REPORT

DANMARKS NATIONALBANK

12 SEPTEMBER 2018 — NO. 6

Monetary and financial trends – September 2018

- The European Central Bank, ECB, expects to end net purchases of bonds at the end the year. The asset purchase programme has contributed to foreign investors purchasing Danish bonds. The new investors will not necessarily sell their bonds again, just because the ECB discontinues its purchase programme.

- Lending from banks and mortgage banks increased, but at a moderate pace. The households continued to switch to loans with a low interest rate risk, and with amortisation. That makes their disposable income less sensitive to changes in interest rates.

- The financial conditions are expansionary, and support activity in the current cyclical situation. Interest rates, and housing and equity prices, are contributing particularly to GDP growth in the current upswing. Furthermore, the economic growth is not driven by increased borrowing.

Longest period without interventions since 1982

The krone

has been stable, on the strong side of the central rate vis-à-vis the euro

Read more

Sustained low interest rates

Yields

on government bonds fell, among other things due to concerns about protectionist trade policies

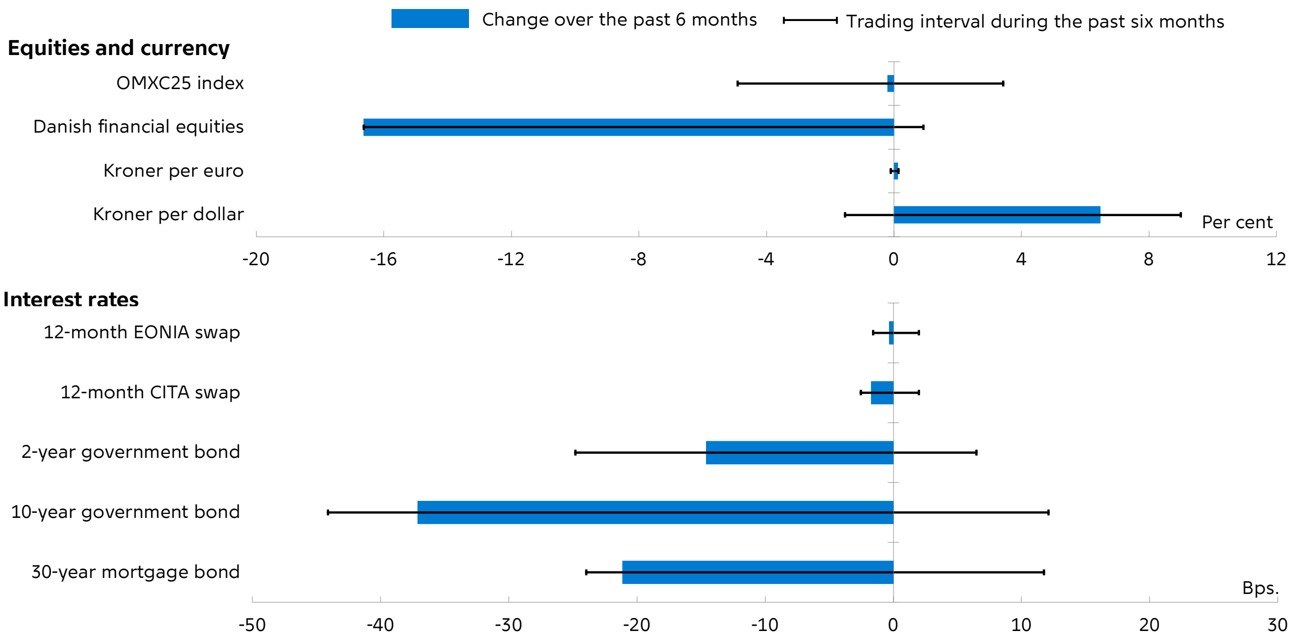
Read more

CONTENT

Key trends in the financial markets since March 2018

Danish and German government bond yields declined during the past six months, and the equities market was broadly unchanged, but with declines for financial stocks. The period was characterised by fears of the consequences of protectionist trade policies. The underlying economic development was still robust, however, and inflation prospects were stable. The ECB announced that it plans to continue the normalisation of monetary policy and it expects net purchases of bonds to end after December 2018. After four years of asset purchases, the ECB's announcement marks a major change in the bond markets as from next year, however this announcement was broadly expected. The krone was stable against the euro and weakened against the dollar.

Overview
Financial markets since March 2018



Note.: The blue column indicates the change as of the date of going to press on 7 September 2018 compared to the starting point as of the date of going to press of the previous edition, i.e. 9 March 2018. The end points of the black lines indicate the largest and smallest change over the period since 9 March 2018.
Source: Thomson Reuters Datastream.

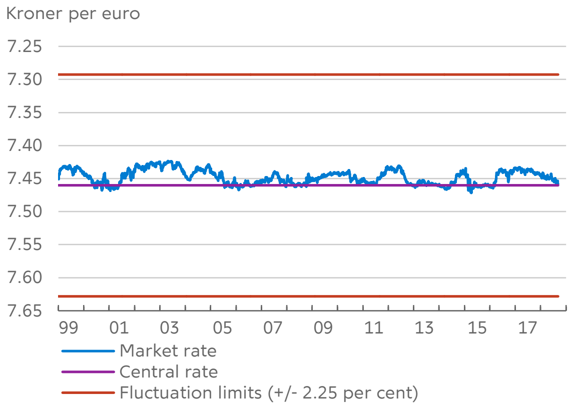
The Danish krone market and the demand for currency

The krone was stable, and Danmarks Nationalbank has not intervened for a long period

The krone continued to be stable against the euro, on the strong side of the central parity rate during the last six months, cf. Chart 1. The interest rate on certificates of deposit was -0.65 per cent, unchanged since January 2016. Besides the very stable krone, the reason for the long period without any changes in the official interest rates is that the ECB primarily used other instruments than the monetary policy interest rates, e.g. the asset purchase programmes, to change its monetary policy stance. As a consequence, since March 2016 the monetary policy interest rate spread to the euro area was negative at 0.25 per cent.

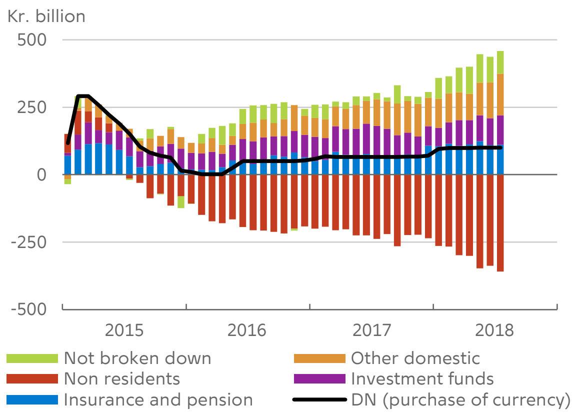
Major currency transactions relating to corporate mergers and acquisitions, including the acquisition of TDC, took place without any significant volatility in the krone exchange rate or any need for intervention by Danmarks Nationalbank. Private market participants were ready to increase or reduce their exposure to kroner. This is an indication of good liquidity in the market for Danish kroner. Up to and including August 2018, Danmarks Nationalbank had not intervened for 17 months, which was the longest period without intervention since the introduction of the fixed exchange rate policy in 1982. The foreign exchange reserve was kr. 468 billion at the end of August 2018.

