

# DANMARKS NATIONALBANK

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## Central government borrowing and debt 2022

- A government budget surplus reduced central government debt by approximately kr. 115 billion to kr. 323 billion at the end of 2022, equal to just under 12 per cent of GDP. Denmark's robust economy and low central government debt support Denmark's AAA rating.
- In 2022, the central government opened the first green government bond. The opening was a great success with total bids of kr. 23.5 billion, which was the largest volume of bids at an opening auction in more than ten years.
- Rising interest rate levels in 2022 meant that the average yield to maturity on nominal government bonds issued in 2022 was 1.13 per cent p.a., which is the highest level since 2013.

### Low central government debt

**12 per cent  
of GDP**

was the percentage of Danish central government debt at the end of 2022. Central government debt fell to kr. 323 billion as a result of a government budget surplus.

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### Rising yields on government issuances

**1.13  
per cent. p.a.**

was the average yield to maturity for nominal bonds issued by the central government in 2022. That is 1.33 percentage points more than in 2021.

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## Summary of the year in review

2022 was characterised by sharp interest rate increases stemming from monetary policy tightening as a result of, among other factors, rising inflation and uncertainties in the financial markets. The Danish economy saw continued growth in 2022 with a high activity level, high employment and a government budget surplus.

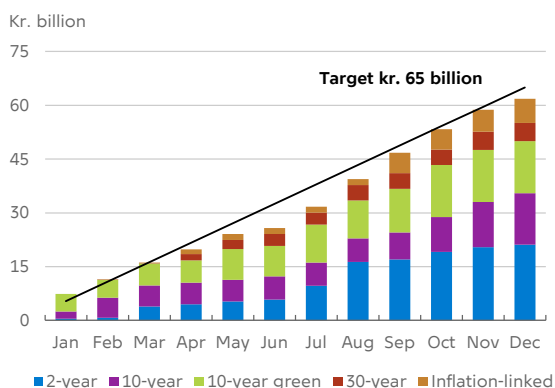
### Government budget surplus has reduced central government debt

At the end of 2022, the central government debt declined to kr. 323 billion. The government budget surplus was revised upwards on an ongoing basis during the year, which has resulted in a reduction of the central government debt of kr. 115 billion in 2022, including through buy-backs of government bonds. The central government debt thus constitutes just under 12 per cent of GDP at the end of 2022, which is the second lowest level in many decades. Denmark's robust economy and low debt level mean that Denmark still has the highest possible credit rating, AAA.

### Central government issuances followed strategy

The central government issued domestic government bonds via auction and tap sales totalling kr. 62 billion at market value in accordance with the announced

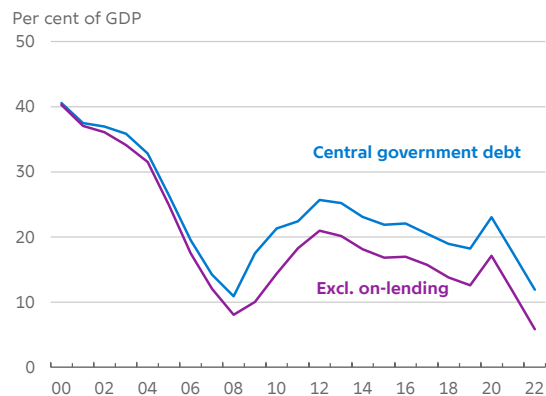
### Sales of bonds in 2022 were in line with the target, but demand at the auctions was more varied than before



Note: The left-hand chart shows bond sales at market value excluding switches. The right-hand chart shows the difference between the average sale at auctions and the allocated volume at each auction. The average for each auction has been calculated as total sales at auctions for the year divided by the number of auctions, corresponding to an even distribution of the issuances over the year.

Source: Danmarks Nationalbank

### Central government debt continues to fall in 2022, driven by debt reduction



Note: The gross domestic product for 2022 is based on the Ministry of Finance's estimates in Economic Survey, August 2022.

Source: Danmarks Nationalbank, Statistics Denmark and the Ministry of Finance.

strategy for 2022. During 2022, the central government opened the first green government bond, a new inflation-linked bond and a government bond denominated in euro through the central government's EMTN programme<sup>1</sup>.

### Slow passthrough of interest rate increases to the central government's total interest costs

The rising interest rate level meant that the average yield to maturity on nominal government bonds issued in 2022 was 1.13 per cent p.a., which is 1.33 percentage points higher than in 2021. This is the highest interest rate level for the central government's issuances since 2013.

However, the rising interest rates do not affect the interest costs on the part of the central government's nominal debt which has already been raised. The central government's total interest costs will only increase in line with new debt being raised at the higher interest rate level.

The central government's total interest costs amounted to kr. 9.5 billion in 2022, which is equal to 0.4 per cent of GDP.

<sup>1</sup> Euro Medium Short Term Note programme. The programme is a standardised form of issuance for the issuance of euro medium-term bonds to international investors. The central government uses the programme to issue bonds in currency (in euro or dollar).

## Central government debt and interest costs

### Government budget surplus was higher than expected

At the beginning of 2022, there were prospects of a government budget surplus.<sup>2</sup> The outlook for the surplus was gradually revised upwards during the year, see chart 1, and ended up being approx. kr. 82 billion higher than expected in Economic Survey, December 2021. The government budget surplus thus ended at kr. 129 billion, equal to approx. 5 per cent of GDP.

The large surplus is due to continued growth in the Danish economy through 2022 with a high level of activity and employment, generally resulting in higher revenues and lower expenditures. In addition, the historically high level of inflation positively affected central government revenues in 2022. In the short term, inflation results in public revenues being brought forward relative to expenses. This can, among other factors, be seen by revenues from income tax and VAT being higher than expected. In addition, large pension yield tax revenues contributed positively to the surplus.

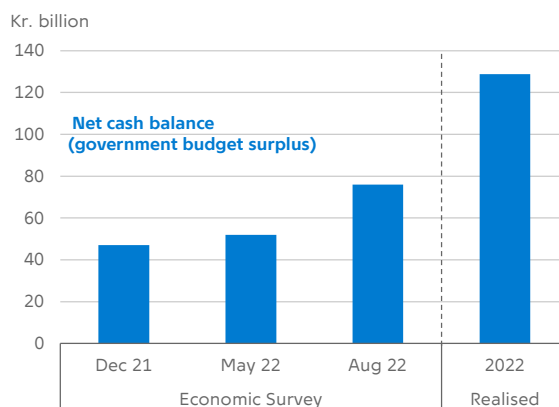
### Central government debt was reduced sharply in 2022

The government budget surplus contributed to reducing the central government debt by kr. 115 billion to kr. 323 billion by the end of 2022. The central government debt thus constitutes just under 12 per cent of BNP at the end of 2022, which is the second lowest level in many decades, see chart 2 (left).

The central government debt is a net statement of the assets and liabilities managed by the central government debt management, see box 2. The principal reason for the decrease in the central government debt is that domestic debt has been reduced by kr. 76 billion, see chart 2 (right).

### Government budget surplus was higher than expected

Chart 1



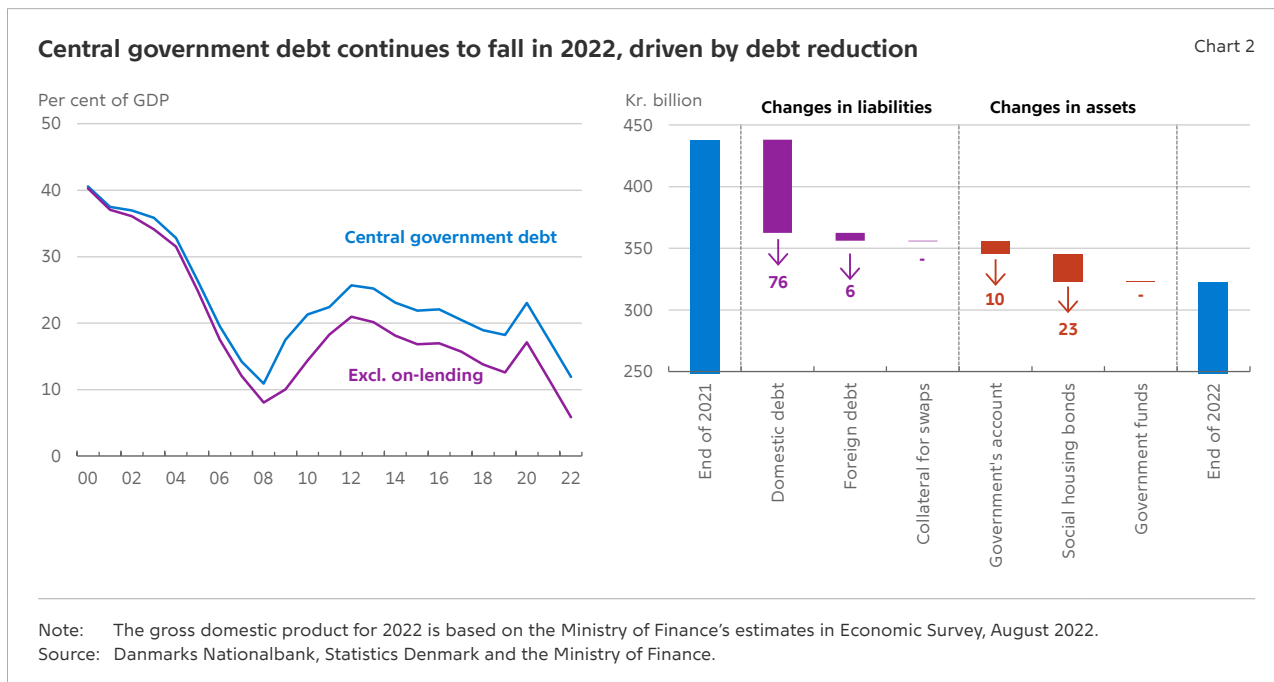
Note: The net cash balance reflects the central government's net financing requirement with a reverse sign. A positive net cash balance means that there are excess funds for repayments on the central government debt, while a negative net cash balance must be financed by increasing the central government debt.

Source: Ministry of Finance and Danmarks Nationalbank.

In addition, the assets included in the central government debt increased by a total of more than kr. 30 billion. This primarily covers an increase of kr. 23 billion in the central government's holding of bonds to finance social housing and an increase of kr. 10 billion in the central government's account balance in Danmarks Nationalbank. The central government's account balance thus amounted to kr. 162 billion at the end of the year.

A still increasing part of the central government debt consists of borrowing on behalf of government-owned companies (on-lending). At the end of 2022, lending to government-owned companies amounted to approx. kr. 165 billion. If on-lending to

<sup>2</sup> The government's budget surplus/deficit uses the net cash balance, which reflects the total actual incoming and outgoing payments made through the central government in a given year. The net cash balance is thus an expression of the liquidity effect of the government budget in the current year and will therefore deviate from the central government's actual surplus for 2022, see the principles of the national accounts.



government-owned companies are deducted from the government debt, then the central government debt has been reduced to approx. kr. 158 billion, equal to approx. 6 per cent of GDP.

### Central government debt policy in light of decreasing central government debt

Since 2011, the central government debt has been reduced on an ongoing basis, and, especially in 2021 and 2022, there has been a large decrease in the government debt due to large government budget surpluses. When the central government's borrowing need is reduced, the need to issue Danish government securities are also reduced. However, it is important for the market for Danish government securities to maintain a certain size to ensure good liquidity in the securities and maintain a broad investor base.

The central government debt policy is therefore designed to support continuity, predictability of issuances and a liquid market for government securities.

The objective of the issuance strategy is to ensure a good balance between offering a wide product range that attracts a broad investor base and ensuring the build-up of liquid government securities.

To ensure liquidity in the market for government securities market, it is important to build up all securities to a sufficiently large outstanding volume<sup>3</sup>. Good liquidity reduces the liquidity premium that investors demand for buying the bonds. It is therefore less expensive for the central government to issue debt when the bonds have good liquidity.

### Consolidation of the central government's debt supports a stable volume of outstanding government securities

To maintain the total volume of outstanding Danish government securities at a sufficient level, there has for many years been a focus on consolidating the central government's other borrowing needs under the funding financed by government bonds.

<sup>3</sup> Liquidity can be defined as the ability to quickly transact large trades at low cost and at any given time. One of the prerequisites for sufficient liquidity of government bond securities is that there is a sufficiently large outstanding volume in each individual paper. If liquidity is low, it becomes expensive for investors to trade (because there is a large difference between bid and ask price), which will ultimately result in a lower bond price.

In the early 2000s, government-owned companies began switching from issuing government-guaranteed loans themselves to an on-lending scheme in which the central government grants on-loans to the government-owned companies, see chart 3 (left). The on-loans are financed by the simultaneous issuance of government bonds, see box 1. In addition, the financing of social housing was changed in 2018, so that the central government finances social housing directly by purchasing the state-guaranteed mortgage bonds that are used to finance social housing construction.<sup>4</sup> Overall, both schemes ensure less expensive financing for government-owned companies' loans and social housing construction, respectively. Further the two schemes give a larger need for issuing government bonds.

