic assets make up a larger share of portfolios than their share of the world market. See S.L. Autrup and J.R. Jensen, QE in a quasi-preferred habitat: The case of the Danish pension sector and the ECB asset purchase programme, *Danmarks Nationalbank Working Paper*, no. 167, January 2021.
[2] Some of the international investment positions are also managed by Danish investment funds, although in many cases on behalf of pension companies.
[3] See B.M. Jensen, A.M. Grønlund and S.M. Steffensen, Currency hedging and the Danish pension sector, *Danmarks Nationalbank Economic Memo*, no. 2, May 2024.
[4] See S.L. Autrup, P.L. Kramp, E.H. Pedersen and M. Spange, Betalingsbalance, udlandsformue og valutareserve (Current Account, International Investment Position and Foreign Exchange Reserve, in Danish only), *Danmarks Nationalbank Monetary Review*, Q4 2015.

Danish non-financial corporations' net krone purchases were supported by slightly higher goods exports, while large corporate acquisitions abroad had a dampening effect

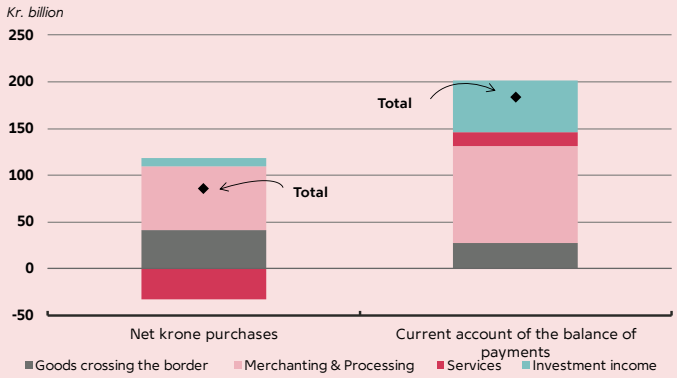
Since September, Danish non-financial corporations have made net purchases of kr. 71 billion through Danish banks, see chart 19. The kroner purchases come from export companies and have been supported by a record-high current account surplus during the period.[29] A significant share of the current account surplus and kroner purchases comes from exporting companies with production abroad (also called "Merchanting & Processing"), see chart 21. However, the kroner purchases associated with this type of export are lower than the value of the export itself, partly because foreign production factors are paid before the remaining proceeds are repatriated.[30]

[29] See Danmarks Nationalbank, The outlook is for lower wage increases and stable inflation despite uncertain times, *Danmarks Nationalbank (Outlook for the Danish Economy)*, no. 9, March 2025.
[30] See box 3 in Danmarks Nationalbank, Monetary policy is tight and dampens inflation, *Danmarks Nationalbank Analysis (Monetary and financial trends)*, no. 3, March 2024.

Companies with service exports have been net sellers of kroner despite high service exports compared to previous periods. Firstly, this is because the majority of their business is conducted abroad, which usually results in a limited need for kroner relative to their earnings. In addition, companies that export services – like those that export goods – have been involved in acquisitions abroad, which has reduced their krone purchases. Acquisitions by Danish companies have been large and include the two largest acquisitions in Danish history, see chart 22. However, the krone sales associated with the acquisitions were significantly lower than the total value of the acquisitions. This is partly because a large part of the acquisitions is settled in currency, and because it is partly externally financed in currency. Furthermore, in some cases they are carried out by the companies' group-related holding and investment companies, which is not included in the calculation of non-financial corporations' krone trades.

CHART 21

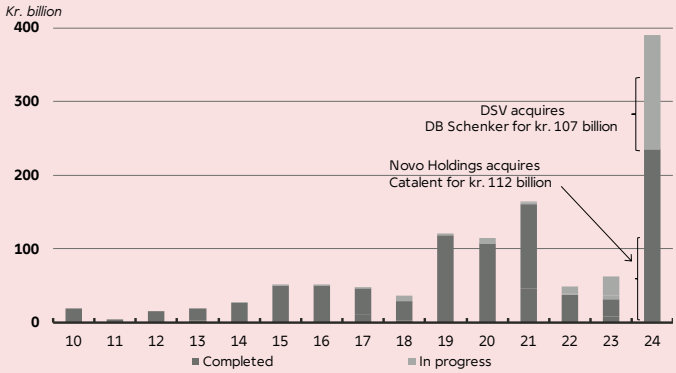
High goods exports contribute to the current account surplus and result in krone purchases



Note: From September 2024 to January 2025. Pillars on the left: Net kroner purchases from Danish non-financial corporations through Danish banks. Based on company data, companies' net kroner purchases are broken down into balance of payments categories according to how much the category represents of the company's net exports. For example, the purchase of kroner from a company where net exports are made up equally of "Goods crossing the border" and "Investment income" will be divided equally between the two categories. Pillars on the right: Current account surplus, where the category "Transfers" is excluded. The "Goods that cross the border" category primarily covers goods produced in Denmark and exported abroad. The kroner purchase associated with the category "Investment income" covers companies that do not export themselves, but own foreign companies and receive the profits from these in the form of dividends.
Source: Statistics Denmark, Danmarks Nationalbank and own calculations.

CHART 22

Very large company acquisitions abroad have reduced demand for kroner



Note: Extent of mergers and acquisitions of Danish companies abroad. The acquisitions are dated to the time of the announcement. Data covers acquisitions with a value of at least kr. 1 billion. Transactions in all currencies, with the majority in foreign currencies.
Source: Bloomberg.

A few large, global companies account for a majority of the sector's current account surplus, foreign investment and krone trades

Denmark is increasingly characterised as an economy with few large, globally oriented companies.[31] This is reflected in the fact that the 50 largest non-financial corporate groups have accounted for Denmark's entire current account surplus

[31] Read more in SJ. Hviid, M.H. Jørgensen, T. Renkin, M. Spange and R.R. Sørensen, The increasing importance of the largest companies, *Danmarks Nationalbank Analysis*, no. 8, March 2025.

in recent years, see chart 23.[32,33] By comparison, they contributed by around 30 per cent of the non-financial corporations' total production measured by gross value added, GVA. The groups also accounted for a very large share of Danish international investments. This applies to both portfolio investments and foreign direct investments.[34] The two largest foreign direct investments in Danish history, mentioned above, serve as examples. Investments are largely carried out by the groups' financial companies (holding and investment companies), see the red bars in chart 23. One of the consequences of this concentration is that these groups are also responsible for a significant proportion of Danish companies' krone trading. Thus, the groups' non-financial subsidiaries account for approximately 80 per cent of the total kroner purchases from the non-financial corporations and associated holding and investment companies as a whole. The groups' financial corporations are pulling in the opposite direction, being significant sellers of kroner.

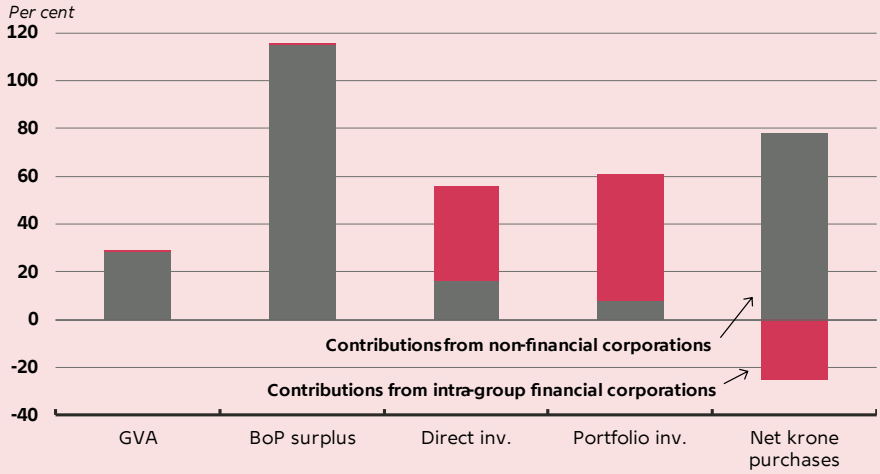
The concentration may, in principle, create a challenge for the Danish krone market if one or more large investors make very large transactions without taking market liquidity into account. However, the record-long period without intervention from Danmarks Nationalbank, which also took place in a period of the two largest corporate transactions in Danish history, shows that the Danish krone market is generally able to absorb large currency transactions without significant impact on the krone exchange rate.[35] In the event of an undesirable impact on the krone exchange rate, Danmarks Nationalbank has the necessary monetary policy instruments available to counteract such effects.