The krone has been on the strong side of the central rate — Chart 1



Note: Reverse scale for the left-hand axis.
Source: Danmarks Nationalbank.

Residents purchased kroner — Chart 2



Note: Identified sector of demand for kroner, net. A positive value indicates kroner purchases, except for Danmarks Nationalbank (DN) where it indicates purchases of foreign exchange. Accumulated purchases since 2015.
Source: Danmarks Nationalbank.

Residents purchased kroner

Denmark's current account surplus amounted to kr. 58 billion in the first seven months of 2018. The current account surplus entailed an increase in Denmark's net foreign assets, which created a placement need in foreign currency.[1]

In the first seven months of 2018, residents purchased kroner, driven especially by investment funds, which purchased kroner for kr. 37 billion, cf. Chart 2. Investment funds sold foreign assets and also slightly increased the currency hedging of their portfolios. Both contributed to their demand for kroner. As in the two preceding years, insurance and pension companies increased their holdings of foreign assets, but hedged against currency risk on a significant scale, cf. Chart 3. In the last three years, residents have had a net demand for kroner.

1 Cf. Danmarks Nationalbank (2018), Monetary and financial trends, *Danmarks Nationalbank Report*, No. 3, March 2018.

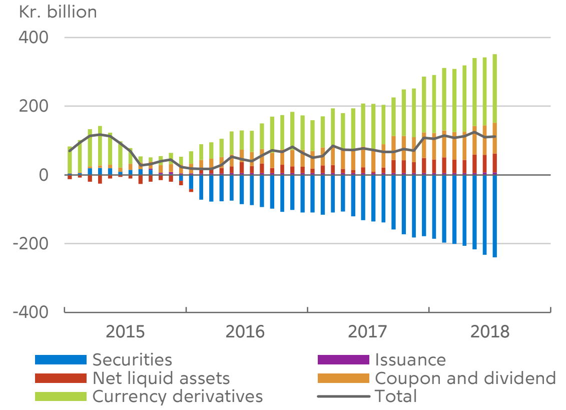
For both investment funds and insurance and pension companies, there was a tendency for increased hedging of euro-denominated currency exposure. This may be due to a gradual weakening of the krone against the euro during the past year, from a very strong level: All other things being equal, investors' expected costs of hedging euro-denominated exposure are high when the krone is strong, if investors are thereby expecting the krone to be weakened, going forward.

Non-residents' sales of kroner are equivalent to residents' purchases

In the first half of 2018, kroner sales from abroad amounted to kr. 123 billion, cf. Chart 4. This was primarily related to non-residents' sales of securities – both shares and bonds – denominated in kroner for a total of kr. 149 billion. In addition, krone-denominated interest and dividend payments to abroad totalled kr. 47 billion. Dividends accounted for the bulk of the payments, at kr. 36 billion, and have approximately doubled during the past five years, in step with increasing profits in the corporate sector, cf. the section on the equities market below. Interest payments to abroad amounted to kr. 10 billion. This is lower than before, due to the low level of interest rates on Danish bonds.

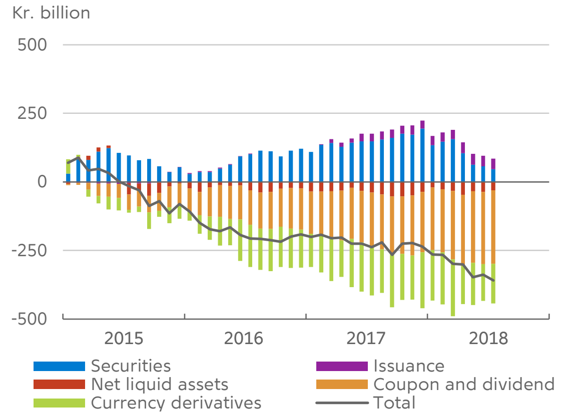
After the pressure on the krone at the beginning of 2015, non-residents have sold kroner for kr. 447 billion. This corresponds to residents' purchases of kroner, including Danmarks Nationalbank's reduction of the foreign exchange reserve.

Insurance and pension companies' net purchase of kroner Chart 3



Note: Identified source of demand for kroner, net. A positive value indicates kroner purchases. Accumulated purchases since 2015.
Source: Danmarks Nationalbank.

Non-residents sold kroner Chart 4



Note: Identified source of demand for kroner, net. A positive value indicates kroner purchases. Accumulated purchases since 2015.
Source: Danmarks Nationalbank.

Monetary policy and money markets

Continued normalisation of monetary policy in the euro area

In June 2018, the ECB's Governing Council announced that they expect to reduce the pace of purchases of bonds as of October 2018, and that net purchases end by the end of the year, subject to incoming data confirming their medium-term inflation outlook. Reinvestments of maturing bonds will continue for now. The asset purchase programmes have contributed to reducing long-term bond yields, retaining them at low levels, and have thus been a central element of the ECB's monetary policy in recent years. In the same instance, the Governing Council reinforced its "forward guidance" concerning the ECB's monetary policy interest rates: They expect the monetary policy interest rates to remain at their present levels at least through the summer of 2019. In this respect, the market participants further deferred their expectations of when the ECB will raise interest rates, cf. Chart 5.

During the last six months, the spread between the official interest rates in Denmark and the euro area has been stable at around -0.15 percentage points, cf. Chart 6. The forward interest rates indicate that the spread may remain negative in the next few years.

Low turnover in the money markets

Turnover in the uncollateralised day-to-day market in kroner declined during the spring and summer of 2018. To a large extent, the T/N rates were therefore again dependent on quoted rates, instead of being based on actual trades. Internationally, too, turnover has been declining in most money markets the last years. Some money market interest rates are used as reference rates in financial contracts. For this reason, new reference interest rates in several currencies have been developed, cf. Box 1. It is important to achieve clarification of the future of the Danish reference interest rates.

Reform of money market interest rates

Box 1

On 1 January 2018, the Benchmark Regulation[1] entered into force, with pan-European requirements for price quoters, users and administrators of reference interest rates, called benchmarks. The regulation includes a transition period up to the end of 2019, after which many of the previously used reference interest rates will surcease.

The two most important euro-denominated reference interest rates are the quoted reference interest rate for uncollateralised inter-bank loans, EURIBOR, and the transaction-based reference interest rate for uncollateralised day-to-day inter-bank loans, EONIA. The European money market institute, EMMI, which administers the two reference interest rates, has decided to reform EURIBOR. EONIA is discontinued as a benchmark in new financial contracts after the end of the transition period.

EONIA is of central importance to the ECB, since – at the present time – it is the best indicator of the transmission of the ECB's interest rates to short-term market-based interest rates. In the euro area, in June 2018 the ECB therefore announced that they will begin to publish a Euro Short-Term Rate, ESTER, as from October 2019. ESTER is a short-term, uncollateralised interest rate that is calculated on the basis of greater turnover than EONIA, so that it is more representative of market turnover. In the autumn of 2018, a working group will decide whether ESTER, or one of the two other candidates, which are based on repo transactions, is to replace EONIA. ESTER was the favourite among market participants, according to the ECB's public consultation.