The total outstanding amounts in on-lending and social housing bonds were kr. 165 billion and kr. 148 billion, respectively, at the end of 2022 – equal to approx. 48 per cent of the central government's total outstanding amount in government securities, see

chart 3 (left). The outstanding amounts under the schemes are expected to continue to increase in the coming years and will thus continue to support the central government's borrowing needs.

### Central government debt consists primarily of domestic government bonds

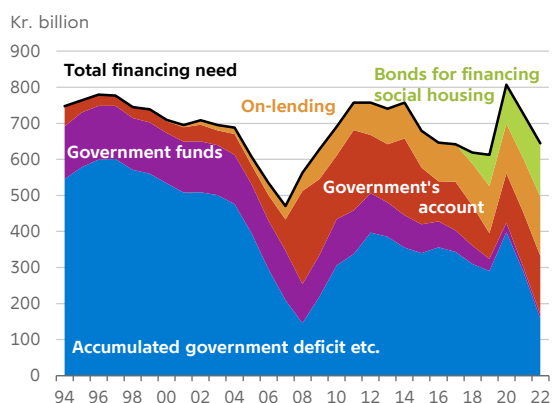
The central government primarily issues bonds in kroner to cover its ongoing financing requirements. In total, approximately 98 per cent of the central government's total outstanding debt has therefore been issued in kroner, see chart 3 (right). By primarily making domestic issuances, the central government ensures that its repayment ability is more robust, as the central government's revenues, such as taxes, are also paid in kroner.

To enable the central government to issue government bonds on an ongoing basis, it is important for it to have access to a wide range of financing options. Therefore, the central government maintains diversified on-the-run issues, consisting of both fixed-rate bonds and inflation-linked bonds<sup>5</sup>.

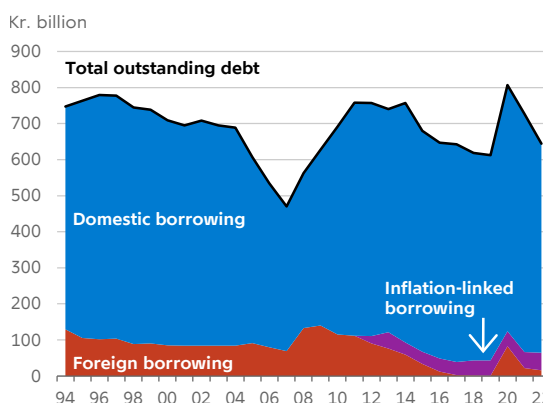
## Consolidation of the central government's borrowing needs maintains a stable volume of outstanding government securities

Chart 3

### Central government borrowing needs



### Financing of central government borrowing needs



Note: Left-hand chart: The central government's total financing requirements (asset) consist of the government's accumulated deficit, including repayment of existing debt, the government funds' assets, the central government's account balance, on-lending to government-owned companies and the central government's holdings of mortgage bonds for financing of social housing. Right-hand chart: The central government's outstanding debt (liability) consists of domestic borrowing (nominal bonds, T-bills issued in kroner), inflation-linked bonds issued in kroner as well as foreign bonds and commercial papers issued in currency (typically euro or dollar).

Source: Danmarks Nationalbank.

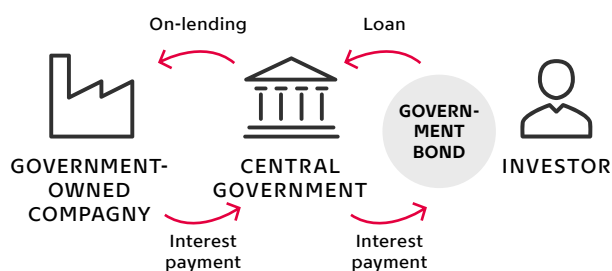
4 See Danmarks Nationalbank, New financing of social housing strengthens the market for Danish government securities, *Danmarks Nationalbank Analysis No. 24*, December 2018.

5 Inflation-linked bonds, also called indexed bonds, are bonds where the principal is linked to the consumer price index (CPI) so that interest and repayments are done in real amounts.

### On-lending to government-owned companies

Box 1

In connection with on-lending, the government-owned company takes out a loan directly from the central government. The loan is paid out from the central government's account to the company, and thereby the loan results in an increase in the central government's financing requirements. The increase is covered by issuance of government bonds. The companies pay interest and make amortisations to the central government corresponding to the terms for government bonds. When a company requests on-lending, the price of the loan is fixed based on the market price of the corresponding government bond.



On-lending is based on a political decision to support selected projects through cheaper financing. As a result of the central government's high creditworthiness, on-lending means, just like government-guaranteed loans, that the company can obtain financing at a lower cost than if it had to raise the loan itself on the market. Financing via on-lending will normally be less expensive than if the company were to finance itself by issuing its own government-guaranteed bonds. One reason for this is that the government bond series have much higher liquidity. The company thus saves the liquidity premium that investors would otherwise demand in the form of a higher yield.

On-lending increases the government's borrowing needs because the on-loans are covered by increasing borrowing or by drawing on the central government's account. On-lending also increases the central government debt because the central government's asset in the form of the on-loan to the company is not offset in the calculation of the central government debt.

Approx. 90 per cent of the central government's issuances are domestic fixed-rate bonds in kroner, primarily issued as 2-year, 10-year and 30-year bonds. In addition, a minor share (approx. 8 per cent) of the issuances consists of inflation-linked bonds.

Inflation-linked bonds often attract a different type of investors who need to ensure a return that follows the development in Danish consumer prices. Such investors include the insurance sector and parts of the pension sector. The issuance of these bonds thus contributes to ensuring that the central government has a broad investor base. The indexed bonds also contribute to spreading the risk on the central government's debt portfolio.

#### Foreign debt makes up an important part of the central government's liquidity reserves

In addition, the central government maintains a number of loan programmes that act as the cen-

tral government's liquidity reserves. These programmes consist of short securities in kroner and currency (T-bills and commercial papers) as well as bonds denominated in currency (the EMTN programme).

The central government's foreign borrowing<sup>6</sup> contributes to ensuring that the central government has effective access to the international financial markets, which are characterised by being the largest and most liquid. Foreign borrowing can thus be an important source of financing to cover sudden liquidity needs.

This was necessary, for example, in 2020, when the central government had to borrow billions of kroner at short notice as a result of sudden and extraordinary expenses in connection with the covid-19 crisis. The central government's use of foreign borrowing contributed to making this possible.<sup>7</sup>

6 Foreign borrowing consists of bonds and commercial papers (short-term loan instruments) issued in currency – typically euro or dollar.

7 See Danmarks Nationalbank, The Danish government has a good starting point to finance the expenses related to Corona, *Danmarks Nationalbank Analysis*, No. 6, April 2020.

Borrowing in foreign currency is thus not used to finance the central government's current deficit, but constitutes an important part of the central government's liquidity reserves and can also be used to ensure an appropriate size of the foreign exchange reserve. The central government's borrowing in foreign currency constitutes approximately 2 per cent of the central government's total borrowing at the end of 2022, see chart 3 (right).

### Slow passthrough of interest rate increases to the central government's total interest costs

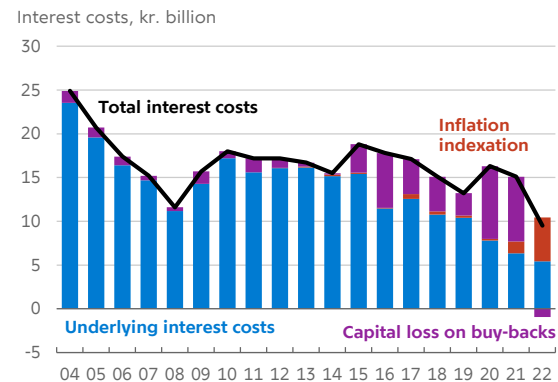
2022 was characterised by sharply increasing interest rates, one reason being rising inflation. The rising interest rate level does not affect the interest costs on the part of the central government's nominal debt which the central government has already issued, but has an impact on the interest costs for the new debt that the central government issues in the future. The central government's total financing costs will therefore increase in line with new debt being issued at the higher interest rate level. The increasing interest rates has a slow passthrough to the central government's total interest costs. One reason for this is that the average fixed interest period is high, see the section on risk management.

Despite rising interest rates on the central government's new debt, the total interest costs on the central government debt fell to kr. 9.5 billion in 2022, equal to 0.4 per cent of GDP. This is approx. kr. 5 billion less than last year, see chart 4. The decrease in the central government's total interest costs was mainly due to a large part of the central government's existing debt having been raised at very low interest rates in recent years.

About half of the central government's total interest costs in 2022 comes from that part of the central government debt which is indexed to the rising

### Total central government interest costs fell in 2022

Chart 4



Note: Annual gross interest costs for the total central government debt in kr. billion. Negative amounts constitute revenue. The central government's interest income from on-lending has not been offset in the chart.

Source: Danmarks Nationalbank.

inflation, see chart 4. The reason for the high contribution of indexation to interest costs is that the upward adjustment of the principal on the indexed bonds is booked as an interest expenditure in the central government's accounts for 2022.

The extraordinary interest costs from the indexation should be seen in the light of the fact that the central government's costs for inflation-linked bonds have been lower for a long period of time than if the central government had instead issued nominal bonds because inflation has been low.<sup>8</sup>

If the central government's interest costs are adjusted for capital losses on buy-backs<sup>9</sup> and inflation-linked principal adjustments, the underlying interest costs amounted to kr. 5.4 billion, equal to 0.2 per cent of GDP, see chart 4.

<sup>8</sup> See Danmarks Nationalbank, New inflation-linked bond helps to ensure a broad investor base, *Danmarks Nationalbank Analysis*, No. 30, December 2021 ([link](#)).

<sup>9</sup> On buy-backs of bonds maturing outside the year, future interest costs are brought forward to the current year. The interest cost is typically realised as a capital loss on buy-backs, as the interest rate level has been falling in recent years, which means that the bonds are redeemed at a price above 100. The rising interest rates have led to falling bond prices, which actually resulted in a capital gain on buy-backs in 2022.

Furthermore, the central government's interest costs should be seen in the light of the fact that the central government receives interest income from the government-owned companies as a result of on-lending. In 2022, interest income totalled kr. 1.1 billion. The central government's net interest costs thus amounted to kr. 4.3 billion if the central government's interest income is offset.

### Denmark's EMU debt is among the lowest in Europe

Denmark's EMU debt is expected to fall by just under 6 percentage points in 2022 and will thus amount to 31 per cent of GDP by the end of the year. This means that Denmark's EMU debt remains among the lowest in Europe, see chart 5 (left).

Denmark's EMU debt is higher than the statement of central government debt because the EMU debt is a gross statement of total public debt, see box 2. For example, the central government's account balance and holdings of social housing bonds are not offset in the statement of the EMU debt.

### Denmark maintains the highest credit rating

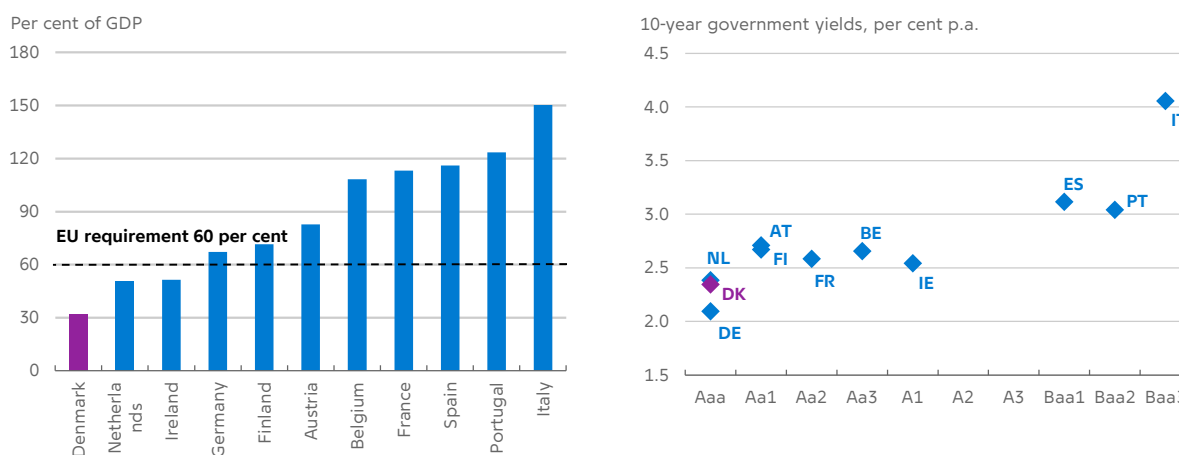
Denmark is one of only nine countries in the world which have the highest credit rating (AAA with stable outlook) from the three largest international credit rating agencies.<sup>10</sup>

The high creditworthiness contributes to keeping down the central government's overall financing costs, as it allows the central government to borrow money at lower interest rates than less creditworthy countries, see chart 5 (right). The reason for this is that investors do not charge a credit risk premium when buying Danish government bonds, as they are regarded as being among the safest in the world.