[32] The high share of the largest groups is merely an accounting consideration and cannot be taken to mean that the current account surplus would have been zero in the absence of these companies.
[33] The 50 largest corporate groups cover a number of sub-companies. Read more in H.Y. Andersen, L. Risbjerg, M. Spange and R. Wederkinck, The Danish savings surplus: Trends in firm and household savings, *Danmarks Nationalbank Economic Memo*, no. 6, September 2024.
[34] In portfolio investments, unlike foreign direct investments, the investor does not have significant influence on the decisions of the investee company.
[35] For transactions related to company acquisitions, see A.M. Grønlund, L. Risbjerg and M.B. Tjørnum, The foreign exchange market for kroner is able to absorb large company acquisitions, *Danmarks Nationalbank Economic Memo*, no. 11, December 2021.

CHART 23

A few large groups account for most of companies' account surpluses, foreign investments and kroner trades

The 50 largest corporate groups' share of each variable



Note: The 50 largest groups' share of total GVA, current account surplus, etc. The shares are proportional to the size of the variable (e.g. GVA) for *all* non-financial corporations and *all* holding and investment companies. Shares are divided into the contribution of the groups' non-financial corporations' in grey bars and the contribution of their holding and investment companies (so-called "financial corporations") in red bars. A balance of payments (BoP) surplus share exceeding 100 per cent means that companies outside the top 50 collectively have a net account deficit. Figures for net krone purchases reflect transactions through Danish banks only. The groups' financial corporations have a negative contribution to the largest groups' share of total net kroner purchases, as the financial corporations are krone *sellers*. The 50 largest groups have at least 1600 employees and cover approximately 1300 sub-companies (CVR numbers). All data points are current magnitudes. Data mainly covers 2020-2024, with differences in start and end periods for the different variables depending on data availability.
Source: Bis Node, Experian, Statistics Denmark, Danmarks Nationalbank and own calculations.

The Danish pension sector bought kroner, mainly due to higher currency hedging

The Danish insurance and pension sector purchased kroner for a net amount of kr. 11 billion through Danish banks from September to February, see chart 19. Based on available data up to January, it is evident that the sector has also purchased kroner through other counterparties such as foreign banks. When including these krone trades, the sector's net kroner purchases from September to January totalled kr. 63 billion, see chart 24.

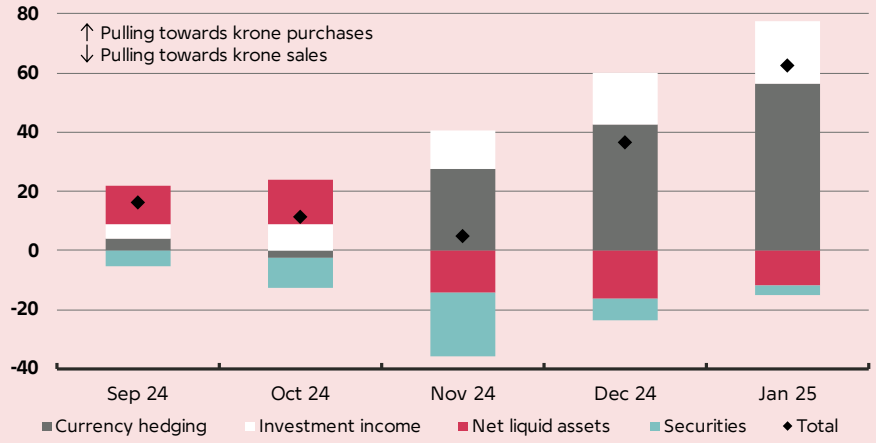
The sector's total kroner purchases mainly reflect increased currency hedging as the pension sector gained higher currency exposures during the period. The hedging ratio of dollars to euros and kroner fell by only about 5 percentage points to 62 per cent, while the hedging ratio of euros to kroner remained approximately unchanged at 39 per cent. The higher exposures were primarily driven by increases in the value of the sector's foreign assets, which make up a large part of Denmark's total foreign asset position. The value increases came mainly from the sector's US shares, which rose by 8 per cent from September to January, see the chapter on *Global financial market developments*. However, the trend has subsequently reversed, but this development lies outside the latest data point of the statistics shown in chart 24.

The sector's net kroner purchases should also be seen in the context of receiving investment income on foreign assets in the form of dividends and coupon payments. The investment income is in foreign currency and can be partly repatriated in Danish kroner and partly used to meet the companies' need for foreign currency to invest, for example. Over a longer period, investment income has increased in line with rising pension wealth, which now means that investment income usually exceeds the sector's purchase of foreign assets after currency hedging. This has contributed to the pension sector often acting as a net buyer of kroner. However, periodic krone sales may occur depending on market developments.[36]

CHART 24

The pension sector's krone purchases were mainly driven by increased currency hedging

Kr. billion



Note: The insurance and pension sector's accumulated net kroner purchases with both Danish and foreign counterparties, where Danish investment funds are analysed. It also shows the driving forces behind it. The statistics are calculated on a gross basis. This can lead to larger flows than the sector's actual buying and selling of kroner, as the sector can in practice, for example, buy foreign securities with income in foreign currency. "Hedging" includes net kroner trading in connection with hedging exposures in all foreign currencies.
Source: Danmarks Nationalbank and own calculations.

Foreign net sales of kroner were driven by dividends paid in kroner, while unusually large purchases of Danish shares pulled in the other direction

Since September, foreign market participants have sold kr. 25 billion in net terms through Danish banks, see chart 19.[37] Foreigners own a significant amount of krone-denominated assets, which gives rise to a continuous flow of investment income in kroner, see box 3. From September to January, foreign investors received kr. 29 billion in investment income, much of which was share dividends[38] paid out in December, see chart 25. The disbursements coincided with the majority of foreign krone sales.

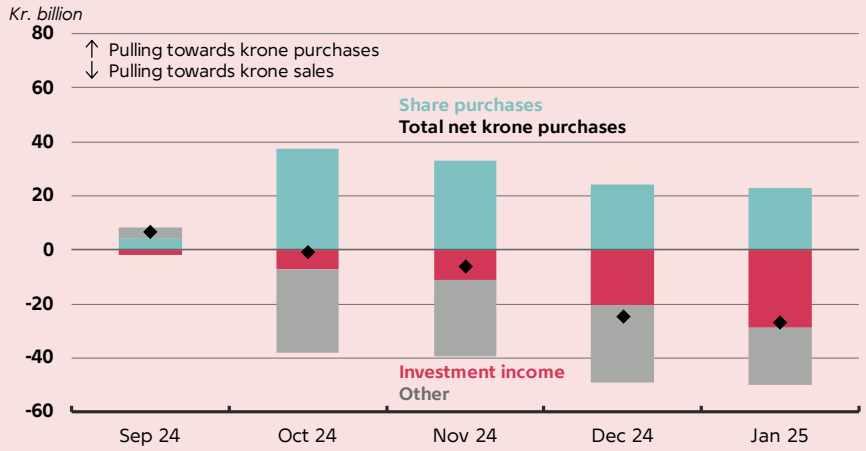
[36] See box 3 in Danmarks Nationalbank, Interest rates have been cut, but monetary policy remains tight, *Danmarks Nationalbank Analysis (Monetary and financial trends)*, no. 13, September 2024.
[37] Foreign krone trades through Danish banks cover both trades driven by a foreign investor and trades where a foreign bank trades with a Danish bank on behalf of a Dane.
[38] Share dividends include ordinary dividends to external investors and intra-group dividends to foreign parent companies. The latter does not necessarily give rise to kroner trades.