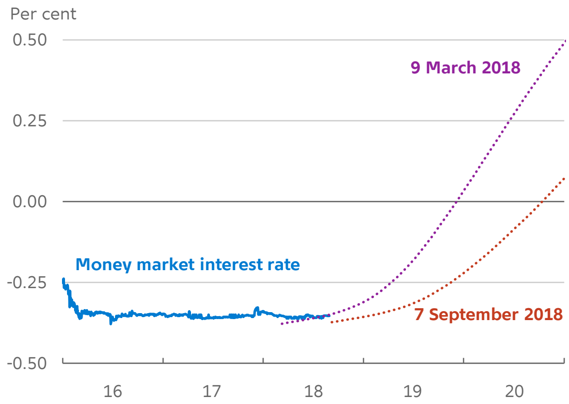
In the USA, there has also been work on designing new, more accurate reference interest rates. In April 2018, the Federal Reserve among other things introduced the Secured Overnight Financing Rate, SOFR, to replace the Effective Federal Funds Rate. Several other countries have likewise developed new reference interest rates.

CIBOR and CITA are the primary Danish reference interest rates.

1. For further information, see the Danish Financial Supervisory Authority's website (*link*).

Deferred expectations of rising interest rates in the euro area

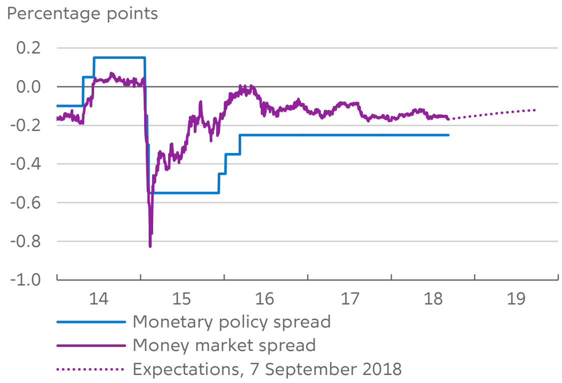
Chart 5



Note: 3-month EONIA swap rate. The dashed curves indicate the 3-month forward interest rates on the specified dates.
Source: RIO Scanrate.

Stable money markets development

Chart 6



Note: Spread between 3-month EONIA and CITA swaps. The monetary policy rate spread is the spread between the ECB's deposit facility rate and Danmarks Nationalbank's rate on certificates of deposits.
Source: RIO Scanrate and Thomson Reuters Datastream.

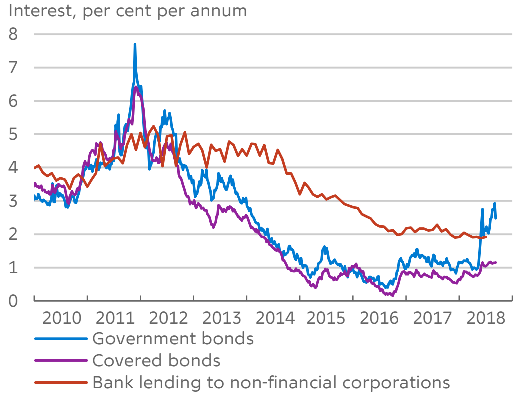
Bond markets

Declining long-term yields in the euro area
German government bond yields have fallen since the spring of 2018. The interest rates fell inter alia when there were prospects of escalating protectionist trade policies. Furthermore, in Italy there was new political uncertainty in conjunction with the formation of a new government in May 2018.That led to a demand for secure assets and a decline in e.g. German government bond yields. On that occasion, Italian government bond yields rose by more than 100 basis points in the 10-year segment, and even more strongly for shorter-term bonds.

In contrast to earlier periods of unrest and widening government yield spreads, there was limited spillover to yields on bonds issued by Italian private enterprises, as well as bonds issued by Italian banks and their retail lending rates, cf. Chart 7. Since the sovereign debt crisis, the ECB's monetary policy has been targeted at ensuring transmission of its monetary policy interest rates by reducing the significance of national government bond markets for the transmission, including by purchasing bonds issued by banks and enterprises (the ABSPP, CBPP3 and CSPP programmes) and by offering the banks long-term loans (LTROs).[2] There was also limited spillover to other southern European countries' government bond yields compared to during the sovereign debt crisis.

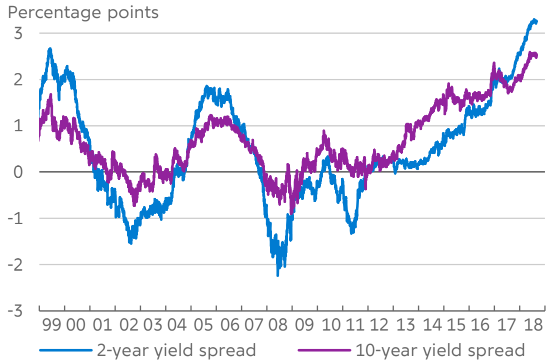
Normalisation of monetary policy is further in the USA
The Federal Reserve has raised its official interest rates a total of seven times since 2015. They also continued to reduce the balance sheet at a cautious pace. The yield spreads between the USA and the euro area widened for both short-term and long-term government bonds, cf. Chart 8. The spreads reached the highest levels since the introduction of the euro. The USA is further into the business cycle, cf. Outlook for the Danish Economy, September 2018.[3] This can contribute to explaining the yield

Limited spillover effects of political unrest in Italy to other Italian interest rates Chart 7



Note: The bond yields are based on IBOXX bond indices with comparable maturities. Bank lending are Italian banks' retail lending rates.
Source: ECB and Thomson Reuters.

Largest yield differential between the USA and the euro area since 1999 Chart 8



Note: Spread between benchmark bonds. The euro area is represented by the yields on German government bonds.
Source: Thomson Reuters and own calculations.

2 These are the "credit easing" policies. Cf. The European Central Bank, The transmission of the ECB's recent non-standard monetary policy measures, *ECB Economic Bulletin*, No. 7, November 2015.

3 Danmarks Nationalbank, Boom with no signs of imbalances, *Danmarks Nationalbank Analysis* (Outlook for the Danish Economy), No. 15, September 2018.

Rebalancing of investors' portfolios as a consequence of the ECB's asset purchase programmes

Box 2

The ECB's asset purchase programme is approaching its conclusion and this can also have consequences outside the euro area

Since the beginning of 2015, inflation and inflation expectations in the euro area have increased. On this basis, the ECB has announced that they expect to discontinue further bond purchases at the end of the year. The asset purchase programmes, APP, have among other things had the effect of rebalancing investors' portfolios. Discontinuation will therefore also affect financial markets outside the euro area, including Denmark.