The credit rating agencies especially find it important that the economic policy design makes the economy resilient to potential economic downturns and future structural imbalances. In addition, Denmark has a long tradition of high fiscal policy discipline with a well-managed public budget, which has resulted in a low level of central government debt as well as a robust composition of the central government debt.

**The combination of Denmark's low debt level and high credit rating helps ensure the central government low borrowing costs**

Chart 5



Note: Left-hand chart: The EMU debt as a share of GDP is based on Eurostat, 3rd quarter 2022. The right-hand chart shows the average par yields in the 10-year segment over the period November-December 2022.

Source: Eurostat, Nordea Analytics, Danmarks Nationalbank.

<sup>10</sup> The nine countries are Australia, Denmark, Germany, Luxembourg, the Netherlands, Norway, Singapore, Sweden and Switzerland. All the countries have an AAA/Aaa credit rating from Fitch, Moody's and Standard and Poor's.



## Statements of public debt

Box 2

Three terms are often used about central government debt: central government debt, EMU debt and net public debt.

*Central government debt* is stated as the nominal value of the central government's domestic and foreign debt less the balance on the central government's account with Danmarks Nationalbank, bonds for financing subsidised construction and the assets of the three government funds: the Social Pension Fund, Innovation Fund Denmark and the Fund for Better Working Environment and Labour Retention. The central government debt is managed by Danmarks Nationalbank on behalf of the Danish Ministry of Finance.

*EMU debt* is a standardised statement of the EU member states' debt and includes debt in central government, regions, municipalities as well as social security funds. The EMU debt is stated at nominal value. The debt is stated gross, but the public sector can consolidate the debt with claims against itself. This means, for example, that the central government's and central government-owned companies' holdings of bonds

issued by public entities are deducted from the statement of the EMU debt. However, for example, holdings of government-guaranteed mortgage bonds as well as the balance on the central government's account with Danmarks Nationalbank cannot be deducted. According to the EU Stability and Growth Pact, the EMU debt share of GDP must, as a general rule, not exceed 60 per cent.

*Net public debt* comprises all financial assets and liabilities in the central government, regions, municipalities as well as social security funds and government-owned funds. The central government's assets side includes the central government's account with Danmarks Nationalbank, assets in government funds, on-lending to government-owned companies and the central government's portfolio of equities and other securities. The net public debt is stated at market value and is thus affected by value adjustments of public assets and liabilities. International calculations of net public debt are made by, for example, the Organisation for Economic Co-operation and Development (OECD) and the International Monetary Fund (IMF).

## Central government borrowing

### Market volatility and large interest rate hikes characterised 2022

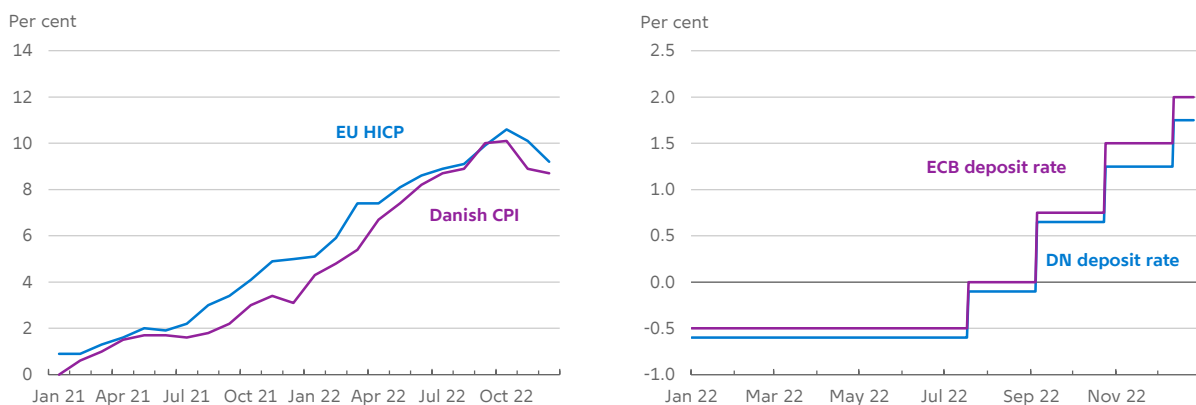
During 2022, the global financial markets were characterised by rising interest rates and high inflation as well as persistent uncertainty about the development of these. One of the effects of the high infla-

tion has been a significant tightening of monetary policy, both globally and in Denmark, see chart 6.

The severe tightening of monetary policy has given rise to sharp increases in interest rates, especially at the short end of the yield curve. At the same time, expectations of an early slowdown in the global economy have contributed to limiting increases in long-term interest rates. This has

Sharp increase in inflation and monetary policy interest rates in 2022

Chart 6



Note: The left-hand chart shows annual HICP inflation in the euro area and the Danish consumer price index. The right-hand chart shows the deposit rate of the European Central Bank (ECB) and the current deposit rate of Danmarks Nationalbank.

Source: Bloomberg.

meant that the spread between short-term and long-term bond yields has narrowed significantly during 2022.

The adjustment to the rapidly rising interest rates has led to increased volatility across asset classes in the financial markets. Danish government bond yields generally followed the global development in the interest rate markets in 2022, with a yield increase in the 2-year maturity segment of 3.3 percentage points and of 2.7 percentage points in the 10-year segment, see chart 7 (left).

### Yield spread to Germany tightened over the year

During 2022, there were significant fluctuations in the yield spread to Germany, but the interest rate spread ended at just under 8 basis points lower than at the beginning of the year.

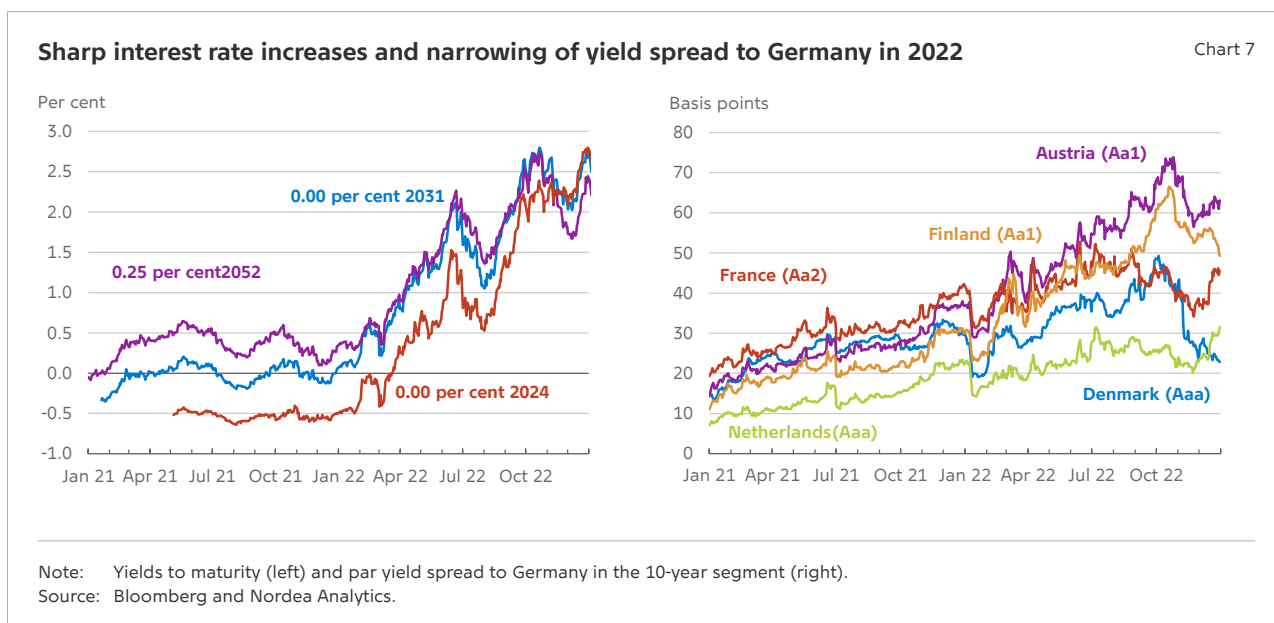
The yield spread to Germany widened during the first three quarters of 2022. This followed a 2021 in which the yield spread also widened, see chart 7 (right). This meant that the 10-year yield spread reached its highest level since 2009 at 49 basis points during 2022.<sup>11</sup> As can be seen from chart 7 (right), the widening of the yield spread to Germany has not only concerned Denmark; a similar widening was seen for other central government issuers as well.

The widening of the yield spread is mainly due to the significant market turmoil having led to increased demand for German government bonds. The reason for this is that the German government bonds has a special status in times of financial turbulence, as it is considered to be among the most secure and liquid markets and is widely used as collateral for financial contracts. The increased demand created a shortage of German government bonds. The scarcity is compounded by the ECB having made purchases of European bonds through its asset purchase programmes for several years.

During the 4th quarter, the yield spread to Germany narrowed significantly and was narrower than for other comparable countries such as the Netherlands, see chart 7 (right). One driving factor behind the narrowing of the yield spread was that Danmarks Nationalbank widened the monetary policy yield spread to the euro area by 15 basis points, resulting in a yield spread of -25 basis points at the end of 2022.<sup>12</sup>

### Higher financing costs for the central government in 2022

The rising interest rates meant that the average yield to maturity on nominal bond issuances was 1.13 per cent p.a. in 2022, see table 1. This is an increase of 1.33 percentage points relative to 2021 and is the



11 The yield spread in the 10-year segment between Germany and Denmark is calculated as the 9-year par yield spread.

12 Danmarks Nationalbank widened the monetary policy yield spread by 15 basis points with effect from 28 October 2022, see press release ([link](#)).

highest interest rate level since 2013. In 2022, the average effective real interest rate on issuances in inflation-indexed bonds was -0.42 per cent p.a.

### The central government issued government bonds totalling kr. 62 billion in 2022

In 2022, the central government issued domestic government bonds via auction and tap sales totalling kr. 61.8 billion at market value, see chart 8 (left-hand chart). This was in line with the target of kr. 65 billion for the year. Bond sales were distributed relatively evenly over the year, but with an overweight in the second half of the year, when the yield spread to Germany also narrowed significantly as described above.

As in recent years, demand at auctions varied in 2022, see chart 8 (right). This made it more challenging to distribute the issuances evenly throughout the year. Generally higher market volatility is among the causes of the fluctuating demand.

### Strong interest in first Danish green government bond

On 19 January 2022, the central government opened a 10-year green bond, see box 3. The opening was a great success with total bids worth DKK 23.5 billion, which was the largest volume of bids at an opening auction in more than ten years, see chart 9. As planned, bonds totalling kr. 5 billion were sold at the auction at a yield that was approx. 5 basis points

### Yield to maturity on government bond issuances

Table 1

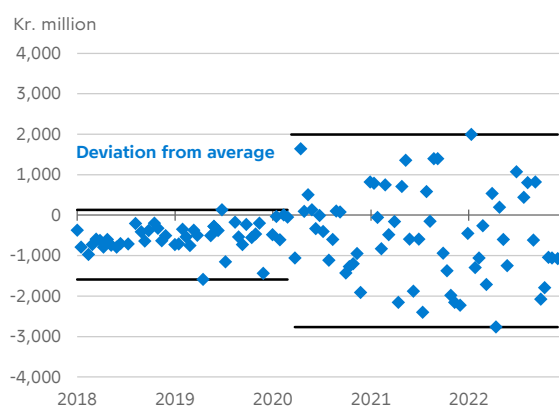
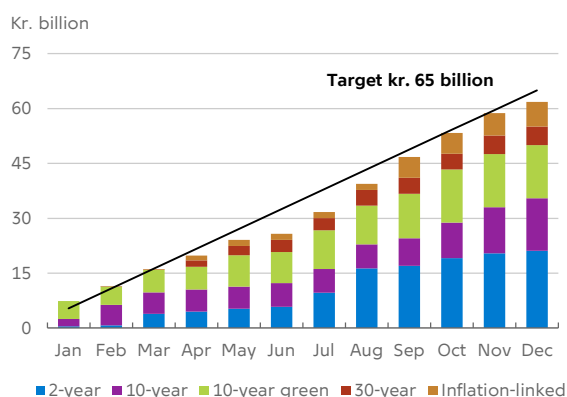
	Average maturity, years	Average yield, per cent p.a.
2013	10.2	1.42
2014	9.3	1.11
2015	6.8	0.32
2016	7.4	0.04
2017	7.5	0.15
2018	7.5	0.14
2019	7.8	-0.33
2020	11.6	-0.33
2021	10.4	-0.20
2022	9.3	1.13

Note: Yield to maturity is weighted by market value and excludes inflation-linked bonds on total central government issuances (including switch operations) in the given years.

Source: Danmarks Nationalbank.