However, foreign market participants' net sales since September have been more subdued than before. One reason may be that foreign investors have increased their ownership of Danish assets, including extraordinarily large purchases of Danish shares.[39] In October, foreign investors bought Danish listed shares for kr. 33 billion, the majority of which were purchases of DSV shares in connection with the company's kr. 37 billion share issue. The issue was part of the financing of the acquisition of DB Schenker.

Finally, a large part of foreign kroner sales in "Other" shown in chart 25 reflects that foreign-registered investment funds under Danish ownership have invested in foreign assets while being financed in kroner.

CHART 25

Foreign market participants' kroner sales have been mainly driven by investment income received in kroner in December



Note: Accumulated net kroner purchases for foreign countries through Danish banks and drivers of foreign transactions in kroner. Figures for foreign investment income and share purchases in kroner are from the securities statistics, where they are calculated residually. Securities transactions for the period have been cross-checked against stock exchange announcements. The exact extent of kroner trades resulting from investment income and share purchases is not known, which is why the categories are presented as drivers for buying and selling, respectively.
Source: Danmarks Nationalbank and own calculations.

[39] Share purchases have only dampened foreign net sales to the extent that share investments are not hedged.

03

Macro-financial developments

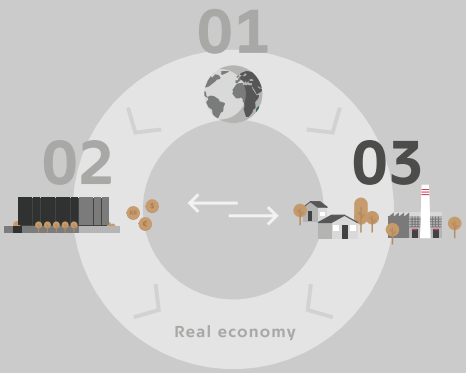
Danmarks Nationalbank's monetary policy rates have been lowered over the past six months and market participants expect further decreases in monetary policy rates in 2025. Interest rates on both new and existing debt for households and businesses have fallen further, while credit growth has increased in the second half of 2024 for both households and businesses.

Based on developments in financing conditions and market participants' expectations for monetary policy rates, it is the assessment of Danmarks Nationalbank that monetary policy and overall financial conditions in Denmark will gradually become neutral for economic activity during 2025 after a period of restrictive monetary policy since 2022. This development reflects, among other things, lower monetary policy rates and a relatively rapid transmission of monetary policy to financing conditions in Denmark.

The price of new financing remains higher than before the monetary policy tightening began in 2022. However, this does not necessarily mean that monetary policy is restrictive, as the years before 2022 were a period of loose monetary policy.

Chapter 03 and how it relates to the rest of the publication

This chapter (03) provides an update on the transmission of monetary policy to lending conditions for households and companies. Developments in the global financial markets (01) and domestic monetary policy conditions (02) affect the macro-financial conditions for Danish households and companies (03). Monetary policy affects the real economy through different channels, and the full effect of monetary policy changes occurs with a lag. This chapter analyses the transmission of monetary policy to households' and corporations' financing conditions. The nominal and real cost of obtaining new financing affects consumption and investment decisions. Market rates are also gradually transmitted to net interest payments, affecting consumption and investment opportunities.



Monetary policy is expected to become gradually neutral in 2025

Since September, Danmarks Nationalbank has followed the ECB and lowered interest rates by 1 percentage point. This means that monetary policy rates have been lowered by 1.5 percentage points since their peak in 2024. Market participants expect monetary policy rates to be lowered further in 2025. Based on the development in financing conditions and market participants' expectations for monetary policy rates at the editorial cut-off date, it is the assessment of Danmarks Nationalbank that monetary policy and overall financial conditions will gradually become neutral in 2025 after having dampened economic activity in recent years. The assessment is based on a wide range of indicators, including financial conditions, estimates of the neutral level for the monetary policy rate and model-based estimates of the overall impact of monetary policy since 2022 on economic activity in Denmark. The latter includes lagged effects of previous monetary contractions.

Interest rates on new loans have fallen for both households and businesses

Interest rates on new bank and mortgage loans have fallen further for households and businesses since September, see chart 26. The fall in interest rates contributes to an easing of financing conditions in Denmark. The biggest drop has been in lending rates on bank loans, while mortgage rates have fallen slightly less. Interest rates on new loans have fallen by around 1.5 percentage points for both households and businesses since the peak in 2023, corresponding to the change in monetary policy rates. However, interest rates on new loans started to fall already in 2023, before monetary policy rates were lowered. This is partly due to the Danish market-based mortgage system and the fact that banks announced lower lending rates on housing loans in anticipation of future interest rate cuts.[40] Interest rates on new loans remain higher compared to the years before the tightening of monetary policy began in 2022. However, it was a period characterised by relatively loose monetary policy. Therefore, the fact that interest rates are above pre-2022 levels does not in itself mean that monetary policy is restrictive.

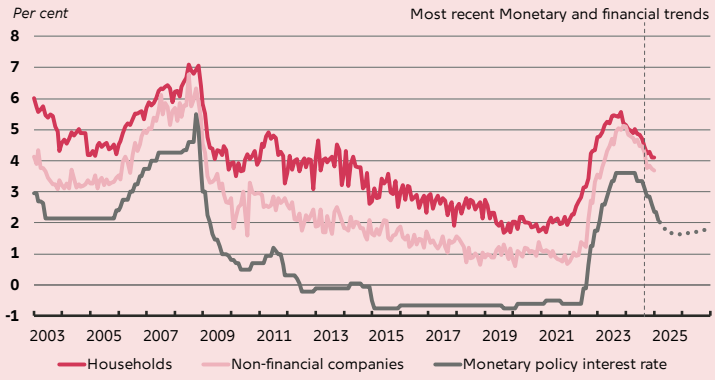
The average cost of external financing for Danish companies remains at a high level

The average cost of external financing for companies has remained roughly flat since September 2024, see chart 27. This reflects the fact that the cost of debt financing has decreased, but also that this is offset by higher costs for equity financing. The latter is due to a higher equity risk premium for Danish shares, which is the compensation investors demand for investing in shares rather than a risk-free asset.[41] This should be seen in light of the fact that Danish equity prices have fallen relatively sharply since September, especially in the pharmaceutical industry and the renewable energy sector, and that this fall cannot be explained by lower earnings expectations. The development of the equity risk premium in Denmark contrasts with the euro area, where the equity risk premium has fallen, see the section on *Global financial market developments*. The Danish stock index is relatively concentrated and dominated by a few large companies, and the development is therefore not necessarily representative of Danish companies in general. The average cost of external financing for Danish companies remains relatively high in a historical perspective.

[40] The Danish market-based mortgage credit system is characterised by the fact that mortgage loans are granted on the basis of bond issues on market terms. Interest rates are thus directly affected by changes in market participants' expectations of future monetary policy, credit and liquidity premiums and expected market fluctuations. Convertible mortgage bonds also include compensation for the borrower's right to repay the loan at par.
[41] The equity risk premium is calculated using the same approach as in chart 11 in the chapter *Global financial market developments*.

CHART 26

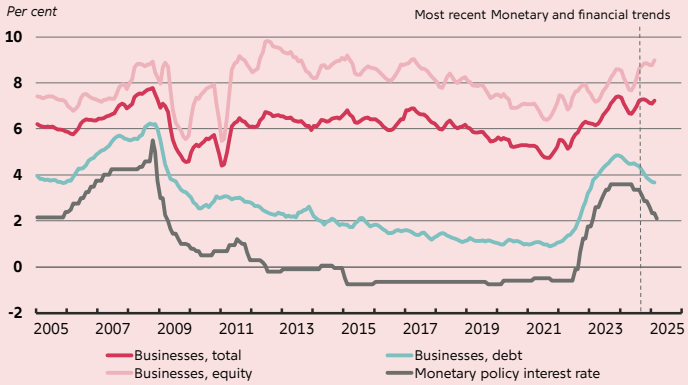
The price of new financing for households and companies has fallen further



Note: Effective interest rate including contributions for new loans from the MFI sector. Households include non-profit institutions targeting households. The dashed grey line is market expectations for monetary policy interest rates. The latest data point for interest rates on new loans is January 2025.
Source: LSEG Workspace and Danmarks Nationalbank.