Foreign investors, in particular, reduced their fixed income debt in the euro area

Before the start of APP (end-2014) investors outside the euro area owned 32 per cent of issued government bonds in the euro area, equivalent to approximately 2,400 billion euro, cf. Chart A. After this, however, non-residents strongly reduced their holdings, by approximately 600 billion euro, in line with the Eurosystem's purchase of bonds in the market. The ECB has assessed that 45 per cent of the purchases concerned sales from abroad.[1]

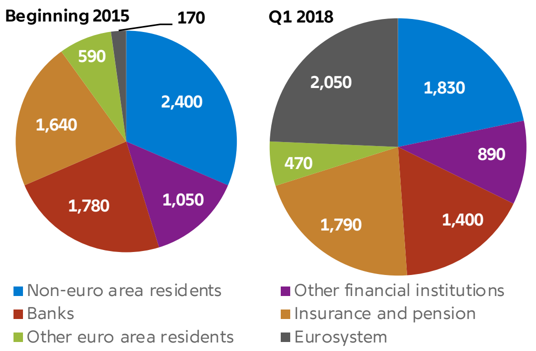
At the same time, foreign investors have purchased Danish long-term debt instruments

Since the beginning of 2015, investors outside the euro area have purchased Danish bonds for approximately 20 billion dollar. Among other things, American and Japanese investors increased their holdings. The euro area's banks and capital managers also sold euro-denominated bonds. There are indications that capital managers purchased considerable holdings of Danish mortgage bonds. The rebalancing of foreign investors' portfolios thereby seems to have led to higher demand for Danish bonds, cf. Chart B. New issues of fixed-rate callable bonds, in particular, have attracted foreign investors. The euro area's holdings of Danish government bonds are much lower than their mortgage bond holdings, and were by and large unchanged during the period.

Wind down of asset purchase programme: Portfolio flows could be asymmetric

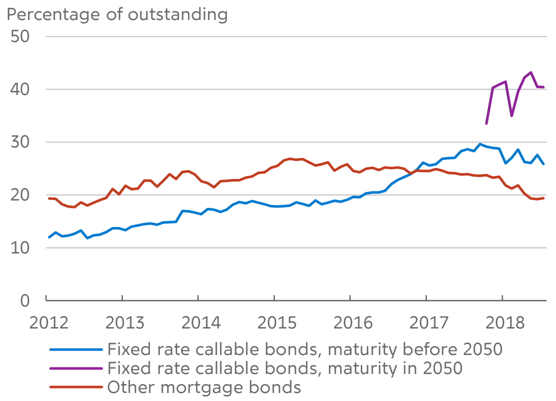
The flows deriving from the portfolio rebalancing could switch around as the ECB is discontinuing its asset purchases, and in particular when the reinvestments of maturing bonds cease. Whether or not that means that foreign investors will again reduce their investments in Danish bonds depend on several factors, e.g. whether the underlying structures of the financial market have changed during the period of the asset purchase programmes. As an example, foreign institutional investors may have invested in systems and know-how to invest in additional segments of the Danish covered bond market, and that the investment mandates set by their owners subsequently include the possibility to invest in these new segments. If asset managers have new mandates to invest in Danish covered bonds it could imply that not all of the new foreign investors in Danish bonds would reduce their holdings in connection with a normalisation of the monetary policy of the ECB.

Distribution of ownership of government bonds in the euro area — A



Note: Estimated distribution of ownership of long-term general government debt. The total outstanding is estimated from the ECB's securities statistics. "Abroad" is holdings outside the euro area and is estimated on the basis of the ECB's sectoral accounts. Holdings of sectors in the euro area are taken from the ECB's securities holdings statistics. The Eurosystem's holdings solely include the SMP and PSPP programmes. The sum of the identified sectors' holdings does not fully correspond to the total outstanding.
Source: ECB and own calculations.

Foreign ownership of long-term fixed-rate mortgage bonds has increased — B



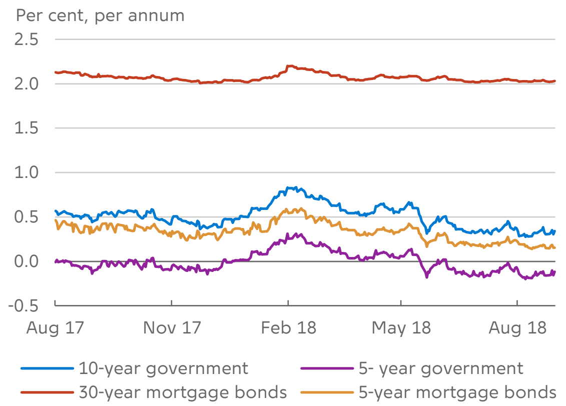
Note: Callable bonds maturing in 2050 are not shown until the combined outstanding exceeds kr. 20 billion.
Source: Danmarks Nationalbank.

1. See The European Central Bank, *ECB Economic Bulletin*, Box: Which sectors sold the government securities purchased by the Eurosystem? Issue 4/2017,

spread for short-term bonds in particular. Yet in overall terms, the prospects for growth and inflation in the USA and the euro area have converged in recent years, and the differences are smaller than in previous periods with significant yield spreads.

The Danish bond markets were calm
The yield spread between Danish and German 10-year government bonds has been stable in 2018, due to a parallel decline in interest rates. After correction for maturity differences between bonds, the yield spread was around 5 basis points. Danish mortgage bond yields fell almost in step with government bond yields, cf. Chart 9. The yield spread between 30-year callable bonds and government bonds widened slightly, however. Foreign investors continued to purchase bonds in the callable segment and at the end of July 2018 they owned 29 per cent of the total outstanding, cf. Box 2.

Yields on Danish bonds have declined Chart 9



Note: Yields to maturity. Government bond yields are the yields on Danish government bonds maturing in 2023 and 2027. 5-year mortgage credit is 1 per cent Realkredit Danmark maturing on 1 April 2023. 30-year mortgage credit is Nykredit 2 per cent maturing on 1 October 2050 with amortisations.
Source: Thomson Reuters.

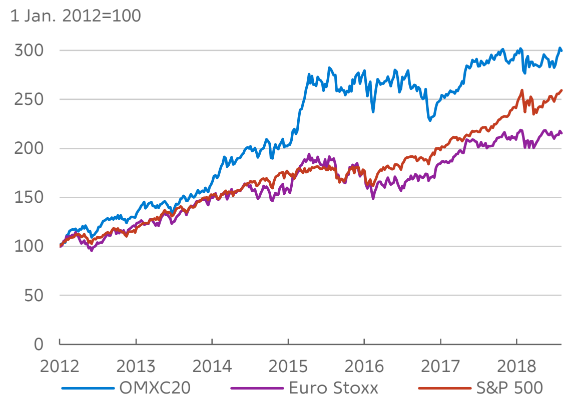
Equity markets

The risk premium on stocks is still high
Returns on Danish equities in the last six months were by and large zero, cf. Chart 10. Danish financial equities fell by 17 per cent since March 2018, however, while prices of non-financial equities rose. The unrest in world trade policies brought volatility, and trade-sensitive equities fell.

The price development in the equities markets in the aftermath of the financial crisis has been extraordinarily favourable. For example, the total return on leading Danish equities (OMXC20) has been 17 per cent per annum since 2012. For comparison, the return was 16 per cent for American equities (S&P 500) and 11 per cent for European equities (Euro Stoxx).