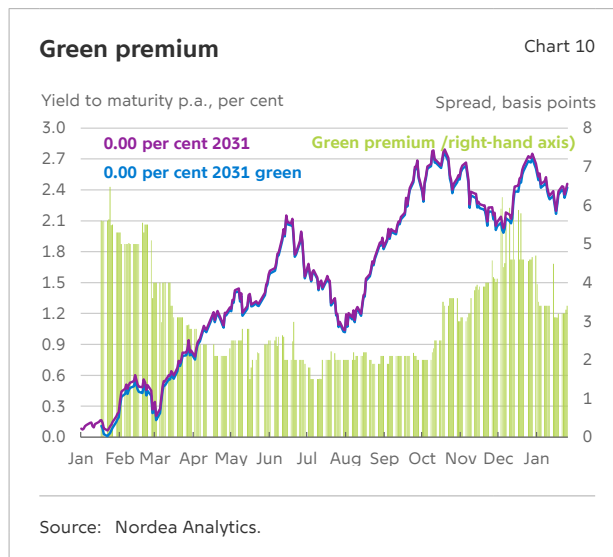
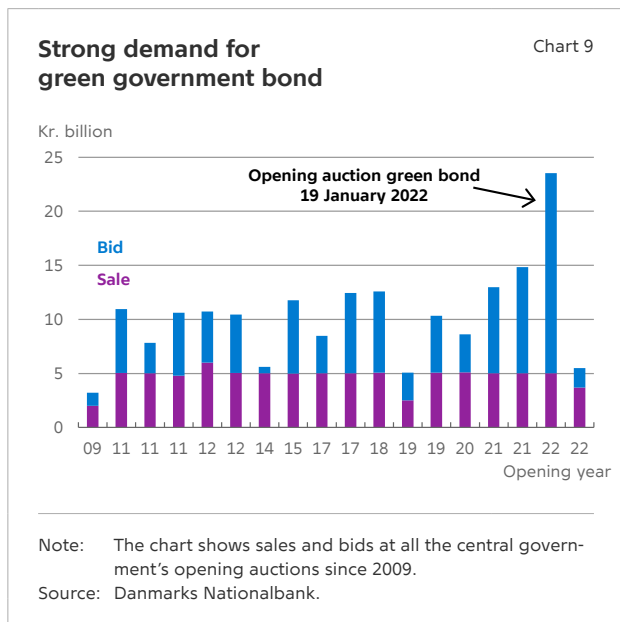
### Sales of bonds in 2022 were in line with the target, but demand at the auctions was more varied than before

Chart 8



Note: The left-hand chart shows bond sales at market value excluding switches. The right-hand chart shows the difference between the average sale at auctions and the allocated volume at each auction. The average for each auction has been calculated as total sales at auctions for the year divided by the number of auctions, corresponding to an even distribution of the issuances over the year.

Source: Danmarks Nationalbank



lower than the yield of the corresponding conventional 10-year government bond<sup>13</sup>, see chart 10. The green premium at the opening auction was at the high end relative to openings of other green government bonds. The green premium has decreased since then and is now on a par with other comparable green government bonds. The 10-year green government bond was issued under the twin bond model, see box 3.

In line with the strategy, sales of the green government bond totalled DKK 14.5 billion at market value in 2022. At the end of 2022, Danish insurance and pension companies were the main holders of the green bond.

When the central government issues green bonds, an amount equal to the proceeds from the sale is allocated to green central government expenditures and investments. This includes expenditures that contribute to supporting the generation of wind and solar energy and the green transition of the transport sector in Denmark. Further information about the specific expenditures in the central government's green bond programme can be found on the Ministry of Finance's website ([link](#)).

## Green bonds

Box 3

### What are green bonds?

Green government bonds are any type of bond instrument where an amount corresponding to the proceeds is exclusively used for full or partial financing or refinancing of new and/or existing suitable green projects/expenditures.

With the issuance of the central government's green bond, an amount corresponding to the proceeds from the sale will be allocated to green government expenditures which support the production of renewable energy in the form of wind and solar energy and the green transition of the transport sector.

### Why does the central government issue green bonds?

Denmark decided to start issuing green government bonds from 2022 to support the transition to a sustainable economy and the development of green capital markets dedicated to financing this transition. In addition, the issuance of green government bonds has been based on an objective to meet the significant increase in demand for green assets from investors.

### Green bonds are issued as twin bonds

The twin bond model was launched by Germany in 2020. The model entails that the central government's green bond is issued with the same financial characteristics as one of the central government's existing conventional on-the-run issues. This means that the central government's 10-year green bond has the same maturity, coupon and repayment profile etc. as the central government's 10-year benchmark bond.

In addition, the twin bond model supports the liquidity in the green bond by allowing investors to make, at any given time, a one-on-one exchange of the green twin bond to the corresponding and more liquid conventional twin bond. The exchange facility is only one way, and the investor thus does not have the option of exchanging the conventional twin bond for the corresponding green twin bond.

<sup>13</sup> The yield differential between a green bond and a conventional bond is also referred to as a green premium or 'greenium'.

The green bond framework, including the criteria for the selection of green expenditures, is also described in the central government's Green Bond Framework ([link](#)). The central government's Green Bond Framework has been prepared in line with best market practice, and the green expenditures have been evaluated and selected on the basis of the criteria in the EU's classification system for sustainable economic activities (the EU taxonomy).

The central government has undertaken an obligation to report on the allocation of the proceeds as well as the climate and environmental impacts. These reports will be published in 2023 and will be posted on the websites of the Ministry of Finance and Danmarks Nationalbank.

### **New inflation-linked bond**

As part of the strategy for 2022, the central government issued a new inflation-linked bond on 14 September 2022, maturing in 2034. This is the first time since 2018 that the central government has opened a new inflation-linked bond. Inflation-linked bonds contribute to ensuring the central government's focus on maintaining a broad and diversified investor base.<sup>14</sup> Going forward, the strategy is that the total outstanding volume in the central government's inflation-linked bonds is built up to kr. 40-60 billion and that a new inflation-linked bond is opened every four years.

The opening of the new inflation-linked bond was well received, with bids of kr. 5.5 billion and sales of kr. 3.7 billion at the opening auction. This was achieved despite the bond market being characterised by high volatility and heavy interest rate increases in September. The issuance was made at a real interest rate of -0.02 per cent p.a. and break-even inflation<sup>15</sup> of 2.2 per cent p.a. This is marginally higher than the ECB's inflation target of 2 per cent p.a. Sales of the new inflation-linked bond totalled kr. 8.5 billion in 2022, with switch auctions accounting for kr. 3.5 billion.

As described earlier, inflation was very high in 2022. As inflation-linked bonds are designed to protect the investors' purchasing power, high inflation has also led to increased costs for the central government<sup>16</sup>. Seen in isolation, it will generally be less expensive for the central government to issue inflation-linked bonds rather than nominal bonds if the realised average inflation turns out to be lower than the break-even inflation rate (observed at issuance) – and vice versa.

### **Increased foreign ownership share of Danish government bonds at end of 2022**

Danish government bonds are owned by a broad circle of investors distributed on sectors and geographical locations, see chart 11 (left). The largest investor group is the Danish insurance and pension sector (IP) with an ownership share of 54 per cent in 2022. IP naturally has a high ownership share, especially in the more long-term maturity segments, due to the need of these investors to hedge their long-term liabilities. The majority of the central government's new inflation-linked bonds and green bonds are also owned by IP.

In 2022, foreign investors increased their ownership share of Danish government bonds, after a number of years with declining foreign ownership, see chart 11 (right). Foreign interest particularly increased during the second half of the year. One reason for this may be that it became more attractive for foreign investors who hedge their investments in Danish kroner to invest in Danish government bonds. Especially Asian and European investors demanded Danish government bonds in 2022. At the end of 2022, the foreign ownership share of Danish government bonds was 31 per cent.

In 2022, the central government debt management focused on measures that can contribute to building up foreign investors' interest in Danish government bonds, for example in the form of increased investor relations activities abroad.

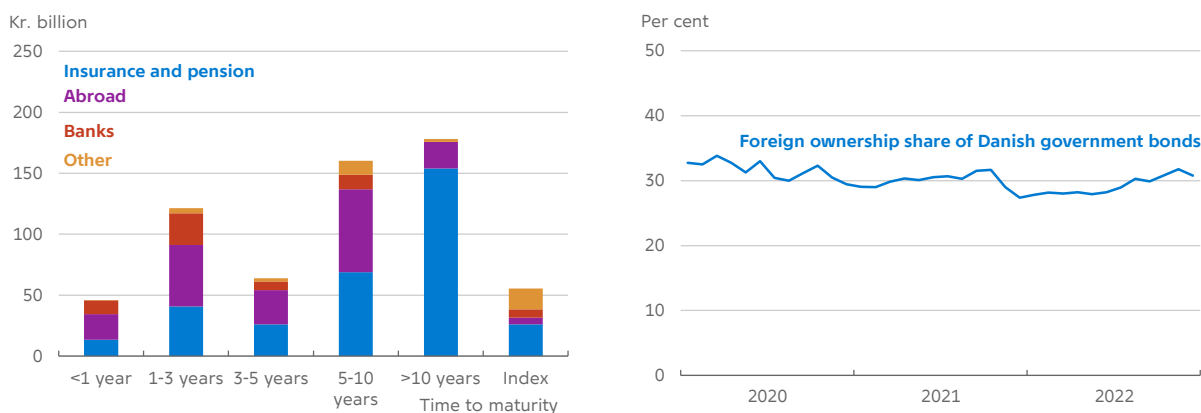
14 See Danmarks Nationalbank, New inflation-linked bond helps to ensure a broad investor base, *Danmarks Nationalbank Analysis*, No. 30, December 2021 ([link](#)).

15 Break-even inflation is an expression of the future average realised inflation level at which the central government's costs of issuing inflation-linked and nominal bonds are the same.

16 Index-linked upward adjustment of the principal for the central government's inflation-linked bonds increases interest costs, see above.

### Foreign investors' ownership share of Danish government bonds has been increasing in 2022 after having decreased for several years

Chart 11



Note: The left-hand chart shows ownership shares at the end of 2022, broken down by remaining maturities.  
Source: Danmarks Nationalbank.

### Annual issuances in the central government's EMTN programme

In 2022, the central government issued a 2-year loan in euro under its EMTN programme. A total amount of 1.5 billion euro was issued. This is the first time since 2011 that the central government issues a euro-denominated loan. The loan was issued at a yield to maturity of 2.50 per cent p.a., equal to 33 basis points above a corresponding German government bond. Interest in the central government's issuance was high, especially from European and Asian investors, see announcement ([link](#)) from Danmarks Nationalbank.

The issuance was made to ensure that the central government's EMTN programme is a well-functioning source of financing, including that processes, investors and market players are in place. A prerequisite for this is that the central government has a regular presence in these markets. This ensures that the investors continue to have active investment mandates to buy Danish government bonds and that all stages of the issuance process function satisfactorily.

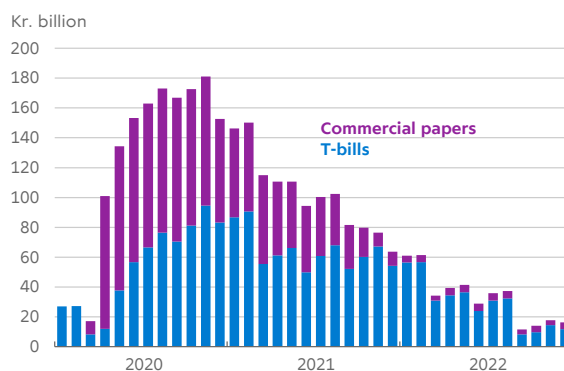
Furthermore, the issuance of bonds denominated in foreign currency also contributes to marketing the Danish central government to foreign investors, which may result in lower financing costs for the central government in the long term. The central government's strategy is therefore to make issuances denominated in foreign currency annually in the future.

### The central government's short-term loan programmes were further reduced in 2022

Since the central government's short-term loan programmes, T-bills and commercial papers (CPs), were increased in 2020 in connection with the covid-19 crisis, the outstanding volume in both loan programmes has been reduced on an ongoing basis, see chart 12. At the end of 2022, there was an outstanding amount of kr. 11.8 billion in T-bills against kr. 54 billion in the previous year. In 2022, the demand for T-bills was generally modest due to

### The central government's short-term loan programmes were further reduced in 2022

Chart 12



Note: Outstanding at nominal value, including forward transactions.  
Source: Danmarks Nationalbank.

uncertainty about the development in monetary policy interest rates. T-bills were sold at an average yield to maturity of -0.01 per cent p.a. in 2022.

At the same time, the central government also reduced the outstanding amount in the CP programmes to just under kr. 5 billion at the end of 2022 against kr. 9 billion in the previous year. The strategy remains to maintain market access to the international capital markets via the CP programmes. Both T-bills and the CP programmes are an important part of the central government's liquidity reserves.