CHART 27

Companies' average cost of external financing remains high in a historical context



Note: Balance sheet-weighted costs of raising external financing for households and companies. Companies relied heavily on equity financing, which goes a long way towards explaining their relatively high costs. For further details on the methodology, see box 1 in Danmarks Nationalbank, Decline in interest rates and refinancing boom, *Danmarks Nationalbank Analysis (Monetary and financial trends)*, no. 19, September 2019. The latest data point is February 2025.
Source: Danmarks Nationalbank, Statistics Denmark, LSEG Workspace and own calculations.

Mortgage rates have fallen in the very short-term segments, while the longer-term segments have increased slightly

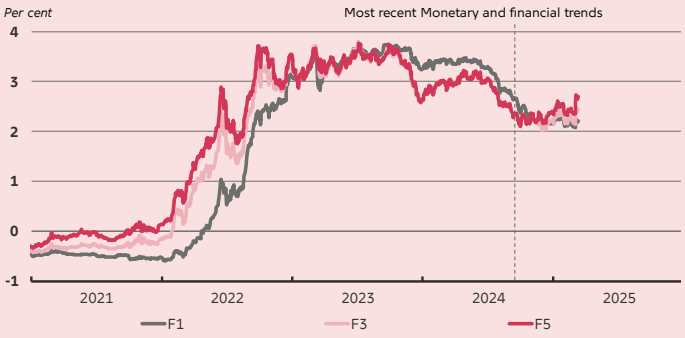
Danish short-term mortgage rates have fallen further over the past six months in line with lower monetary policy rates and market expectations of further interest rate cuts in 2025. This has contributed to easing financing conditions. Interest rates on F1 loans have decreased by 0.5 percentage points while interest rates on F3 loans, F5 loans and 30-year mortgage bonds have increased slightly, see charts 28 and 29. The interest rate on long-term mortgage bonds is influenced by market participants' expectations of future monetary policy, but also by credit and liquidity risk premiums and a pre-payment premium.[42] Since September, risk-free interest rates have driven up long-term interest rates, while credit and liquidity premiums and the pre-payment premium have pulled in the opposite direction, see chart 29. In real terms, yields on short-term mortgage bonds in particular have fallen slightly more over the past six months than in nominal terms due to slightly higher short-term inflation expectations among market participants.

Over the past six months, there has been an increase in net issuance of F3 and F5 loans. This continues the trend that started in 2022, where Danish households have taken out a larger share of their debt as F-loans. The relatively shorter interest rate fixation period contributes to a faster pass-through of interest rate changes to households' total interest expenses. However, there is considerable heterogeneity among households in terms of interest rate pass-through, as around 35 per cent of households' total outstanding loans still consist of fixed-rate mortgages.[43]

[42] Convertible mortgage bonds are typically priced based on a so-called risk-free yield curve, e.g. the government yield curve, and are subject to a credit risk premium and compensation for the borrower's right to repay the loan at par.
[43] The share of fixed-rate and variable-rate loans is roughly constant across income deciles. See Danmarks Nationalbank, The household cash-flow effects of monetary policy in Denmark and the euro area, *Danmarks Nationalbank Economic Memo*, no. 1, 2024.

CHART 28

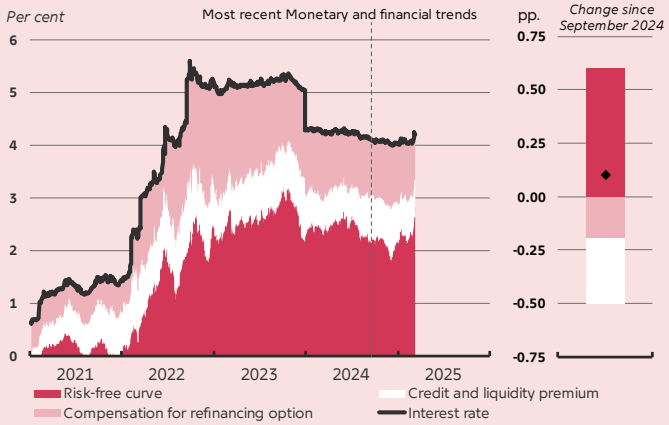
Interest rates on F1 loans have fallen while interest rates on F3 loans and F5 loans have risen slightly



Note: F1, F3 and F5 rates are par rates. The latest data point is 12 March 2025.
Source: Nordea Analytics.

CHART 29

Interest rates on long-term mortgage loans have increased slightly



Note: The chart shows the current yield on 30-year callable mortgage bonds, decomposed into a contribution from risk-free interest rates, a credit risk premium and the compensation for the right to redeem at 100. The latest data point is 12 March 2025.
Source: Bloomberg, LSEG Workspace, Scanrate Rio and Danmarks Nationalbank.

Lower average interest rate on total outstanding debt contributes to support consumption and investment in 2025

The average interest rate on outstanding loans decreased slightly in the second half of 2024 for both households and businesses, see chart 30. This implies lower interest costs for households and businesses, which can support consumption and investment. Net interest payments as a share of disposable income (the net interest burden) have also fallen steadily for Danish households since mid-2023, and the net interest burden is now back around the level it was before the interest rate hikes in 2022. This should be seen in light of the fact that household deposits are at a record high and have been increasing since the financial crisis, see box 4. Combined with rising disposable income over the past few years, this has led to higher interest income offsetting rising interest expenses.[44] The transmission of monetary policy rate cuts to average household interest rates has generally been slightly stronger in Denmark compared to the euro area, see chart 30.[45]

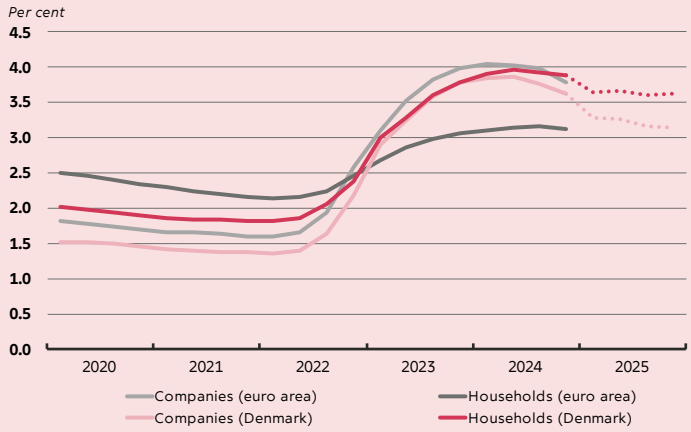
Current market expectations indicate that Danish F1 borrowers who are due to have a new interest rate set in 2025 will have to pay a lower interest rate than they do today. This will also be the case for F3 borrowers in late 2025. Market expectations also indicate that F5 borrowers are expected to pay a higher interest rate than they do today when refinancing in 2025. A projection based on market participants' interest rate expectations suggests that the average interest rate on total outstanding debt will decrease in 2025, see chart 30. Market expectations indicate that the average interest rate on debt could fall from 3.9 per cent to around 3.6 per cent for households in 2025, and from 3.6 per cent to

[44] However, household interest expenses and interest income are not evenly distributed across the income distribution.
[45] See Danmarks Nationalbank, The household cash-flow effects of monetary policy in Denmark and the euro area, *Danmarks Nationalbank Economic Memo*, no. 1, 2024.

3.1 per cent for companies.[46] Decreasing interest payments on outstanding loans increases household spending opportunities and companies' profitability. This could also affect companies' investment, which is expected to increase in 2025, see *The outlook is for lower wage increases and stable inflation despite uncertain times*.[47] The slightly larger decrease in the average interest rate for companies is due to the fact that companies generally have a larger proportion of their debt in loans with shorter fixed interest rates. The average interest rate on outstanding loans for both households and businesses is expected to remain at a slightly higher level in the coming year than before 2022. However, this does not in itself mean that monetary policy is restrictive, as the period before 2022 was characterised by relatively loose monetary policy.