Rising equity prices can be due to growth in expected future corporate earnings, or that investors are willing to pay more for a given return. The latter will lead to a falling risk premium on equity investments.[4]

The return on equities has been close to zero in the past half-year Chart 10

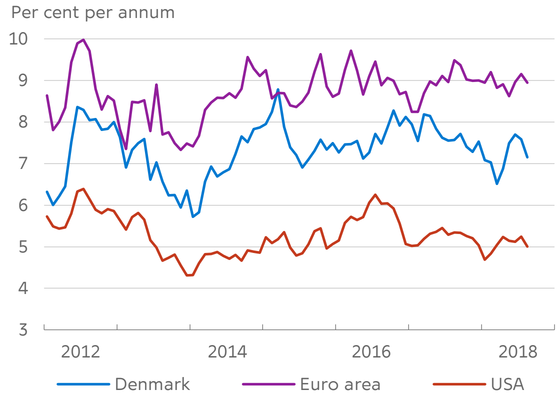


Note: Total return, i.e. including dividend payments.
Source: Thomson Reuters and own calculations.

4 The risk premium indicates the extra return, compared to a 10-year government bond, that is expected to be achieved from equities in the long term, given the expectations of future income. The equity risk premium will decline per structure when equity prices are rising, if nothing else is changed.

Estimates of the risk premium from a standard dividend discount model for the past six years[5] are by and large unchanged, cf. Chart 11. The unchanged estimates reflect that rising earnings and dividend can explain most of the high return in recent years. Increasing earnings have helped to support the dividend payments, which have increased by around 175 per cent since 2012. Even though Danish equity prices have increased more than European equity prices, the risk premia have shown more or less the same development. This is because Danish corporations' earnings increased more than for their euro area counterparts.

Equity risk premia are still high Chart 11



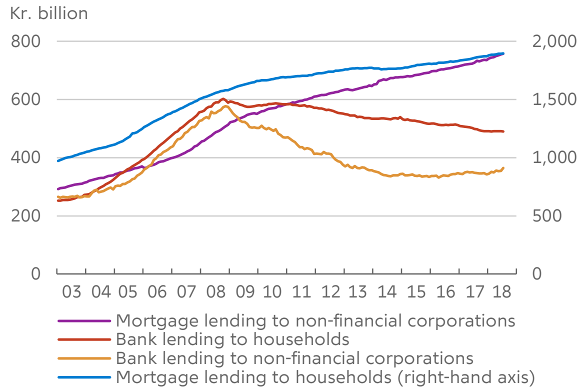
Note: Based on OMXC20, Euro Stoxx and S&P 500. The implicit future return is derived via an approximation to a "three stage dividend discount model", see Fuller, Russell J. and Chi-Cheng Hsia, A simplified common stock valuation model, *Financial Analysts Journal*, Vol. 40(5), 1984. The expectations applied to earnings growth are consensus expectations collected from equity analysts, as well as expected long-term growth equivalent to the actual average real GDP growth over the last 20 years, with the addition of 2 percentage points.
Source: Thomson Reuters and own calculations.

Development in MFI credit

The economic growth is not currently driven by increasing borrowing
Lending from banks and mortgage banks continued to increase, cf. Chart 12. In July 2018, the year-on-year growth in total lending was 2.3 per cent. This is a weak increase in growth compared to the spring of 2018. Since 2009, the growth in lending has overall been lower than GDP growth. The slower accumulation of debt contributes to making the economic upswing more balanced and durable. Lending growth still takes place primarily through the mortgage banks, which are taking over market shares from the banks.[6]

The lower credit growth in the current upswing should be viewed in the light of the high starting point for the debt at the beginning of the upswing.[7] The high level of debt may have contributed to high

The trends for lending from banks and mortgage banks continue Chart 12



Note: Lending in all currencies to households and non-financial corporations domiciled in Denmark. Seasonally adjusted.
Source: Danmarks Nationalbank.

5 See The European Central Bank, Measuring and interpreting the cost of equity in the euro area, *ECB Economic Bulletin*, No. 4, June 2018.

6 In statistical terms, the use of shared funding, i.e. that mortgage bonds are used to finance bank lending does, however, contribute to increasing mortgage lending at the expense of lending from the large banks. In addition, the medium-sized banks have won market shares in recent years and increased their lending by almost 5 per cent, i.e. slightly faster than the GDP development. However, the medium-sized banks' lending constitutes only around 8 per cent of GDP.

7 The starting point for lending as a ratio of GDP has increased monotonously during the last five upswings (92, 94, 118, 133 and 175 per cent, respectively). The higher debt level at the start of the upswing must be viewed in the light of a lower level of interest rates and the households' increasing gross balances, including the development of the labour market pension system. All other things being equal, these drivers support higher debt levels.

savings surpluses for companies and households and therefore a lower need for external financing compared with other upswings since the 1970s, cf. Chart 13.

It is normal for credit growth to gain momentum at a relatively late stage of an economic upswing, since households and businesses often use internal financing first.[8] Experience from the previous upswings in the 1980s and 1990s shows that credit growth can come quickly and strongly, however. In such case, it can contribute to increased consumption and investment and, at worst, make the upswing less robust.

There are signs that businesses have gradually changed their financing structure and increasingly obtain financing from outside banks and mortgage banks via e.g. holding companies, cf. Box 3. Focusing only on credit intermediation from the MFI sector thus underestimates the actual credit extension to companies. But even when credit intermediation from non-banks is taken into account, credit growth has been low in recent years.

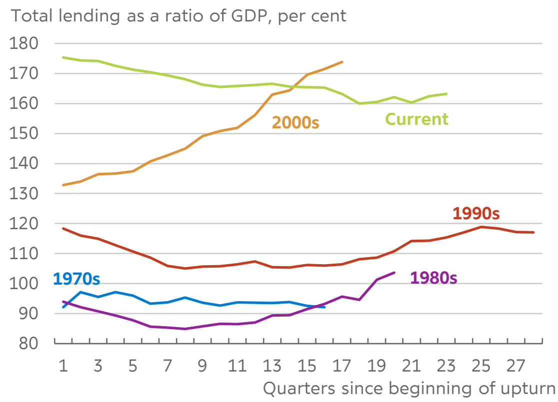
Higher level of credit, but lower growth, compared with northern European countries

In the last three years, the credit growth in the overall euro area was at the same level as in Denmark, but with a lot of variance across countries. Lending growth was higher in most northern European euro area countries and Sweden than in Denmark. On the other hand, lending growth was negative in countries that were more severely affected by the financial crisis of 2007-08 and subsequently the sovereign debt crisis. The level of credit to the private non-financial sector in Denmark continues to be above the level in other EU member states, cf. Chart 14.

8 See Lars Risbjerg and Christina Pedersen, Danske virksomheders finansiering i et makroøkonomisk perspektiv (The financing of Danish corporations in a macroeconomic perspective – in Danish only), *Danmarks Nationalbank Working Paper*, No. 62, 2009.