### The central government's account constitutes a significant liquidity buffer

As described in previous sections, the central government had a significantly higher budget surplus in 2022 than expected at the beginning of the year. This has meant that the balance on the central government's account grew by kr. 10 billion in 2022 to kr. 162 billion at the end of the year, see chart 13. This is still significantly above the level generally regarded as necessary to ensure that the central government has a sufficient liquidity buffer. However, the continued uncertainty about the utilisation rate of the extension scheme for energy costs for households and companies as well as the state guarantee schemes for energy companies means that it may be beneficial to have a higher liquidity buffer than usual. The strategy remains to reduce the balance on the central government's account in the longer term.

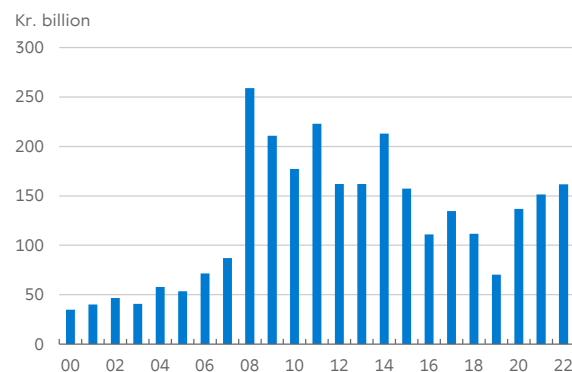
## Trading and liquidity in secondary market

### Central government supported liquidity in secondary market

The state focuses on supporting the liquidity<sup>17</sup> of Danish government bonds to minimise the central government's financing costs. The central government is therefore an active market participant in the secondary market, where, for example, it continuously buys government securities in off-the-run issues (tap buy-backs), see chart 14. Buy-backs were particularly important in a year in which the market

Continued high balance on central government's account

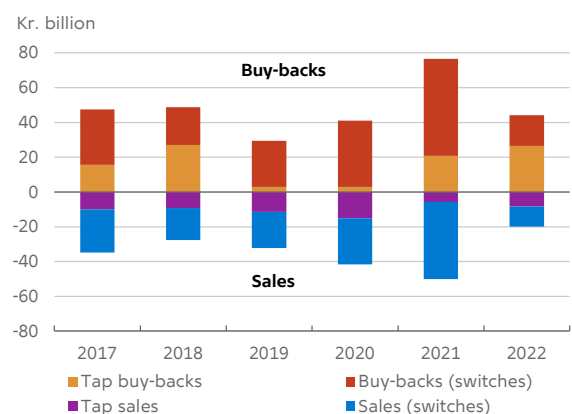
Chart 13



Note: Year-end balance on the central government's account  
Source: Danmarks Nationalbank.

The central government participates actively in the secondary market

Chart 14



Note: Purchases of bonds maturing within the year are not included.  
Source: Danmarks Nationalbank.

<sup>17</sup> Liquidity is here defined as the possibility to transact large trades at low costs quickly and at any given time.



was characterised by increased market volatility. The central government also holds switch auctions, where investors and the central government's primary dealers have the opportunity to buy on-the-run issues against selling off-the-run issues. Switch auctions also contribute to building up outstanding volumes in new bonds more quickly.

In 2022, the central government sold bonds for just under kr. 12 billion and bought back bonds for kr. 18 billion via switch auctions. The total buy-backs by the central government in 2022 amounted to kr. 43 billion, while the central government issued bonds totalling DKK 73 billion when the central government's issuances in connection with switch operations are included<sup>18</sup>. The central government's net issuances were thus kr. -47 billion in 2022, which is significantly lower than in previous years, see chart 15.

A prerequisite for the central government's involvement in the secondary market is that the trades can be made at fair market prices. This means that there is a reasonable correlation between the prices of the central government's buy-back securities and on-the-run securities.

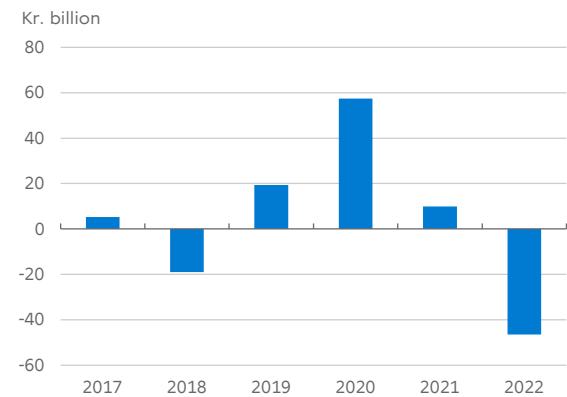
### Market volatility has increased trading costs

The high market volatility during 2022 periodically resulted in higher trading costs measured by the spread between buy and sell prices on the inter-dealer platform MTS Denmark, see chart 16. The widening of the spread between buy and sell prices in the 2-year maturity segment should also be seen in the light of the uncertainty surrounding the development in monetary policy interest rates. Compared with previous years, the spread was generally at a higher level – especially in the second half of the year. This is in line with what has been observed in other government bond markets, where trading costs have also risen.

Despite the increased market volatility, the feedback from the market participants continues to be that

**Negative net issuance of government bonds in 2022**

Chart 15

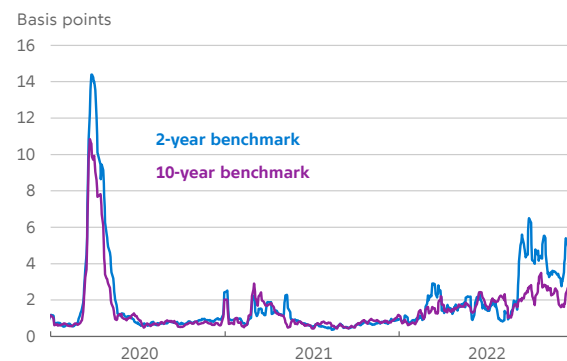


Note: Net issuances have been stated as sales of government bonds via auctions, taps and switches less the central government's purchases of bonds maturing outside the year via tap and switch auctions as well as repayments on bonds maturing within the year.

Source: Danmarks Nationalbank.

**Increased trading costs due to market volatility**

Chart 16



Note: Calculated as a 5-day moving average of the difference between the best buy and sell prices for a given volume over five hours per day.

Source: MTS Denmark

<sup>18</sup> The central government's switch operations allow the market participants to replace a large volume of off-the-run securities with securities in on-the-run issues at market price. Issuances in connection with switches are not included in the central government's issuance target for the year because they concern a switch from an off-the-run bond to an on-the-run bond. Therefore, the central government's issuances, including issuances made during switching operations, are higher than the central government's issuances at auctions and taps.



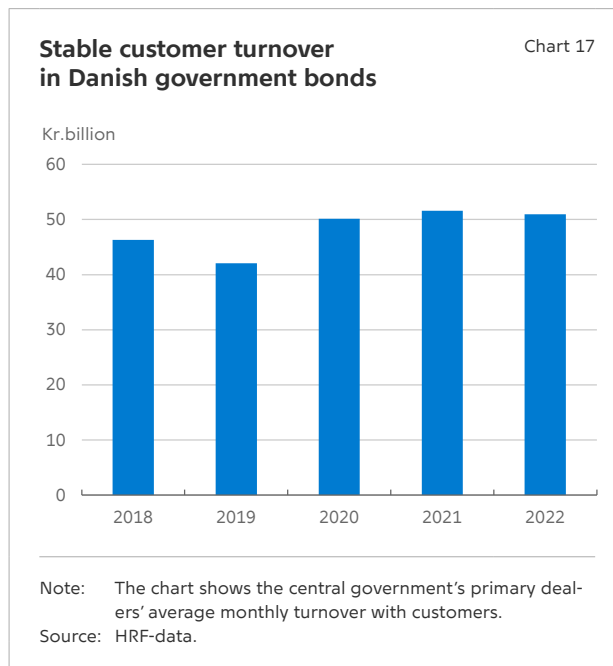
there is generally good liquidity in Danish government bonds. The primary dealers' turnover with customers has also been stable over the past many years, see chart 17.

However, the central government's primary dealers are increasingly reporting that new regulation has resulted in higher capital costs. Other things being equal, this has made it more expensive for banks to be a primary dealer and act as a market maker, including setting prices to customers and allocating capital to hold, for example, Danish government bonds. The regulatory development may mean that there will be an ongoing need to adjust the central government's primary dealer model. Against this background, work has been initiated to ensure that the Danish government securities market continues to have good liquidity that makes it attractive to a wide circle of investors. One of the necessary prerequisites for a well-functioning government securities market is that it is supported by an appropriate number of primary dealers, which makes it necessary to ensure that it remains attractive to be a primary dealer in Danish government bonds. The above problem is far from just a Danish challenge, but also applies to other central government debt markets.

In April 2022, Spar Nord Bank decided to withdraw from the central government's primary dealer scheme. This means that the central government now has eight primary dealers.<sup>19</sup>

## Risk management

The market risk management of the central government debt is particularly aimed at risks associated with the development in interest rates, as the central government only has limited exchange rate and credit risks. The average time to refixing of the



central government debt, the duration, is the overall management guide for interest rate risk, but it is also supplemented by, for example, scenario calculations for interest costs and the market value of the debt.

In addition, the risk management focuses on managing the central government's liquidity risk, which is the risk that the central government cannot meet financial obligations, for example due to large unexpected expenses or a lack of market access to refinance debt.

### The central government has maintained low interest rate risk

In 2022, the average duration of the central government debt portfolio increased to 11.4 years, see chart 18. The primary reason for the increase is that the central government had a high average account balance, which is included as a short-term asset in the duration calculation<sup>20</sup>. The increase thus does not reflect a changed issuance or risk strategy. Excluding account

<sup>19</sup> A list of the central government's primary dealers in Danish government bonds can be found on Danmarks Nationalbank's website ([link](#)). Here you can also read more about the central government's primary dealer scheme.

<sup>20</sup> The duration is calculated as the average payment date for the cash flows in the central government debt portfolio. The calculation of the duration includes both financial liabilities and assets managed by Danmarks Nationalbank. In practice, this means that payments on the central government's foreign and domestic debt is offset by cash flows from the bond holdings in central government funds, the account balance with Danmarks Nationalbank and on-lending to the government-owned companies. As the balance in the central government's account counterbalances cash flows from short-term liabilities, such as short-term loans or swap payments, this will increase the overall duration.

balances and short-term borrowing, the duration has been significantly more constant in recent years, see chart 18.

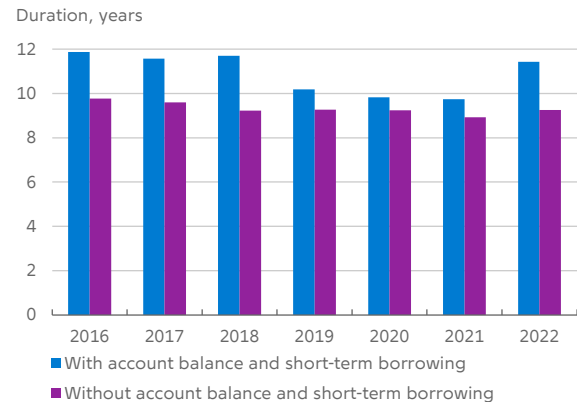
The target for the average duration was set at 10,25 years  $\pm$  0.5 years at the beginning of the year. In June, however, the target was increased to 11 years  $\pm$  0.5 years as the government budget developed significantly better than budgeted in December, which increased the expectation for the central government's account balance.

### Continued low expected interest costs despite interest rate increases

As previously described, 2022 was characterised by significant interest rate increases. However, the interest rate increases are not expected to result in large increases in the central government's interest costs in the coming years due to the low debt, the relatively long duration and the high account balance. In the coming six years, interest costs, excluding capital losses on buy-backs and revaluations of the principal on inflation-linked bonds, are expected to be at a low level of around kr. 2-4 billion in a baseline scenario with a balanced primary balance and where the forward interest rate structure is realised, see chart 19 (left).

**A high account balance resulted in an increase in duration in 2022**

Chart 18

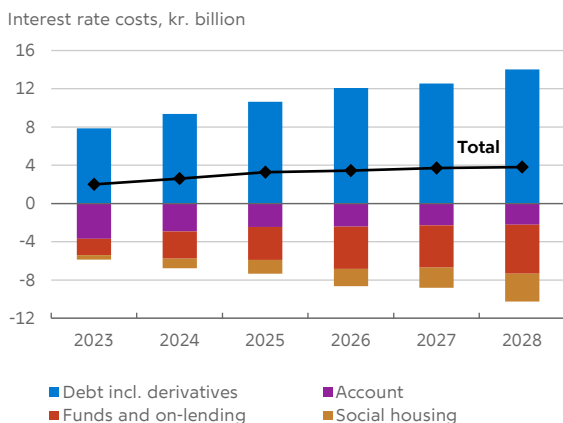


Note: The duration is calculated without discounting.  
Source: Danmarks Nationalbank.