CHART 30

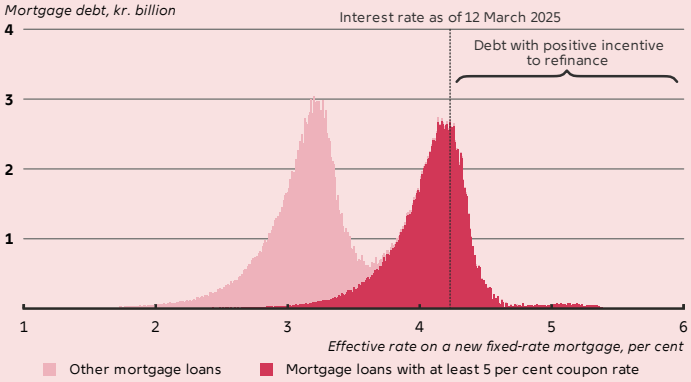
The average interest rate on total outstanding debt is expected to decrease in 2025



Note: Quarterly interest expenses before tax on bank and mortgage debt for Danish households and non-profit institutions serving households and non-financial corporations. The dashed lines are projections and the methodology is explained in footnote 46. The latest data point is Q4 2024.
Source: Danmarks Nationalbank, ECB and own calculations.

CHART 31

Mortgages with fixed interest rate of 5 per cent or more can potentially be refinanced in 2025



Note: The chart shows model estimates of the proportion of debt that has a positive incentive to convert to different interest rate levels. For a given mortgage rate level on the x-axis, all debt to the right of this level will have a positive incentive to convert, based on an optimal refinancing rule presented by S. Agarwal, J.C. Drisscoll and D.I. Laibson, *Journal of Money, Credit and Banking*, Vol. 45, issue 4, June 2013. The potential to convert at the current effective mortgage rate of 4.2 per cent is therefore to the right of the vertical dashed line. The chart is based on a calculation of all outstanding fixed-rate mortgage loans among Danish households in Q4 2024.
Source: Danmarks Nationalbank.

The pass-through of falling interest rates to household consumption may be amplified by refinancing of fixed-rate mortgage loans

Refinancing of callable mortgages to lower interest rates may support households' spending opportunities in 2025. A significant share of loans to

[46] The projection is based on implicit market expectations for the loan segments F-short, F1, F3, F5 and fixed rate loans. It takes into account the change in the average interest rate for bank debt and F-loans when interest rates are continuously adjusted. It is assumed that interest rates on fixed-rate loans remain unchanged and that changes in interest rates on bank loans are 60 per cent of the change in the F-short rate, i.e. the observed pass-through in the current interest rate cycle. It is further assumed that there is a 5 per cent turnover of fixed-rate loans in each quarter, corresponding to the average turnover since 2003 excluding waves of refinancing. This corresponds to the implied market expectation for the 30-year interest rate in that quarter. Loan composition during the projection period is assumed to be as in December 2024. The projection is subject to considerable uncertainty, both in terms of market developments and refinancing behaviour among fixed-rate borrowers.
[47] Danmarks Nationalbank, The outlook is for lower wage increases and stable inflation despite uncertain times, *Danmarks Nationalbank Analysis (Outlook for the Danish economy)*, no. 9, 19 March 2025.

Danish households are issued with a coupon interest rate of 5 per cent or more. Calculations show that kr. 53 billion of these loans could potentially be refinanced to the current effective fixed interest rate, which at the time of writing was around 4.2 per cent, see chart 31. Here, borrowers may exercise the right to refinance and replace the existing loan with a new loan carrying a lower interest rate. However, if the interest rate on new fixed-rate mortgages falls to, say, 3.5 per cent, the conversion potential increases to kr. 151 billion. However, it is uncertain how many homeowners will actually convert their loans, even though they could potentially lower their interest costs. How quickly homeowners react also varies.[48] For example, if half of the potential is actually refinanced to the current interest rate level, refinancing of callable mortgage loans could amount to kr. 26 billion in 2025.

In addition to lower interest payments, refinancing of fixed-rate mortgages has previously been associated with taking on more debt to finance higher consumption, for example. A study from Danmarks Nationalbank has estimated an increase in borrowing linked to refinancing that corresponds to 18 per cent of the original loan.[49] The study also estimates higher consumption corresponding to 10 per cent of the original loan linked to refinancing. If homeowners behave as they have done in the past when interest rates fall, refinancing of fixed-rate mortgage loans at the current interest rate level could contribute by kr. 3 billion to private consumption in 2025. At an interest rate level of 3.5 per cent, the contribution to private consumption could rise to kr. 8 billion.

Lower deposit rates since September also contribute to making consumption and investment more attractive

Deposit rates have also fallen over the past six months for both households and businesses. The decrease has been slightly steeper for companies, which should be seen in light of the fact that deposit rates had also increased more for companies in 2022-2023. In the second half of 2024, Danish households' total current account deposits in banks increased by kr. 23 billion. Thus, the trend towards increased bank deposits relative to bank lending continues, which may imply that the deposit rate has become more important for households' consumption decisions over time, see box 4. The pass-through from monetary policy rates to deposit rates in Denmark has also been slightly stronger compared to the euro area since 2022.[50]

Credit growth increases for both households and businesses on the back of increased loan demand

The annual growth in total lending from banks and mortgage credit institutions has increased further for both households and businesses since the last Monetary and financial trends in September 2024, see chart 32. Annual business credit growth has increased to around 6 per cent, primarily driven by industrial companies. Thus, credit growth for businesses is higher than average in the years 2010-2020. The household credit growth increases from a relatively low level and is now around 1 per cent, which is consistent with a normalisation around pre-2020 levels.

The demand for loans has increased quite significantly in the second half of the year for both households and companies. The increase was particularly strong in Q4, with the quarterly increase being the second largest for households and the largest for businesses since the start of the lending survey in 2008. In Q4, banks and mortgage credit institutions expected loan demand to continue to increase

[48] See S. Andersen, J.Y. Campbell, K.M. Nielsen and T. Ramadorai, Sources of Inaction in Household Finance, *American Economic Review*, vol. 110, no. 10, October 2020.
[49] See H.Y. Andersen, S.L. Bech, A.M. Otte and I.R. Julin, Mortgage refinancing supports private consumption, *Danmarks Nationalbank Analysis*, no. 16, September 2019.
[50] Higher deposit rates in Denmark than in the euro area partly reflects lending-related deposits in Denmark and lower lending rates in the euro area.

for both households and businesses in Q1 of 2025. At the same time, during the second half of 2024, banks have eased credit standards slightly for households and kept them roughly unchanged for companies. In the second half of 2024, companies raised a total of kr. 73 billion in market-based financing, which is relatively high in historical terms, see chart 33. Financing through share issues has contributed significantly, which should be seen in light of DSV's acquisition of DB Schenker in Q4 of 2024.

BOX 4

Households' expectation of the gap between deposit and lending rates aligns with the actual gap

The expected real interest rate (after tax) reflects the cost of bringing forward or postponing consumption by households. For a household without debt and with bank deposits of a certain size, it is the deposit rate that is likely to influence their marginal consumption and savings decisions. By contrast, it is the lending rate that may matter for households with debt and limited or no deposits. For larger consumption and savings decisions, the return or interest rate on other balance sheet elements may also be important, for example, when buying and selling a home, where both the expected return on financial assets and mortgage rates can play a role.