The starting point for the economic upswing was high lending as a ratio of GDP

Chart 13

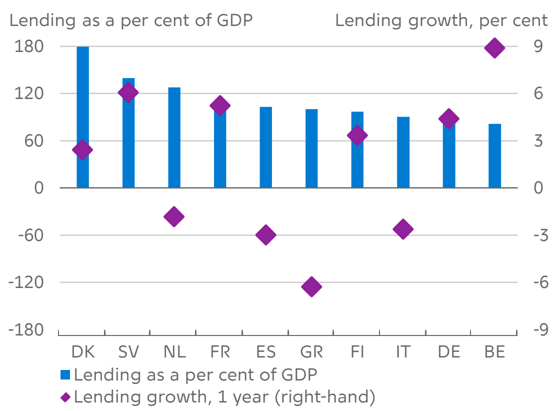


Note: The X axis shows the number of quarters since the start of the upswing. Total lending concerns lending from banks and mortgage banks to households and non-financial corporations domiciled in Denmark. Lending from banks includes lending from entities abroad. Mortgage lending includes non-bond-related lending. The 1970s is the period from Q2 1976 to Q1 1980, the 1980s is the period from Q2 1981 to Q1 1986, the 1990s is the period from Q2 1993 to Q1 2000, the 2000s is the period from Q4 2003 to Q4 2007, and current is the period from Q4 2012 to Q2 2018.

Source: Statistics Denmark and Danmarks Nationalbank.

Credit growth in Denmark around the average in the euro area

Chart 14



Note: Lending at the end of June 2018 compiled in euro, except for Sweden. GDP for 2017 is used. Lending from the domestic MFI sector to all sectors except other MFIs and the public sector.

Source: ECB, Sveriges Riksbank, Thomson Reuters and own calculations.

Companies more often achieve financing from outside the regular banking sector

Box 3

The changed financing structure of non-financial corporations has contributed to the weak lending growth from banks and mortgage institutions (MFIs). There are indications that businesses are increasingly obtaining financing from outside MFIs. This justifies greater attention to these financing sources, in order to obtain an accurate view of credit growth.

Since 2010, the overall debt of non-financial corporations has increased, while MFI lending has stagnated. In total, companies' nominal debt increased by 1 per cent per annum from 2010 to 2015. At the same time, their loans from MFIs declined slightly. Since then, loans from MFIs have increased a little, while the overall debt has declined slightly, and had a market value of approximately kr. 2,500 billion in Q1 2018.

Lending from domestic MFIs accounted for 45 per cent of non-financial corporations' debt in Q1 2018, compared to 53 per cent in 2010, cf. Chart A. A similar reduction in the share of MFI lending is also seen in the euro area, cf. ECB.[1] The remaining debt raised by non-financial corporations in Q1 2018 was financed by other residents, including other non-financial corporations, and other financial corporations, and by abroad.

Instead, credit is intermediated between businesses and by other financial corporations

The increase in the total debt from 2010 to 2015 can be attributed particularly to a strong increase in sector-internal loans (loans between non-financial corporations). Credit from other financial corporations than MFIs also increased during the period. This reflects relatively large increases in credit from holding companies in recent years, while credit from other financial intermediaries, etc. (e.g. investment, venture and leasing companies), and insurance and pension companies, is by and large unchanged, cf. Chart B.

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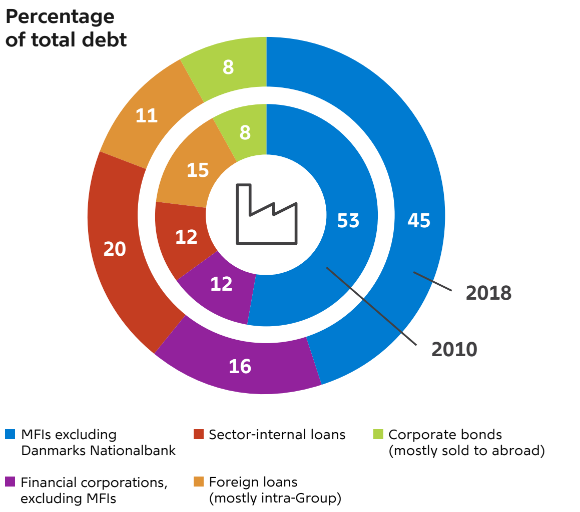
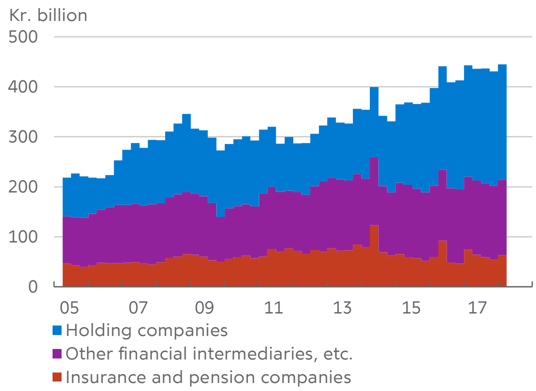
Companies finance their debt from several sources A



Note: Data as of the end of Q1 2010 and Q1 2018, and compiled at market value. Loans are financial account loans and other receivables that have fallen due, but have not yet been paid. Domestic financial corporations, excluding MFIs, are holding companies, other financial intermediaries, etc. and insurance and pension companies. Sector-internal loans are loans between non-financial corporations. The relatively small loans from other operators, such as public management and service, households and non-profit entities, directed at households, are disregarded.
Source: Danmarks Nationalbank.

Higher debt financing via other financial corporations than MFIs, in particular holding companies B



Note: Contains loans and other receivables that have fallen due, but have not yet been paid, cf. Note to Chart A. The changes in the portfolios reflect the net transactions, with correction for re-assessments/value adjustments and other volume changes.
Source: Danmarks Nationalbank.

1. The European Central Bank, *Annual Report 2017*, Box 4, 2018.

Companies more often achieve financing from outside the regular banking sector Box 3
continued

MFIs also intermediate credit indirectly, however. Approximately 40 per cent (kr. 64 billion) of lending from financial intermediaries, etc. is financial leasing. Most of the financial leasing companies are part of the same Group as the respective MFIs, so that this primarily concerns throughflow financing from the MFIs to non-financial corporations.

Danmarks Nationalbank's statistics, Financial Accounts, indicate a more important role for intra-Group debt. A higher proportion of loans from abroad reflects intra-Group receivables, and the volume of loans via domestic, Group-related holding companies has increased, cf. Chart B. Some of the loans between non-financial corporations are also intra-Group loans, although the precise extent is not known. To a greater extent, intra-Group loans reflect liquidity management, rather than actual financing.

Statistical uncertainty
The distribution of companies' liabilities, including the extent of sector-internal loans, is subject to some uncertainty. The distribution is compiled by comparing accounting details of the companies' debt with details of the volume of lending from MFIs and from abroad. The increase in sector-internal loans may thus be due to several factors, such as new organisation forms. However, the significant increases in the element of non-financial corporations' borrowing that cannot be attributed to MFIs probably reflects a changed financing structure.

The households' balance and interest rate sensitivity

The households have switched to loans with a low interest rate risk, and with amortisation
In October 2018, it is ten years since interest rates began a long decline up to 2015, after which they have been relatively stable at historically low levels. Many households have used the falling interest rates to switch to loans with a lower interest rate risk. In addition, changes in the price structure for the mortgage banks' administration margins have incentivised households to shift to loans with longer fixed interest periods and with amortisation. As in the preceding five years, the growth in the households' mortgage loans in 2018 applied particularly to fixed rate loans with amortisation, cf. Chart 15.[9] The ratio of variable rate loans with five-year fixed interest periods and with amortisation also increased, while fewer borrowers had adjustable rate loans with shorter fixed interest periods. Prior to the financial crisis, on the other hand, the growth in mortgage lending was driven particularly by variable rate loans without amortisation, after the introduction of deferred amortisation loans in 2003, i.e. loans with a higher interest rate risk and lower payments.