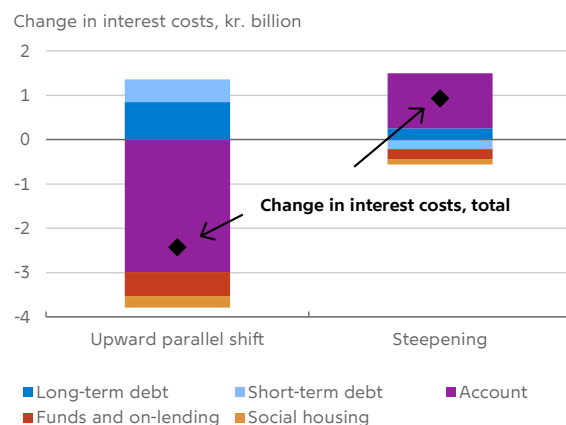
**Central government debt is robust to interest rate increases**

Chart 19

### Low expected interest costs despite interest rate increases



### Interest rate risk scenarios in 2023



Note: Left-hand chart: Projection of the central government's interest costs excluding revaluations of the principal on inflation-linked bonds and capital losses on buy-backs in a baseline scenario with a balanced primary balance and where the forward rate structure is realised. The decrease in interest income from the central government's account reflects that the balance in the central government's account is expected to be reduced over the coming years by contributing to covering the financing requirement. Right-hand chart: Change in interest costs in 2023 in a scenario in which the yield curve is parallel shifted or steepens, i.e. short interest rates decrease and long-term interest rates increase. The changes have been calculated in relation to the scenario in which the forward interest rate structure is realised.

Source: Danmarks Nationalbank.

### **The debt profile is resilient to further interest rate increases**

The resilience of the debt portfolio to interest rate changes can be analysed by looking at the impact on the interest costs in specific interest rate scenarios. In a scenario in which there is a parallel upward shock to the yield curve of 2 percentage points at the beginning of 2023, the central government's total interest costs are actually expected to decrease in 2023, see chart 19 (right). The parallel shift means that a higher interest rate will immediately accrue on the entire central government's account balance, while the costs of the debt will only increase as new debt is issued and existing debt is refinanced. Conversely, this means that if there is a parallel downward shock to the yield curve, the central government's interest costs will increase in 2023.

Another interest rate scenario that will cause the central government's interest costs to increase in 2023 is the scenario in which the yield curve steepens – i.e. short-term interest rates fall and long-term interest rates rise. In this scenario, interest income from the central government's account will fall, while it will become more expensive to refinance long-term debt. If the yield curve steepens at the beginning of 2023, interest costs are expected to increase by approximately kr. 1 billion in 2023, see chart 19 (right).

### **Interest rate swaps contribute to stabilising interest costs and reducing market value risk**

To create greater stability in the central government's interest costs and to reduce fluctuations in the market value of the debt, the central government entered into interest rate swaps in 2022, where the central government receives a fixed interest rate and pays a variable interest rate, called receiver interest rate swaps.

The central government's interest rate risk has typically been focused on the risk of higher interest costs rather than changes in the market value of the debt. However, it is also relevant to stabilise the market value, as any increases in the market value are realised directly as capital losses in connection with bond buy-backs or indirectly as higher interest

costs over the maturity of the debt than the current interest rate level would indicate.

Typically, there will be a trade-off between stabilising interest costs and stabilising the market value of a portfolio. But because the central government currently has more short-term assets than liabilities, it is possible for the central government both to reduce the risk of fluctuations in short-term interest costs and reduce fluctuations in the market value of the debt by entering into receiver interest rate swaps.

As the central government's account balance significantly exceeds the central government's short-term loans, the central government will be a net receiver of the short-term interest rate. The central government's interest costs are therefore affected by changes in short-term interest rates, which will immediately make themselves felt on the central government's interest costs. When a receiver interest rate swap is entered into, the variable leg that the central government pays will reduce the central government's net exposure to the short-term interest rate and thus stabilise the central government's net interest costs. The fixed leg of the interest rate swap that the central government receives will reduce the krone duration of the debt and thus reduce fluctuations in the market value of the portfolio due to interest rate changes.

The above is illustrated by an example in chart 20, which shows changes in the central government's interest costs and the market value of the debt in different interest rate scenarios in which the yield curve either steepens, flattens or is parallel shifted. The example illustrates that the absolute fluctuations in interest costs and market value are smaller if the portfolio is partially hedged by interest rate swaps.

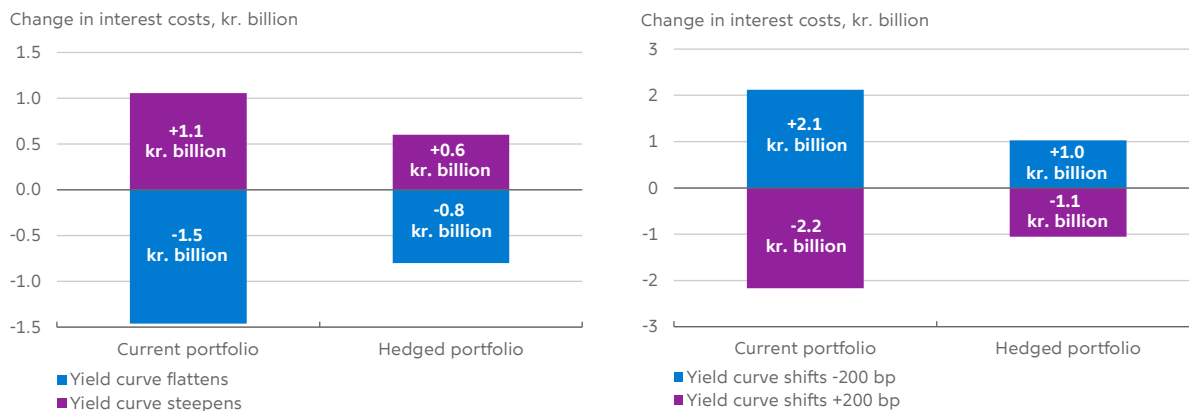
### **The central government's short-term refinancing volume returns to its pre-covid-19 level**

At the end of 2022, the central government's short-term refinancing volume, i.e. debt with maturity within the coming 12 months, was just under kr. 90 billion, equal to 14 per cent of the gross debt<sup>21</sup>. This is kr. 64 billion down on the previous year. The reduction in 2022 primarily reflects a decrease in the outstanding volume of T-bills, see chart 21.

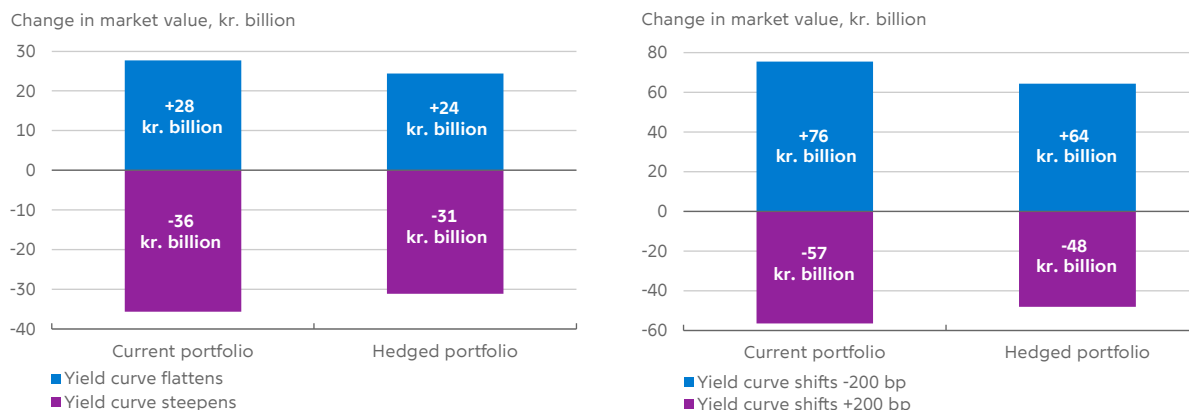
21 The refinancing volume has been calculated for the central government's total liabilities. Assets such as account balances, on-lending and social housing bonds are not offset.

**Interest rate swaps can contribute to stabilising fluctuations in both interest costs ...**

Chart 20



**... and the market value of the debt**



Note: The *Hedged portfolio* is a fictitious portfolio that is constructed corresponding to the central government historically having hedged 15 per cent of all issuances with receiver interest rate swaps. The example assumes that the central government interest rate and the swap interest rate is the same, and the spread risk is therefore not taken into account. The interest rate scenarios are defined as in the EBA's Guidelines on interest rate risks in the banking book (IRRBB). In the scenario where the yield curve flattens and steepens, the short end of the yield curve is shocked by 200 and -162.5 basis points, respectively, and the long end by -90 and 135 basis points, respectively. In the parallel shift, the entire yield curve is shocked by +/- 200 basis points.

Source: Danmarks Nationalbank.

The upper limit for the 1-year refinancing volume is set at 30 per cent of the gross debt. The purpose of the upper limit is to ensure that the existing loan programmes can cover the refinancing volume without a need to scale up significantly.

**Increased focus on liquidity risks**

The central government's liquidity profile is characterised by large gross incoming and outgoing payments during the year. The primary liquidity risk scenario for the central government is therefore a scenario in which several large incoming payments are deferred or fail – as was, for example, the case during covid-19. To reduce this risk, the central government has

focused on ensuring solid liquidity reserves by maintaining a minimum account buffer, maintaining market access to short-term borrowing in the international money markets via the CP programmes and diversifying the central government's investor base through bond issuances in foreign currency.

In the day-to-day liquidity risk management, projections of the central government's account balance are monitored to ensure that the central government has liquidity to cover expected payments and a buffer to cover unexpected payments.

## On-lending and central government guarantees

The central government provides on-lending and central government guarantees to a number of government-owned companies. On-lending and guarantees contribute to more favourable loan conditions for the companies due to the central government's high creditworthiness, see box 1.

At the end of 2022, the on-lending volume was kr. 165 billion distributed on 22 companies, which is an increase of approx. kr. 15 billion, see table 3. Government guarantees managed by Danmarks Nationalbank amount to kr. 9.8 billion against kr. 9.7 billion in 2021, see table 2.

On-lending to government-owned corporations constitutes 26 per cent of the central government's total outstanding government bonds. In the future, on-lending is expected to account for a steadily increasing share of central government issuances. Especially Femern Landanlæg contributes significantly to the on-lending volume and is expected to account for a large share of the on-lending granted in the coming years.

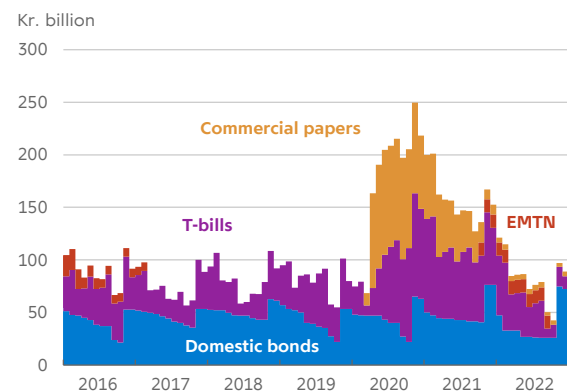
## Social housing

The central government supports social housing and independent nursing homes through debt service support, guarantees and purchases of bonds to finance subsidised construction. The debt service support consists in the central government paying that part of the debt service which exceeds the resident's payment. The central government thus bears the interest rate risk on the loans. By purchasing bonds for financing subsidised construction, it is ensured that the financing takes place on the same terms as the central government's own financing.

In 2022, the central government purchased bonds to finance social housing construction for kr. 23 billion. Since 2018, bonds have been purchased for a total of kr. 148 billion. The holding is equal to 23 per cent of domestic debt.

**The short refinancing volume has been reduced by kr. 64 billion**

Chart 21



Note: Each column shows the redemptions of domestic bonds, T-bills, bonds denominated in foreign currency (EMTN) and commercial papers the next 12 months.

Source: Danmarks Nationalbank.

**Loan guarantees managed by Danmarks Nationalbank on behalf of the central government**

Table 2

End of 2022	Kr. million
A/S Storebælt	1,166
A/S Øresund	804
A/S Femern Landanlæg	1,215
Øresundsbro Konsortiet I/S	5,755
DSB	205
DR (Danish Broadcasting Corporation)	436
The Danish Guarantee Fund for Non-life Insurers	245
<b>Total</b>	<b>9,826</b>

Note: The figures include guaranteed swaps.

Source: Reporting from the government-owned companies.