In Danmarks Nationalbank's new expectations survey, households are asked about their expected marginal interest rates. The Expectations Survey is a monthly questionnaire-based survey of household expectations that has been distributed since October 2024. Specifically, they are asked what interest rate they expect to receive on bank deposits and pay on loans of an amount equivalent to one month's income for one year. They are also asked about inflation expectations for the coming year, which can be used to construct expected real interest rates on bank deposits and loans for each survey participant.[1]

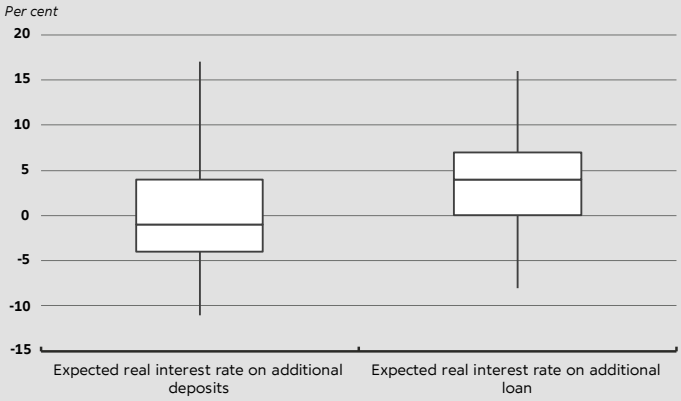
The results show that households are aware that the deposit rate is lower than the lending rate, see chart A. In Q4 2024, the median household expected the real interest rate before tax on bank deposits to be -1 per cent. At the same time, the median household expected the real interest rate on loans to be 4 per cent. This difference in levels is slightly larger than the actual difference between deposit and lending rates observed in the data. However, there is also great variation across respondents in terms of what they expect from both nominal interest rates and inflation, and therefore also in the relevant real interest rate for an individual's consumption and savings decisions.

In recent years, household deposits have increased significantly, while bank lending has remained roughly unchanged, see chart B. In 2024, household deposits in banks increased by kr. 63 billion to kr. 1,200 billion. Over the same period, household bank loans have remained largely unchanged, totalling kr. 400 billion at the end of 2024. There may be several reasons for this development, including previous consumption and savings decisions in favour of savings. As a result of the increase in deposits, the deposit rate is now, all else being equal, expected to have more influence on households' consumption and savings decisions than before. As the expected real interest rate on deposits is lower than on loans, it can be assumed that this has contributed to an easing of financial conditions for households.

[1] In empirical studies based on countries other than Denmark, there is evidence that inflation expectations in isolation can affect investment and consumption. This indicates that real interest rates are relevant to consumption and investment decisions. However, the effect of inflation expectations is smaller for consumption than investment as households may tend to focus on nominal interest rates. See J.F. Adolfsen, M. Bess and J. Pedersen, Real interest rates are affected by inflation expectations, *Danmarks Nationalbank Analysis*, no. 19, October 2020.

CHART A

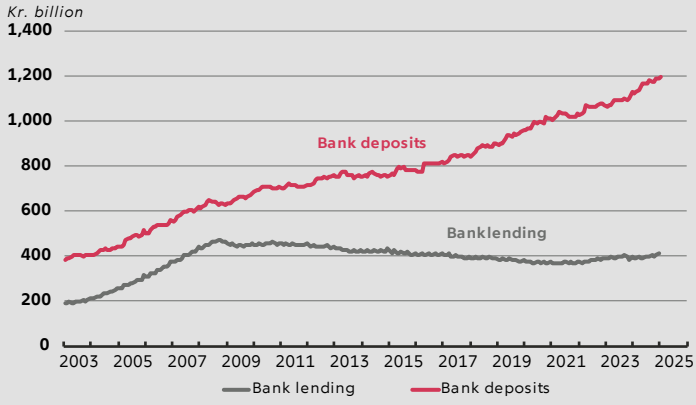
Households are aware that lending rates are higher than deposit rates



Note: The chart shows 10, 25, 50, 75 and 90 per cent of households' expected real interest rate on deposits and one month's income respectively. The expected nominal interest rates are subtracted from the inflation expectation for the coming year at respondent level. There are just over 3,000 responses in the surveys collected in Q4 2024.
Source: Danmarks Nationalbank.

CHART B

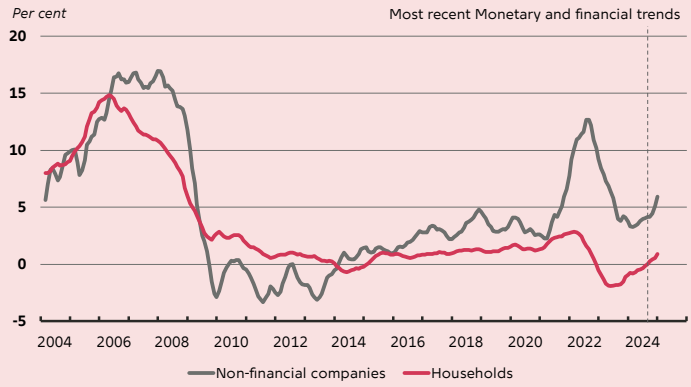
Household deposits increase while their bank loans remain roughly unchanged



Note: The chart shows the nominal value of total bank loans and deposits for Danish households, including employees, pensioners, etc.
Source: Danmarks Nationalbank.

CHART 32

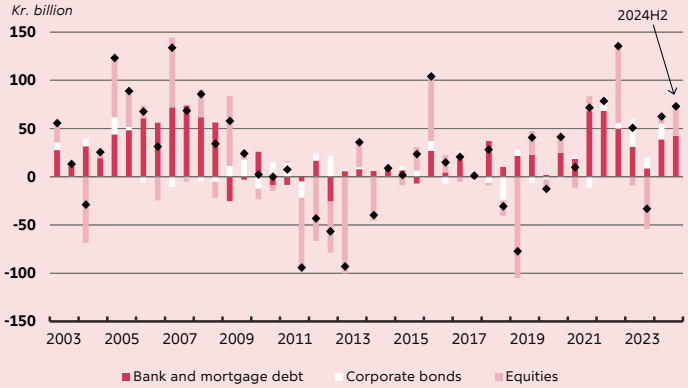
Credit growth for Danish households and businesses has increased since September



Note: Three-month moving averages. The latest data point in the chart is January 2025.
Source: Danmarks Nationalbank.

CHART 33

Businesses' take-up of market-based financing was relatively high in the second half of 2024



Note: Danish non-financial corporations' net borrowing via banks and mortgage banks and net issuance of corporate bonds and shares. The latest data point is the second half of 2024.
Source: Danmarks Nationalbank and Statistics Denmark.

Model estimates indicate that monetary policy is approaching neutral territory

Model estimates indicate that monetary policy rates in 2025 will move towards a level consistent with a monetary policy that is neutral for economic activity in 2025, see chart 34. It is based on market expectations for monetary policy rates and model estimates for the neutral interest rate in Denmark. This contrasts with 2023 and 2024, where the models indicated a restrictive monetary policy. The model estimates also indicate that the neutral interest rate may have increased in 2020-2024.[51] An increase in the level of the neutral interest rate implies that, all else being equal, monetary policy will hit a neutral level faster when monetary policy is eased from the restrictive territory. The development in the estimates for the neutral interest rate is in line with similar estimates from the ECB, see the section on *Global financial market developments*.