The adjustment of the rules for good business practice for lenders with effect from 1 January 2018 imposed restrictions on the choice of loan type for home buyers with high debt as a ratio of income and the property's value. The rules may contribute to highly indebted households choosing loans with amortisation and longer fixed interest periods. Danmarks Nationalbank's lending survey shows an impact on the mortgage banks' credit policy, since these banks reported the greatest tightening vis-à-vis households since the survey began ten years ago.

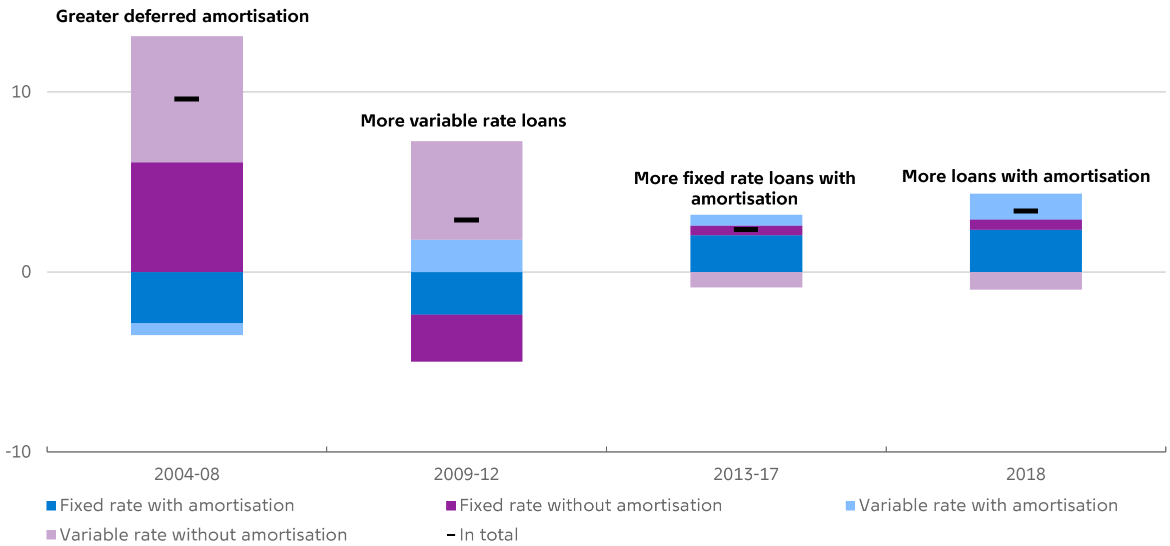
The drop in interest rates for both short-term and long-term mortgage bonds caused a decline in households' interest payments for a given loan, so that their consumption opportunities – everything else equal – were increased. But as a consequence of the shift to loans with lower interest rate risk, for which the interest rate was higher, the average interest rate for households' new mortgage loans has not fallen in line with bond yields during the past two years, cf. Chart 16. Against this background, most Danish households' interest rate sensitivity is limited,

9 In the first half of 2018, fixed rate loans accounted for the majority of all new lending; and in July 2018 accounted for 42 per cent of all outstanding mortgage loans.

Growth in mortgage lending to households occurs in loans with amortisation, primarily at fixed interest rates

Chart 15

Average annual growth contribution, percentage points per annum



Note: Contribution to growth in mortgage loans for owner-occupied homes and second homes. Sub-periods are defined on the basis of loan type patterns. 2018 up to and including July.
Source: Danmarks Nationalbank.

and the macroeconomic consequences of an increase in interest rates are therefore moderate, cf. Box 4.

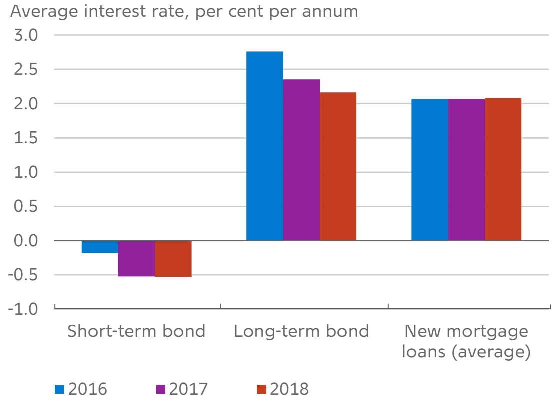
Deposits

Increase in the households' bank deposits
The households' deposits continued to increase, amounting to almost kr. 880 billion, equivalent to 45 per cent of GDP. The increase should be viewed in the light of the growth in the Danish economy, and that the interest rate differential between a bond and a bank deposit has narrowed and in some cases is negative. This means that only little interest, if any, is lost by holding money in the bank at no or little interest, instead of holding a bond, cf. Hensch and Pedersen (2018).[10] The average interest rate on or-

Interest rates for average mortgage loans were unchanged during the past two years

Chart 16

Average interest rate, per cent per annum



Note: Data concerns short-term and long-term yields to maturity, as well as the average yield to maturity for new mortgage loans to employees, pensioners, etc. For each of the years, an average for the first half-year is used. The average interest rate on new loans includes administration margin payments.
Source: Finance Denmark and Danmarks Nationalbank.

10 Jonas Ladegaard Hensch and Erik Haller Pedersen, Low interest rates boost bank deposits, *Danmarks Nationalbank Working Paper*, No. 9, July 2018.

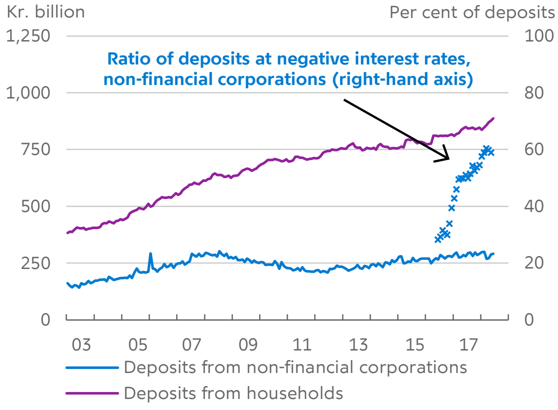
dinary bank deposits from Danish households is 0.08 per cent.[11] Households' ordinary deposit accounts without any binding period or special terms predominantly accrue zero interest, while negative interest rates are not common for this type of transaction.

Firms' deposits accrue negative interest on a wide scale. At April 2018, 60 per cent of deposits from non-financial corporations accrued negative interest. This is a doubling from two years ago, when Danmarks Nationalbank undertook the first survey of the prevalence of negative interest rates, cf. Chart 17.[12] Negative interest rates are particularly applied to customers of the large banks. Negative deposit rates are also more common for the banks' financial customers, such as insurance and pension companies, than for the non-financial corporations.