## On-lending in 2022

Table 3

Kr. billion, nominal value	Holding, end of 2021	Gross borrowing in 2022	Amortisations and early redemptions in 2022	Holding, end of 2022
<b>Infrastructure</b>				
A/S Femern Landanlæg	11.2	4.7	1.7	14.3
A/S Øresund	11.1	1.9	1.2	12.0
A/S Storebælt	18.2	1.8	2.5	17.9
Energinet	29.5	2.4	0.5	31.6
Evida Holding	2.5	0.0	0.0	2.5
Femern Bælt A/S	7.2	0.0	0.0	7.2
Fjordforbindelsen Frederikssund	0.8	0.0	1.1	0.0
Kalaallit Airports International	0.2	0.4	0.2	0.6
Metroselskabet I/S	32.0	4.4	5.1	31.8
Hovedstadens Letbane I/S	1.9	0.6	0.3	2.3
Sund & Bælt Holding A/S	0.7	0.3	0.7	0.3
Udviklingsselskabet By & Havn I/S	12.5	3.3	1.4	14.8
<b>Other</b>				
Danmarks Grønne Fremtidsfond (Denmark's Green Future Fund)	0.1	0.3	0.0	0.5
Den Grønne Investeringsfond (The Green Investment Fund)	1.9	6.4	5.6	2.8
Danmarks Skibskredit A/S	0.2	0.0	0.1	0.1
DR (Danish Broadcasting Corporation)	2.8	0.0	0.2	2.6
EKF Danmarks Eksportkredit (EKF Denmark's Export Credit Agency)	8.6	8.5	2.5	15.4
Investeringsfonden for Udviklingslande (Investment Fund for Developing Countries)	0.3	0.2	0.0	0.4
Naviair	0.5	0.0	0.0	0.5
Nordsøfonden (Danish State's oil and gas company)	1.0	0.0	0.9	0.0
Vækstfonden	6.0	14.6	15.0	5.7
SAS	0.0	1.1	0.0	1.1
<b>Total</b>	<b>149.2</b>	<b>51.0</b>	<b>38.9</b>	<b>164.5</b>

Note: The holdings of the on-loans have been stated at nominal value, while gross borrowing has been stated at market value. On-lending to A/S Femern Landanlæg has been stated without on-loans taken out on a forward contract.

## Government funds

Danmarks Nationalbank manages the assets of three government funds on the central government's behalf. The assets of the funds are set off in the statement of the central government debt and are managed together with the central government's other financial assets and liabilities in the central government debt area.

### Innovation Fund Denmark

The assets of Innovation Fund Denmark amounted to kr. 12.8 billion at the end of 2021, see table 5. The fund's portfolio of government securities is distributed roughly evenly between short-term, medium-term and long-term Danish government bonds. Kr. 400 million was transferred from the fund to the Danish Ministry of Higher Education and Science in 2022. The transfers were primarily financed by divestments and by interest income in the fund.

Innovation Fund Denmark was established in 2014. Every year, the fund awards funds for new initiatives that create growth and jobs through knowledge.

### Fund for Better Working Environment and Labour Retention

The assets of the Fund for Better Working Environment and Labour Retention amounted to kr. 0.7 billion at the end of 2022. All the funds were deposited

in the central government's account with Danmarks Nationalbank, see table 5.

The fund was established in 2007. The fund's funds have been used for preventive measures, retention and inclusion in the labour market. On establishment of the fund, kr. 3 billion was contributed to the fund, and there are no plans for further capital injections by the central government. The fund has not disbursed funds since 2018.

### SPF is expected to be closed down during 2023

The last assets of the Social Pension Fund (SPF) were disbursed in 2021, and an attempt was made to close down the fund through the passing of an act during 2022. There was not time for reading of the Bill on the closure of the fund in 2022 due to the general election and the subsequent government formation process. The closure of the fund is now expected to be implemented in the first half of 2023 with retroactive effect, so that the fund is legally closed as of 31 December 2022.

SPF was established by an act in 1970, where a special old-age state pension contribution was introduced. Payments to the fund ceased in 1983, and the fund was closed because its resources have been used on an ongoing basis to finance pension improvements. Therefore, the fund had run out of funds in 2021.<sup>22</sup>

**The funds' income and expenses in 2022**

Table 4

Kr. million	SPF	Innovation Fund Denmark	Fund for Better Working Environment and Labour Retention
<b>Revenues</b>			
Interest etc. <sup>1</sup>	0	19	-3
<b>Expenses</b>			
Transfer to Ministry	22	400	-
Pension yield tax <sup>2</sup>	-22	-	-
Net revenues	0	-381	-3

<sup>1</sup> Net statement of interest received, interest receivable and distributed capital losses on buy-backs.

<sup>2</sup> Pension yield tax is paid on yields for the previous year.

<sup>22</sup> See Danmarks Nationalbank, Central Government Borrowing and Debt 2021, box 6, *Danmarks Nationalbank Report*, February 2022.

**The government funds' assets, end of 2022**

Table 5

Nominal value, kr. billion	SPF	Innovation Fund Denmark	Fund for Better Working Environment and Labour Retention
7 per cent bullet loan 2024	-	1.1	-
1.75 per cent bullet loan 2025	-	2.1	-
0.5 per cent bullet loan 2027	-	3.7	-
0.5 per cent bullet loan 2029	-	2.8	-
4.5 per cent bullet loan 2039	-	0.6	-
Government bonds, total	-	12.7	-
Account balance	-	0.07	0.7
<b>Total</b>	-	<b>12.8</b>	<b>0.7</b>



## PUBLICATIONS



### NEWS

News offers quick and accessible insight into an Analysis, an Economic Memo, a Working Paper or a Report from Danmarks Nationalbank. News is published continuously.



### ANALYSIS

Analyses from Danmarks Nationalbank focus on economic and financial matters. Some Analyses are published at regular intervals, e.g. *Outlook for the Danish economy* and *Financial stability*. Other Analyses are published continuously.



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Reports comprise recurring reports and reviews of the functioning of Danmarks Nationalbank and include, for instance, the *Annual report* and the annual publication *Danish government borrowing and debt*.



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An Economic Memo is a cross between an Analysis and a Working Paper and often shows the ongoing study of the authors. The publication series is primarily aimed at professionals. Economic Memos are published continuously.



### WORKING PAPER

Working Papers present research projects by economists in Danmarks Nationalbank and their associates. The series is primarily targeted at professionals and people with an interest in academia. Working Papers are published continuously.

The report consists of a Danish and an English version. In case of doubt regarding the correctness of the translation the Danish version is considered to be binding.

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BANKING AND MARKETS

# Danish Government Borrowing and Debt 2022

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**Central-Government Debt year-end 2012-22 (continues next page)**

Table 1

Kr. million	2012	2013	2014	2015	2016
<b>A. Loan</b>					
<i>Domestic debt</i>					
- Fixed-rate bonds, nominal	620,695	615,907	637,617	584,356	572,020
- Inflation-linked bonds <sup>1</sup>	10,207	23,251	35,531	35,667	38,193
- Fisheries Bank bonds	684	594	507	424	343
- Treasury bills	44,940	32,300	29,800	29,840	27,180
- Currency swaps from kroner to euro (net) <sup>2</sup>	-1,490	-1,490	-	-	-
- Currency swaps from kroner to US dollars	-7,512	-6,364	-5,215	-4,067	-2,942
<b>Domestic debt, total</b>	<b>667,524</b>	<b>664,198</b>	<b>698,240</b>	<b>646,220</b>	<b>634,794</b>
<i>Foreign debt<sup>3</sup></i>					
- in US dollars	7,662	6,219	5,778	5,047	3,795
- i euros	82,338	69,689	53,207	28,223	8,044
- in other currencies and multi-currency	-	-	-	-	-
<b>Foreign debt, total</b>	<b>90,000</b>	<b>75,908</b>	<b>58,986</b>	<b>33,270</b>	<b>11,839</b>
<b>Domestic and foreign debt, total</b>	<b>757,524</b>	<b>740,106</b>	<b>757,225</b>	<b>679,490</b>	<b>646,633</b>
<b>B. Collateral related to swaps<sup>4</sup></b>	<b>-</b>	<b>3,596</b>	<b>3,804</b>	<b>2,859</b>	<b>1,610</b>
<b>C. Government deposits with Danmarks Nationalbank</b>	<b>-161,991</b>	<b>-161,953</b>	<b>-213,099</b>	<b>-157,376</b>	<b>-110,928</b>
<b>D. The Social Pension Fund, The Fund for Better Working Environment and Labour Retention and The Danish National Innovation Fund</b>					
- Government securities	-70,859	-62,550	-64,825	-62,399	-63,233
- Other securities	-37,902	-32,352	-25,259	-17,172	-8,834
<b>The three funds, nominal value, total</b>	<b>-108,761</b>	<b>-94,902</b>	<b>-90,084</b>	<b>-79,571</b>	<b>-72,067</b>
<b>E. Bonds to finance social housing</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Central-government debt, total (A+B+C+D+E)</b>	<b>486,771</b>	<b>486,848</b>	<b>457,846</b>	<b>445,402</b>	<b>465,249</b>
<b>Central-government debt, per cent of GDP</b>	<b>25.7</b>	<b>25.2</b>	<b>23.1</b>	<b>21.9</b>	<b>22.1</b>

Note: A positive sign indicates a liability, a negative sign an asset.

1. Inflation-linked bonds are compiled as indexed value at end-year.

2. Currency swaps from kroner to euro less currency swaps from euro to kroner.

3. Foreign loans are compiled after end-exposure.

4. Cash-collateral for the market value of the swap portfolio. A positive number means the counterparties net have posted collateral.

5. Deposits include deposits of the government funds. Government deposit are measured as in Danmarks Nationalbank's balance sheet.

**Central-Government Debt year-end 2012-22 (continued)**

Table 1

Kr. million	2017	2018	2019	2020	2021	2022
<b>A. Loan</b>						
<i>Domestic debt</i>						
- Fixed-rate bonds, nominal	570,222	543,732	543,075	597,153	602,728	561,722
- Inflation-linked bonds <sup>1</sup>	38,765	43,897	44,957	44,223	47,602	55,318
- Fisheries Bank bonds	272	200	129	108	86	65
- Treasury bills	32,740	30,400	23,980	83,180	54,200	11,820
- Currency swaps from kroner to euro (net) <sup>2</sup>	-	-	-	-	-	-
- Currency swaps from kroner to US dollars	-1,872	-1,022	-400	-67	-	-
Domestic debt, total	640,127	617,207	611,741	724,596	704,616	628,925
<i>Foreign debt<sup>3</sup></i>						
- in US dollars	2,152	1,244	497	71	-	-
- i euros	-	-	-	82,132	22,012	15,668
- in other currencies and multi-currency	-	-	-	-	-	-
Foreign debt, total	2,152	1,244	497	82,202	22,012	15,668
Domestic and foreign debt, total	642,279	618,450	612,239	806,798	726,628	644,593
B. Collateral related to swaps <sup>4</sup>	1,005	690	267	-370	573	279
C. Government deposits with Danmarks Nationalbank	-134,689	-111,674	-70,411	-136,875	-151,533	-161,779
D. The Social Pension Fund, The Fund for Better Working Environment and Labour Retention and The Danish National Innovation Fund						
- Government securities	-52,084	-48,454	-32,267	-25,851	-12,555	-12,665
- Other securities	-7,432	-1,675	-1,675	-	-	-
The three funds, nominal value, total	-59,516	-50,129	-33,942	-25,851	-12,555	-12,665
E. Bonds to finance social housing	-	-30,298	-86,784	-107,689	-124,960	-147,525
Central-government debt, total (A+B+C+D+E)	449,079	427,039	421,368	536,014	438,153	322,903
Central-government debt, per cent of GDP	20.5	19	18.2	23.1	17.5	11.9

Note: A positive sign indicates a liability, a negative sign an asset.

1. Inflation-linked bonds are compiled as indexed value at end-year.

2. Currency swaps from kroner to euro less currency swaps from euro to kroner.

3. Foreign loans are compiled after end-exposure.

4. Cash-collateral for the market value of the swap portfolio. A positive number means the counterparties net have posted collateral.

5. Deposits include deposits of the government funds. Government deposit are measured as in Danmarks Nationalbank's balance sheet.

**Central government's financing requirement 2020-22**

Table 2

Kr. billion	2020	2021	2022
Current, investment and lending budget	-14.5	33.1	na.
On-lending of government loans	-65.8	-1.9	na.
Distributed capital losses on issue and due interest <sup>1</sup>	7.8	6.6	na.
Other capital items <sup>2</sup>	-38.2	72.7	na.
Net cash balance	-110.7	110.5	128.7
Net financing requirement (= net cash balance)	110.7	-110.5	-128.7
Redemption on long-term domestic government debt <sup>3</sup>	116.7	148.3	143.2
Redemption on T-bills <sup>4</sup>	24	83.2	54.2
Domestic financing requirement <sup>5</sup>	251.3	120.9	68.7
Redemption on long-term foreign government debt <sup>6</sup>	0.4	0.1	-2.9
Redemption on commercial papers <sup>4</sup>	0	69.5	9.4
Financing requirement	251.8	190.5	75.2

Source: Central Government Accounts. 2021 are based on Danmarks Nationalbank's end-year specification, which may differ from accounting figures.