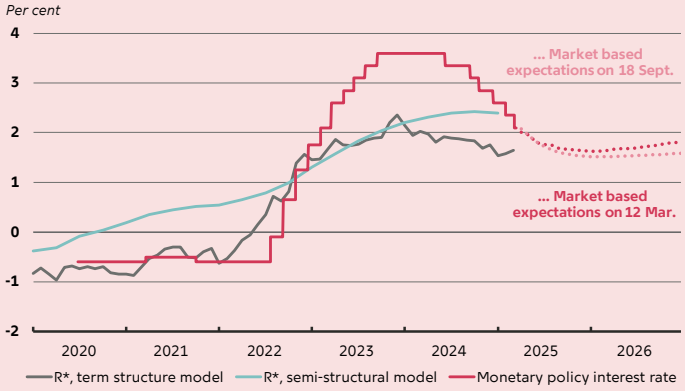
The neutral interest rate cannot be observed and is therefore estimated based on models. There is great uncertainty associated with the estimates, which are model-dependent. At the same time, the neutral interest rate is a simplistic measure as the monetary policy stance does not only depend on the level of the policy rate. The monetary policy stance is also influenced by the *current* macro-financial conditions in the economy. The impact of monetary policy on macro-financial conditions may change over time and is dependent on the state of the economy. This is partly because risk premiums, propensity to save and credit conditions change over time and are generally affected differently in Denmark than in other countries, partly due to the peculiarities of the Danish mortgage system as discussed earlier. Estimates for the neutral interest rate do not take into account current fluctuations in these conditions. Instead, they indicate the policy rate, which is neutral for economic activity in the medium term and adjusted for temporary conditions. The comparison of the current monetary policy rate with an estimate of the neutral level can therefore not stand alone,

[51] The increase in neutral interest rate estimates over the past few years may be due to some of the supply chain disruptions that have occurred since the covid-19 pandemic and Russia's war in Ukraine, as well as a trend towards a greater need for public debt issuance in several large countries, partly due to increased defence spending. See e.g. S.T. Hetland, M.M. Ingholt, R.B. Larsen and M. Spange, Real interest rates in the context of inflation and higher government debt, *Danmarks Nationalbank Analysis,* no. 2, February 2023, and box 4 in Danmarks Nationalbank, Interest rates have been cut, but monetary policy remains tight, *Danmarks Nationalbank Analysis (Monetary and financial trends)*, no. 13, September 2024.

but is nevertheless an important concept for several central banks including the Federal Reserve, the ECB and Danmarks Nationalbank. This is because it may serve as a starting point in a broader assessment of the impact of monetary policy on the economy.[52]

CHART 34

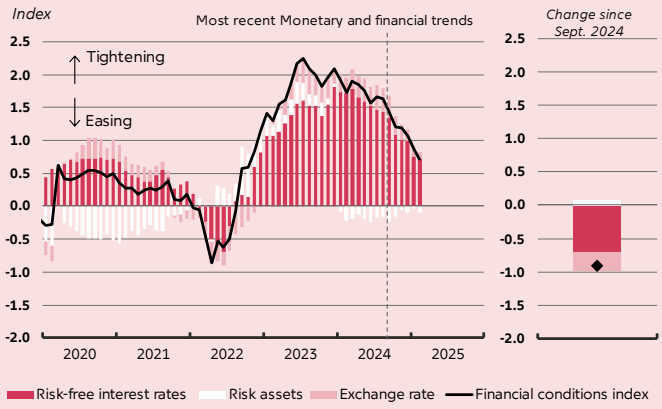
Model estimates indicate that monetary policy is approaching neutral territory



Note: The chart shows Danmarks Nationalbank's current account rate (red) and market participants' expectations for ESTR minus the current monetary policy rate spread between the euro area and Denmark (dashed). The estimates for the neutral policy rate are based on two different models, which are described in the appendix in S.T. Hetland, M.M. Ingholt, R.B. Larsen and M. Spange, Real interest rates in the context of inflation and higher government debt, *Danmarks Nationalbank Analysis*, no. 2, February 2023. Estimates are subject to considerable uncertainty. The latest data point is February 2025 for the term structure model, Q4 for the semi-structural model and 12 March for the monetary policy rate.
Source: LSEG Workspace, Danmarks Nationalbank and own calculations.

CHART 35

Easing of overall financial conditions in Denmark is driven by a drop in risk-free interest rates



Note: The evolution of the financial conditions index and sub-components averaged over the given month. "Risk-free interest rates" is the first principal component of swap rates with maturities from 3 months to 10 years minus the 1-year swap rate in 9 years (proxy for a market-based nominal equilibrium rate). "Risky assets" is the first principal component of the following variables: 1) monthly return on the C20, 2) a proxy for the equity risk premium (expected earnings yield on the C20 less a 10-year swap rate, 3) option-adjusted yield spread on mortgage bonds and 4) implied interest rate volatility from 1Y10Y swaptions and 3-month Cibor-OIS yield spread. "Currency" is nominal effective krone rate. The three factors are weighted in the overall index based on their effect on Danish inflation in a VAR model via impulse response functions. The latest data point is February 2025.
Source: LSEG Workspace, Macrobond, Nykredit and Danmarks Nationalbank.

The index for financial conditions in Denmark shows an easing since September

An index for Danish financial conditions indicates that the financial conditions for households and businesses have eased since September, see chart 35. The index is a way of providing an overall measure of financial conditions that takes into account time-varying factors that may affect the transmission of monetary policy. The index therefore weights how the risk-free interest rate curve, risky assets and the exchange rate affect financial conditions for households and businesses in Denmark based on their historical effect on inflation. The index gives indications of the change in overall financial conditions, while the index level remains more difficult to interpret.

The easing in overall financial conditions in Denmark since September has primarily been driven by declines in risk-free interest rates, which in this model

[52] To assess the current monetary policy stance, it is therefore important to take into account the temporary and time-varying macro-financial conditions discussed individually above. For more on the uncertainty of the estimates, see box 4, Monetary and financial trends, September 2024, and C. Brand, N. Lisack and F. Mazelis, Natural rate estimates for the euro area: insights, uncertainties and shortcomings, *ECB Economic bulletin box*, February 2025.

covers the risk-free yield curve from three months to 10 years. The decline in short-term interest rates in particular has driven this development, as mentioned earlier, while a stronger dollar exchange rate has also contributed to this trend, see the chapter on *Global financial market developments*. By contrast, more expensive equity financing in isolation has contributed to slightly tighter financial conditions in Denmark, as shown by the contribution of "Risky assets".

Model estimates indicate that monetary policy since 2022 will have a neutral effect on economic activity in 2025

The monetary policy tightening since 2022 has, in isolation, dampened Danish GDP in 2022-2024. This is shown in model calculations from Danmarks Nationalbank's DSGE model, see chart 36.[53] The full effect of the monetary policy tightening has been realised with some delay.[54] The delayed effects should also be taken into account when assessing the contribution of monetary policy to economic activity in a given year. The DSGE model may shed light on the timing of monetary policy pass-through, and therefore also the overall effect on the economy, when interest rate hikes in 2022-2023, interest rate cuts in 2024-2025 and market participants' expectations of future monetary policy rates are included. The results from the model show that the tightening have particularly affected economic activity in 2023-2024, although most of the monetary policy tightening took place in 2022, and that in 2025 monetary policy will have an effect on economic activity that will be approximately neutral. As chart 36 shows the isolated contribution of the accumulated monetary policy since 2022 to the GDP level in a given year, the estimates can be interpreted as a monetary policy counterpart to a multi-year fiscal effect, see box 5.[55]

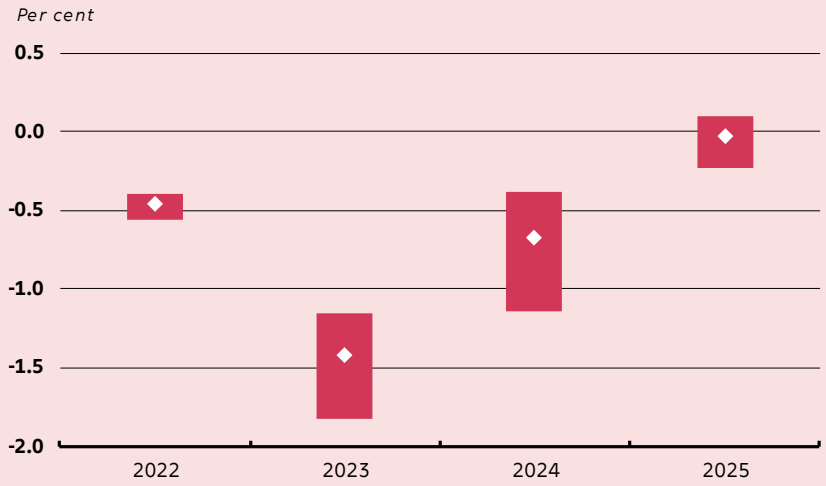
Monetary policy and overall financial conditions are expected to gradually become neutral in 2025

The assessment of Danmarks Nationalbank is that monetary policy and overall financial conditions are approaching neutral territory and that the effect on economic activity in 2025 will be approximately neutral. The assessment is based on the overall picture of various indicators, including the development of financial conditions and a comparison between the policy rate and estimates for the neutral interest rate level, as well as a model-based analysis of the transmission of previous monetary policy tightening.