Financial conditions in overall terms

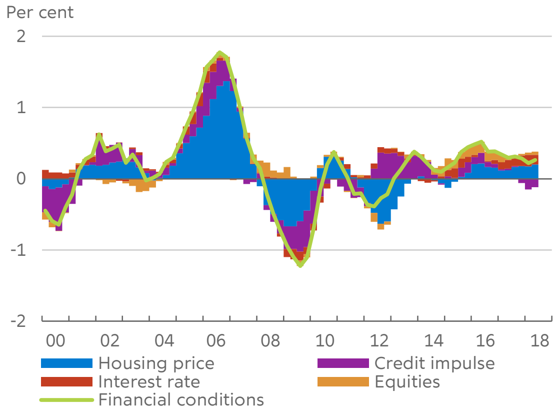
The financial conditions were expansionary and increased the economic activity
Since 2016, the financial conditions overall have contributed to year-on-year growth in GDP of 0.3-0.5 percentage points annually, cf. Chart 18. This is equivalent to around one quarter of the overall GDP growth. In the last two years, the contribution from the financial conditions was at its highest level since prior to the financial crisis in 2008. Interest rates, and housing and equity prices, have contributed particularly to GDP growth in the current upswing. The derived index for conditions expresses the financial conditions' contribution to GDP growth *beyond* the cyclical trend.[13] See also Jensen and Pedersen (2018).[14]

Increasing deposits despite zero or negative interest Chart 17



Note: All currencies. Households include employees and pensioners, etc. The survey of the prevalence of negative interest rates began in May 2016, so that there are no observations prior to this.
Source: Danmarks Nationalbank.

Interest rates, and housing and equity prices contributed particularly to growth Chart 18



Note: The overall contribution from financial variables, broken down as contributions from housing prices, credit, interest rates and equity prices, respectively.
Source: Own calculations.

11 Lending-related deposits significantly increase the average interest rate for the overall deposits, up to 0.35 per cent.

12 This is shown by Danmarks Nationalbank's half-yearly survey, which as at April 2018 covered 18 of the largest banks.

13 This concerns the overall contribution to GDP growth due to changes in the financial variables that cannot be explained by changes in GDP, inflation or the other financial variables.

14 Jakob Roager Jensen and Jesper Pedersen, Financial conditions are supporting the upswing, *Danmarks Nationalbank Analysis*, No. 14, September 2018.

The households' interest rate sensitivity is moderate

Box 4

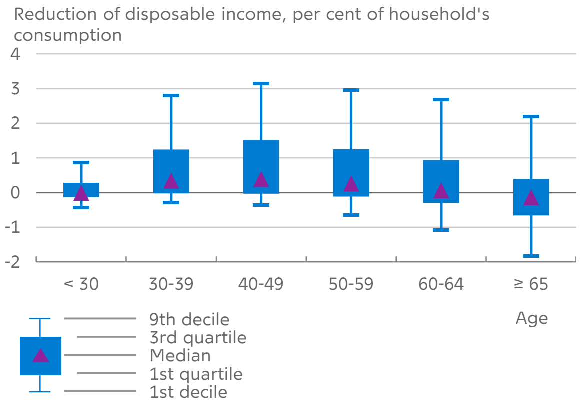
Danish households' interest rate sensitivity is moderate, despite their large gross debt
Households' interest payments account for only a limited share of a typical household's budget. Based on data at household level for 2015, it is estimated that an interest rate increase of 1 percentage point could reduce the households' total disposable income by 0.89 per cent of their consumption, cf. Hviid and Kuchler (2017). Since the households are increasingly opting for fixed rate mortgage loans, the interest rate exposure is declining. On the basis of the latest available register data for 2016, the equivalent drop in disposable income is estimated to be 0.72 per cent of the households' consumption.

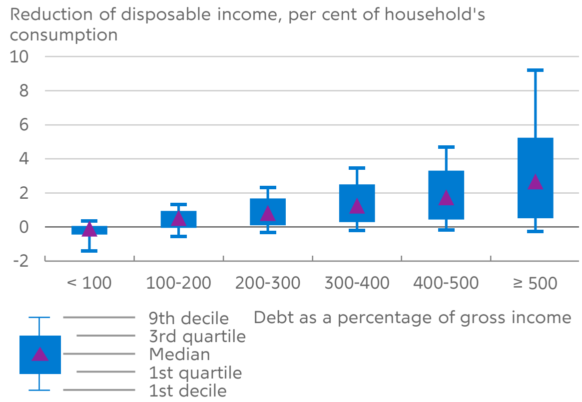
The significance of an interest rate increase for a given household depends on its debt and net worth
There is considerable variation in the households' interest rate exposure, e.g. across age groups, cf. the Chart to the left. Households with high debt are affected most severely by any interest rate shock. Even among households with high debt, the interest rate sensitivity is generally moderate, however. For a typical household with a debt that exceeds five times its annual income, an interest rate increase of 1 percentage point will only reduce disposable income by 2.7 per cent of consumption, cf. the Chart to the right. With an income shock of this magnitude, most households will still be able to service their debt. There are households, however, particularly young people and heavily mortgaged borrowers, that will be affected rather more severely by an increase in interest rates.

Lower pass-through to deposit rates can increase the interest rate exposure in the short term
In the short term, it could be expected that an interest rate increase will not fully pass through to increases in the banks' deposit rates. This is because the banks have not introduced negative interest rates for the households' ordinary deposits, in the wake of the introduction of negative monetary policy interest rates. The interest rates for ordinary bank deposits could therefore stay at the current level during an initial normalisation of the interest rate level. On the other hand, changes in the official interest rates have a greater impact on the share of deposits that is related to mortgage loans, for example. If we assume that rising official interest rates will not lead to increasing deposit rates, the households' interest rate sensitivity is higher than the aforementioned figures reflect. Based on this assumption, the households' disposable income will be reduced by 1.15 per cent of their consumption, as a consequence of an increase in interest rates of 1 percentage point. For the aforementioned reasons, this is probably an estimate on the high side, and the effect must be expected to decline with the magnitude of the interest rate increase.

The aforementioned results solely concern the direct impact of interest rate increases on households' disposable incomes, and not the broader macroeconomic effects. If the households change their savings and consumption patterns, the macroeconomic effects may differ significantly. For example, after the financial crisis in 2008, the households have increased their consumption more slowly than their disposable incomes have increased. If the households equivalently reduce their consumption more slowly, in the event of a reduction of their disposable income as a consequence of an increase in interest rates, the macroeconomic effects may be smaller than the direct effect on income. The overall effect of an increase in interest rates will therefore depend on the specific circumstances, for example whether the increase takes place in a period with general economic expansion and optimism, or in a period when households are more hesitant.

Distribution of the households' interest rate exposure – effect of an increase in interest rates of 1 percentage point





Note: The Charts show the reduction of the households' disposable income as a consequence of an increase in interest rates of 1 percentage point. The interest rate shock comprises all bank debt, variable rate mortgage debt and bank deposits. The shock also includes 25 per cent of the fixed rate mortgage debt, to take account of remortgaging, purchase of new homes, etc.
Source: Own calculations on the basis of register data from Statistics Denmark.

1. Simon Juul Hviid and Andreas Kuchler, Consumption and savings in a low interest rate environment, *Danmarks Nationalbank Working Paper*, No. 116, June 2017.

ABOUT REPORT

Reports are periodical reports and accounts describing the activities and tasks of Danmarks Nationalbank.

Reports include e.g. Danmarks Nationalbank's annual report and the semi-annual report on monetary and financial trends.

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