1. Including capital losses on buy-backs
2. Including e.g. movements in the central government's holdings, cf. Budget Outlook from the Ministry of Finance
3. Including net purchases of bonds from the government funds and changes in collateral related to swaps. From 2019 also including transactions related to financing of social housing, which was previously included under "On-lending of government loans".
4. Corresponds to the outstanding amount at the end of the year before.
5. Deviations from actual domestic financing requirement are possible due to inter alia foreign on-lending.
6. Including net payments on cross-currency swaps.

**Interest payments on central-government debt 2015-22**

Table 3

Kr. billion	2015	2016	2017	2018	2019	2020	2021	2022
Domestic deb	21.6	21.5	18.5	15.6	14.2	17.1	15.1	9.3
Foreign debt	-0.2	0.1	0.0	-0.1	-0.1	-0.6	-0.4	-0.1
Central government's account at Danmarks Nationalbank	0.6	0.3	0.2	0.8	0.5	0.6	0.5	0.1
Government funds	-3.2	-4.1	-1.5	-1.2	-1.4	-0.9	-0.3	0.0
Bonds for financing social housing	0.0	0.0	0.0	-0.02	-0.03	0.1	0.2	0.1
Central-government debt	18.8	17.8	17.1	15.1	13.2	16.3	15.1	9.5
Central-government debt, per cent of GDP	0.9	0.8	0.8	0.7	0.6	0.7	0.6	0.35
On-lending	-2.5	-2.1	-2.0	-1.5	-1.4	-1.3	-1.1	-1.1
Central-government debt, adjusted for on-lending	16.4	15.7	15.2	13.6	11.8	15.1	14.0	8.3
Central-government debt, adjusted for on-lending, per cent of GDP	0.8	0.7	0.7	0.6	0.5	0.6	0.6	0.3

Note: A positive sign denotes interest costs. A negative sign denotes interest income.

Source: Central Government Accounts. Figures for 2021 are provisional figures from the central government's accounting.

**Issuance of domestic central-government securities in 2022**

Table 4

ISIN code	Coupon, per cent	Name	Opened	Redemption date	Issuance, kr. million, nominal	Issuance, kr. million, market value
<b>Government bonds</b>						
DK0009924292	0	Bullet loan 2024	5 Maj 2021	15 Nov 2024	23,820	23,397
DK0009923724	0.1	DGBI 2030	7 Feb 2018	15 Nov 2030	2,285	2,863
DK0009924375	0	Green bullet loan 2031	19 Jan 2022	15 Nov 2031	16,240	14,502
DK0009924102	0	Bullet loan 2031	20 Jan 2021	15 Nov 2031	19,250	16,884
DK0009924458	0.1	DGBI 2034	14 Sep 2022	15 Nov 2034	7,800	8,484
DK0009924029	0.25	Bullet loan 2052	1 Apr 2020	15 Nov 2052	10,170	7,341
Government bonds, total					79,565	73,470
<b>T-bills</b>						
DK0009818429	0	T-bill 2022 I	25 Feb 2021	1 Mar 2022	360	360
DK0009818502	0	T-bill 2022 II	28 Maj 2021	1 Jun 2022	12,340	12,360
DK0009818692	0	T-bill 2022 III	30 Aug 2021	1 Sep 2022	21,840	21,872
DK0009818775	0	T-bill 2022 IV	29 Nov 2021	1 Dec 2022	8,080	8,085
DK0009818858	0	T-bill 2023 I	30 Aug 2022	1 Mar 2023	9,140	9,104
DK0009818932	0	T-bill 2023 II	29 Nov 2022	1 Jun 2023	2,680	2,656
T-bills, total					54,440	54,437
Domestic issuance, total					134,005	127,907

Note: Issuances related to switch operations are included.

## Central-government domestic debt as of end-2022

Table 5.1

Mio. kr., nominel værdi	Outstanding amount end 2021	Issuance 2022	Redemp- tion 2022	Outstanding amount end 2022	Redemption date	ISIN code
<b>Government bonds, fixed interest-rate</b>						
<i>Bullet loans</i>						
0.25 per cent bullet loan 2022	76,235	0	76,235	0	15 Nov 2022	DK0009923997
1.5 per cent bullet loan 2023	51,720	0	3,471	48,250	15 Nov 2023	DK0009923054
7 per cent bullet loan 2024	2,972	0	75	2,897	10 Nov 2024	DK0009918138
0 per cent bullet loan 2024	39,840	23,820	0	63,660	15 Nov 2024	DK0009924292
1.75 per cent bullet loan 2025	49,090	0	2,310	46,780	15 Nov 2025	DK0009923138
0.5 per cent bullet loan 2027	75,880	0	8,390	67,490	15 Nov 2027	DK0009923567
0.5 per cent bullet loan 2029	84,860	0	17,580	67,280	15 Nov 2029	DK0009923807
0 per cent green bullet loan 2031	0	16,240	0	16,240	15 Nov 2031	DK0009924375
0 per cent bullet loan 2031	60,115	19,250	0	79,365	15 Nov 2031	DK0009924102
4.5 per cent bullet loan 2039	114,345	0	2,425	111,920	15 Nov 2039	DK0009922320
0.25 per cent bullet loan 2052	47,670	10,170	0	57,840	15 Nov 2052	DK0009924029
<i>Inflation-linked bonds</i>						
0.1 per cent inflation-linked 2023	25,844	0	4,127	24,200	15 Nov 2023	DK0009922916
0.1 per cent inflation-linked 2030	21,758	2,422	4,068	22,438	15 Nov 2030	DK0009923724
0.1 per cent inflation-linked 2034	0	8,476	0	8,680	15 Nov 2034	DK0009924458
<i>Perpetual bonds</i>						
5 per cent Dansk-Islandsk Fond 1918	1	0	0	1	Perpetual	-
Government bonds, fixed interest rate, total	650,329	80,378	118,681	617,040		
<b>T-bills</b>						
T-bill I 2022	37,900	360	38260	0	1 Mar 2022	DK0009818429
T-bill II 2022	9,960	12340	22300	0	1 Jun 2022	DK0009818502
T-bill III 2022	5,480	21840	27320	0	1 Sep 2022	DK0009818692
T-bill IV 2022	860	8080	8940	0	1 Dec 2022	DK0009818775
T-bill I 2023	0	9140	0	9140	1 Mar 2023	DK0009818858
T-bill II 2023	0	2680	0	2680	1 Jun 2023	DK0009818932
T-bills, total	54,200	54,440	96,820	11,820		
<b>Fisheries Bank of Denmark Bonds</b>						
5 per cent 2025	86	0	22	65	1 Nov 2025	DK0009604894
Fisheries Bank Bond, total	86	0	22	65		
Domestic government securities, total	704,616	134,818	215,523	628,925		
Swaps from kroner to US dollar	0	0	0	0		
Central-government domestic debt, total	704,616	134,818	215,523	628,925		

<sup>1</sup> Issuance in the inflation-linked bond includes the index revaluation. Outstanding amount in the inflation-linked bond is measured at indexed nominal value at year-end.



**Central-government foreign debt as of end-2022**

Table 5.2

Title	Coupon, per cent	ISIN code	Redemption date	Nominal value, kr. million <sup>1</sup>
2022/2024 Euroloan	2.5	XS2547290432	18 Nov 2024	11,111
<b>Loan, total</b>				<b>11,111</b>
<b>Foreign debt, total</b>				<b>15,623</b>
<b>Commercial Papers</b>				
ECP programme in euro				1,487
ECP programme in US dollar				2,998
USCP programme in USD <sup>2</sup>				0
Forward foreign-exchange contracts <sup>2</sup>				28
<b>CP outstanding, total</b>				<b>4,513</b>

1. The outstanding amount as of 31 December 2022 is calculated to kroner on the basis of the following exchange dollar rates as of 30 December 2022: euro = 743.65 and US dollar = 656.12.

2. The Kingdom of Denmark enters a forward foreign-exchange contract with Danmarks Nationalbank when entering into a US dollar Commercial Paper loan. The Kingdom of Denmark receives US dollars upon redemption and pays euros.

**Central-government portfolio swaps as of end-2022**

Table 6

Expiry year	Krone interest rate swaps		Euro interest rate swaps	
	Net exposure, kr. million	Net exposure, million euro	Net exposure, kr. million <sup>1</sup>	
2024	-	300	2,231	
2025	-	-150	-1,115	
2026	-	-650	-4,834	
2027	600	350	2,603	
2028	600	-	-	
2029	-	-	-	
2031	-	100	744	
2032	-	650	4,834	
Interest rate swaps, total	1,200	600	4,462	

Note: Net exposure is calculated as the difference in principal between interest rate swaps in which the central government receives a fixed rate and interest rate swaps in which the central government pays a fixed interest rate.

<sup>1</sup> Converted to kroner on the basis of the following exchange rate as of 30 December 2022: euro = 743.65.

**On-lending and government guarantees administered  
by Danmarks Nationalbank 2017-22**

Table 7.1

Kr. million	2017	2018	2019	2020	2021	2022
<b>On-lending</b>						
A/S Femern Landworks	1,425	2,600	3,900	5,400	11,220	14,250
A/S Storebælt	15,110	17,040	17,271	18,286	18,219	17,948
A/S Øresund	10,302	10,322	10,722	10,772	11,122	12,022
Denmark's Green Future Fund	-	-	-	-	130	454
The Danish Green Investment Fund	-	-	-	-	1,900	2,800
Danish Ship Finance	2,775	1,751	889	347	161	73
DR (Danish Broadcasting Corporation)	3,002	3,044	2,902	2,801	2,801	2,599
EKF (Danish Export Credit Agency)	13,248	12,853	9,808	10,265	8,627	15,437
Energinet	22,980	25,505	28,724	31,037	29,466	31,635
Evida Holding A/S	-	-	-	-	2,499	2,499
Femern Bælt A/S	2,550	6,200	11,750	11,750	7,180	7,180
Fjord Link Frederikssund	530	650	750	780	780	0
Greater Copenhagen Light Rail	-	350	1,100	1,300	1,900	2,300
Investment Fund for Developing Countries			142	188	264	426
Kalaallit Airports International A/S	-	-	-	-	249	634
The Copenhagen Metro	17,585	21,990	29,440	31,940	31,990	31,810
Naviair	-	-	-	-	500	500
Nordsøfonden	-	-	-	500	1,000	0
Sund & Bælt Holding A/S	500	300	650	650	650	300
CPH City & Port Development	14,450	13,850	12,700	12,300	12,500	14,800
Vækstfonden	-	-	-	-	6,000	5,700
SAS	-	-	-	-	-	1,088
<b>Total</b>	<b>104,457</b>	<b>116,456</b>	<b>130,748</b>	<b>138,315</b>	<b>149,158</b>	<b>164,455</b>

**Guarantees**

Table 7.2

Kr. million	2017	2018	2019	2020	2021	2022
<b>Guarantees</b>						
A/S Femern Landworks	4	6	22	55	86	1,215
A/S Storebælt	5,971	3,955	2,285	1,023	828	1,166
A/S Øresund	495	447	439	465	528	804
DR (Danish Broadcasting Corporation)	776	436	436	436	436	436
DSB (the Danish State Railways)	3,526	1,687	749	286	245	205
Fjord Link Frederikssund	-	-	-	2	27	-
The Danish Guarantee Fund for Non-life Insurers	-	-	534	761	746	245
Sund og Bælt Holding A/S	100	-	-	-	-	-
Øresundsbro Konsortiet I/S	13,009	13,189	11,976	8,039	6,767	5755
<b>Total</b>	<b>23,882</b>	<b>19,720</b>	<b>16,442</b>	<b>11,068</b>	<b>9,664</b>	<b>9,826</b>

Note: Guarantees are inclusive of guaranteed swaps.

Outstanding amount in the inflation-linked loans are measured at indexed nominal value at year-end.

1. Re-lending in dollar to Danish Ship Finance is calculated to kroner by the end-of-year exchange rate.

**Buy-backs from the market by the government and the government funds in 2022**

Table 8

Kr. million, market value	Government	Social Pension Fund	Fund for Better Working Environment and Labour Retention	Innovation Fund Denmark	Total buy- backs from the market	Hereof buy- backs in switch operations
0.25 per cent bullet loan 2022	50,613	-	690	0	51,303	-
1.5 per cent bullet loan 2023	3,509	-	-	-320	3,189	2,443
0.1 per cent DGBi 2023i	4,224	-	-	0	4,224	1,639
7 per cent bullet loan 2024	84	-	-	0	84	-
1.75 per cent bullet loan 2025	2,353	-	-	0	2,353	579
0.5 per cent bullet loan 2027	8,251	-	-	0	8,251	-
0.5 per cent bullet loan 2029	16,772	-	-	314	17,086	5,053
0.1 per cent DGBi 2030i	4,154	-	-	0	4,154	4,154
4.5 per cent bullet loan 2039	3,895	-	-	171	4,066	3,769
<b>Total</b>	<b>93,855</b>	<b>-</b>	<b>690</b>	<b>165</b>	<b>94,709</b>	<b>17,637</b>