[53] DSGE model stands for *Dynamic Stochastic General Equilibrium model*. It is a macroeconomic model with forward-looking and behaviour-optimising households and businesses.
[54] Empirical studies show that the full effect of monetary policy rate changes materialises with a delay. See e.g. S. Miranda-Agrippino and G. Ricco, The Transmission of Monetary Policy Shocks, *American Economic Journal*: *Macroeconomics*, vol. 13, no. 3, 2021, or M.D. Bauer and E.T. Swanson, A Reassessment of Monetary Policy Surprises and High-Frequency Identification, *NBER Macroeconomics Annual*, vol. 37, 2023.
[55] The effect in 2025 is robust to alternative interest rate scenarios, e.g. with slightly higher or lower monetary policy rates compared to current market expectations. This is because the large effects from the monetary policy rate hikes in 2022-2023 dominate the results.

CHART 36

Multi-year effect of monetary policy since 2022 has approximately neutral effect on Danish GDP in 2025



Note: The chart shows the accumulated effects of ECB interest rate changes since 2022 on Danish GDP levels according to Danmarks Nationalbank's DSGE model. The white markings are mean estimates, while the red areas indicate 90 per cent confidence ranges.
Source: Own calculations.

BOX 5

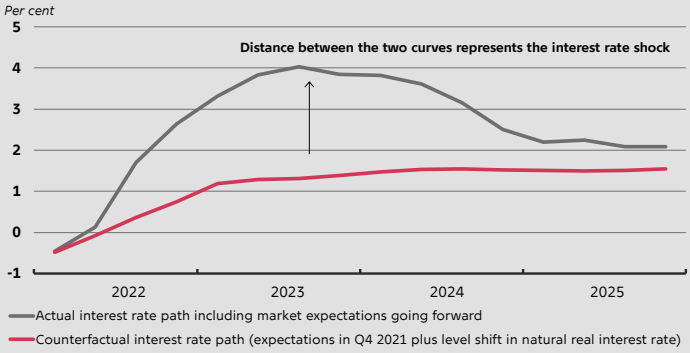
Multi-year effect of monetary policy since 2022 on Danish GDP is neutral in 2025

According to model calculations, the monetary policy rate hikes from the ECB since 2022 have had a negative effect on economic activity in Denmark until 2024, see chart 36. The effects should be interpreted as the cumulative multi-year effect of monetary policy since 2022 on the GDP level in each year. In 2025, the activity effects are approximately zero, depending on the assumptions for the natural real interest rate, which indicates the long-term, structural level of the real interest rate. The calculations have been made using Danmarks Nationalbank's DSGE model.[1]

The analysis models the interest rate changes by increasing the ECB's monetary policy rate by the actual development in short-term money market interest rates since Q1 2022, and market expectations going forward relative to market expectations in Q4 2021, see chart A.[2] The interest rate changes are modelled as unexpected shocks to the ECB's monetary policy rule (i.e. the Taylor rule in the model).[3] The analysis therefore ignores the underlying drivers that have caused the ECB's monetary policy response. The estimates thus capture the isolated effects on the Danish economy from the ECB's interest rate changes since 2022 and the associated slowdown in the European economy. The calculations are based on the assumption that the natural real interest rate has increased in the period since 2022. Specifically, the modelling assumes an increase of 1.5 percentage points in line with the natural real interest rate estimates in chart 34. Estimates for the natural real interest rate in Denmark from Danmarks Nationalbank's models indicate an increase since 2022, which is also in line with estimates from the ECB, although the level of the point estimates is associated with great uncertainty.[4] Assuming an entirely flat natural real interest rate since 2022, the model shows a slightly contractionary effect in 2025, but the profile remains largely unchanged.

CHART A

Modelling uses changes in interest rate expectations since 2022



Note: The chart shows the short-term money market interest rate including market expectations going forward (grey curve) and market expectations as of Q4 2021 (red curve) plus a gradual increase in the natural real interest rate of 1.5 percentage points through 2022.
Source: LSEG Workspace and own calculations.

Continues ...

... continued

The full effect of an interest rate change on GDP is delayed, see chart 36 in the main text.[5] This is shown by the fact that the model estimates show limited effects in 2022, even though approximately half of the total interest rate hikes occurred in this year. Therefore, the estimates also show that the biggest impact on GDP came in 2023. Afterwards, GDP will gradually return towards its structural level until 2025. This is not only due to the policy rate cuts starting in 2024, but also because contractionary effects from previous rate hikes are gradually fading away.[6]

Model estimates are subject to uncertainty. Parameter uncertainty means that the estimates are associated with statistical uncertainty, which is illustrated by the confidence bands in chart 36. In addition, assumptions about expectation formation have an impact on the model estimates. In the analysis, interest rate changes are modelled as unexpected shocks, meaning that households and businesses expect interest rates to gradually return to their natural level after an interest rate change. This contrasts with the actual course of events, where market expectations for future short-term money market interest rates gradually increased throughout 2022. To the extent that future interest rate changes have been anticipated by households and businesses, it will accelerate their behaviour and thereby also the GDP effects. This would suggest that the interest rate changes since 2022 may have had a faster effect on GDP and thus may have slightly more expansionary effects from 2025.

Monetary policy may affect the economy through a number of transmission channels.[7] However, the theoretical structure of the DSGE model implies that the ECB's monetary policy primarily affects households by changing the incentive to save via the real interest rate (the intertemporal substitution channel), while the decline in European activity weakens Danish exports. In other model types, other transmission channels, such as the net interest payment channel, may have greater relative importance in the overall transmission. However, this will not necessarily have a significant impact on the overall effect of monetary policy shocks.[8]

[1] DSGE stands for *dynamic stochastic general equilibrium*. The model is a re-estimated version of the DSGE model developed in J. Pedersen and S.H. Ravn, What Drives the Business Cycle in a Small Open Economy? Evidence from an Estimated DSGE Model of the Danish Economy, *Danmarks Nationalbank Working Papers*, no. 88, 2013. The re-estimated version is estimated on data from 1995-2022 and extended with, among other things, a module for modelling the euro area economy using a medium-sized DSGE model, see F. Smets and R. Wouters, Shocks and Frictions in US Business Cycles: A Bayesian DSGE Approach, *American Economic Review*, Vol. 97, no. 3, 2007.
[2] The methodology of the analysis is similar to that used by the ECB in similar analyses. However, the ECB's analyses include the effects of the phasing out of asset purchase programmes, as ECB purchase programmes have also affected economic activity in the euro area. See e.g. P.R. Lane, The 2021-2022 inflation surges and the monetary policy response through the lens of macroeconomic models, SUERF Marjolin Lecture, November 2024.
[3] It is assumed that there is full pass-through from ECB interest rates to Danmarks Nationalbank interest rates in the model. The widening of the monetary policy spread by 30 basis points since the beginning of 2022 is not expected to have significant effects.
[4] See C. Brand, N. Lisack and F. Mazelis, Natural rate estimates for the euro area: insights, uncertainties and shortcomings, *ECB Economic Bulletin*, Issue 1, 2025.
[5] In the model, it takes just under a year for an ECB interest rate shock to have maximum effect on the GDP level in Denmark. The delay is consistent with the estimate from R.B. Larsen and C.J. Weissert, Monetary policy transmission in Denmark, *Danmarks Nationalbank Working Paper*, no. 198, January 2024.
[6] Monetary policy is neutral in the long term. Therefore, real GDP will increase after the initial drop when interest rates rise.
[7] The different monetary policy transmission channels are discussed in Danmarks Nationalbank, Effects of monetary policy rate hikes, *Danmarks Nationalbank Analysis*, no. 5, March 2024.
[8] See e.g. A. Auclert, M. Rognlie and L. Straub, Fiscal and Monetary Policy with Heterogeneous Agents, *NBER Working Paper*, No. 32991, 2024.

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