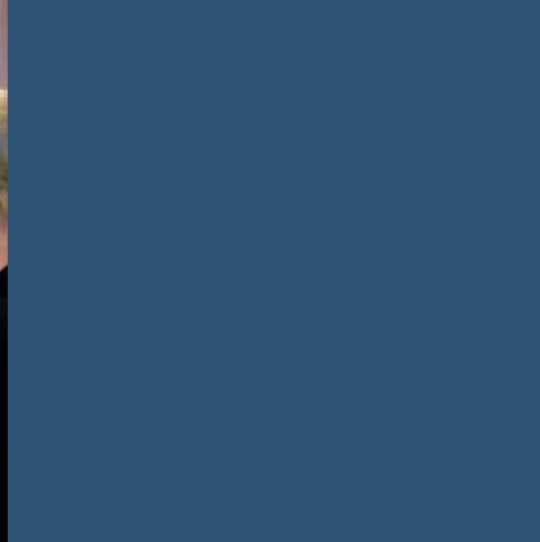
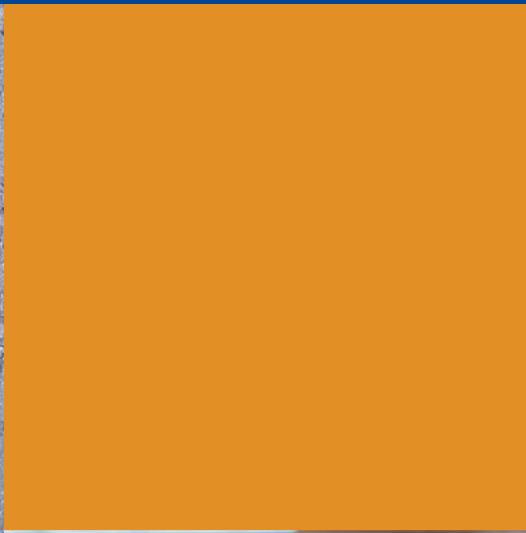




# The tasks of Danmarks Nationalbank



This publication closed for contributions in mid-May 2008.

*The Tasks of Danmarks Nationalbank* can be found at the website [www.nationalbanken.dk](http://www.nationalbanken.dk).

A free printed copy can be requested by filling in the order form under "Publications".

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# Preface

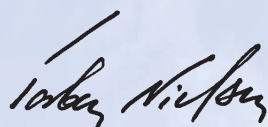
Danmarks Nationalbank is the central bank of Denmark and plays a key role in the Danish economy. *The Tasks of Danmarks Nationalbank* is an overall presentation of what Danmarks Nationalbank does and what its main objectives are.

The publication is aimed at a wide audience – including people with no previous knowledge of economics.

We hope you will enjoy reading it!



Nils Bernstein  
Governor by Royal Appointment  
Chairman



Torben Nielsen  
Governor



Jens Thomsen  
Governor



Photo: *The Danmarks Nationalbank building was designed by the Danish architect Arne Jacobsen and was completed in 1978.*



# Contents

## Objectives and tasks

Objectives and history . . . . .	6
Organisation and management . . . . .	7
Accounts and profit . . . . .	8
International cooperation . . . . .	9

## Stable Prices

First main objective: Stable prices . . . . .	10
Inflation . . . . .	11
A fixed exchange rate to keep inflation low . . . . .	12
The foreign-exchange reserve . . . . .	13
Monetary-policy interest rates . . . . .	14
Danmarks Nationalbank is banker to the banks . . . . .	15

## Safe payments

Second main objective: Safe payments . . . . .	16
Production of banknotes and coins . . . . .	17
The history of money at a glance . . . . .	18
From sketch to printed banknote . . . . .	19
Putting cash into circulation . . . . .	20
Payments between banks . . . . .	21

## A stable financial system

Third main objective: A stable financial system . . . . .	22
Financial stability . . . . .	23
Oversight of payment systems . . . . .	24
Management of central-government borrowing and debt . . . . .	25
Statistics . . . . .	26
More information . . . . .	27

# Objectives and history

Danmarks Nationalbank is the central bank of Denmark as defined in the Danmarks Nationalbank Act of 1936. Under the first section of the Act, "Danmarks Nationalbank ... shall as the Central Bank of this country have the object ... to maintain a safe and secure currency system in this country, and to facilitate and regulate the traffic in money and the extension of credit". This description still fits the tasks of Danmarks Nationalbank today.

## Three main objectives

Under the Act, Danmarks Nationalbank has three main objectives:

- ◆ Stable prices: Danmarks Nationalbank helps to maintain stable prices, i.e. low inflation. This is done by pursuing a fixed-exchange-rate policy against the euro.
- ◆ Safe payments: Danmarks Nationalbank promotes safe settlement of cash and electronic payments. This is done by issuing banknotes and coins and ensuring that payments can be settled between banks.
- ◆ A stable financial system: Danmarks Nationalbank helps to maintain the stability of the financial system. This is done by assessing financial stability, overseeing payment systems, compiling financial statistics and managing the central government's borrowing and debt.

## An independent, self-governing institution

Danmarks Nationalbank is an independent, self-governing institution established by law. Its independence dates back to its establishment in 1818. The independence of Danmarks Nationalbank is incorporated in the 1936 Act,

in that the bank's Board of Governors is solely responsible for determining monetary-policy interest rates.

The principle of the independence of central banks is also stated in the Treaty establishing the European Community (article 108), which says that neither the ECB nor a national central bank shall seek or take instructions from Community institutions, from any government of a member state or from any other body.

## Establishment of Danmarks Nationalbank

1818

Danmarks Nationalbank was established as a private limited liability company with the task of putting the Danish monetary system back on track. It was therefore given the sole right to issue banknotes in Denmark. Previous experience had shown that it was not a good idea to allow the state to be responsible for banknote issue. On several occasions, the King's expenses for e.g. wars had been paid by putting too many banknotes into circulation, which led to inflation.

## More information

The Danmarks Nationalbank Act of 1936 lays down the foundations for Danmarks Nationalbank. The Act can be found at [www.nationalbanken.dk](http://www.nationalbanken.dk).



"Nationalbanken i Kjøbenhavn" (the National Bank in Copenhagen) was established in 1818. Its first domicile was next to Christian IV's old Stock Exchange.



Danmarks Nationalbank's main building from 1870 until the early 1970s. It was demolished to make room for the present building, which is emerging to the left.



# Organisation and management

Danmarks Nationalbank employs around 500 people in many different jobs, e.g. economists, banknote printers, bank clerks and guards.

## Danmarks Nationalbank and The Royal Mint

Danmarks Nationalbank is located in Havnegade in central Copenhagen, except for The Royal Mint in the suburb of Brøndby. Danmarks Nationalbank used to have branches in different parts of Denmark, but the last two – in Aarhus and Odense – were discontinued in 1989. The branches were Danmarks Nationalbank's local cash centres and were responsible for the supply of cash outside Copenhagen.

## Danmarks Nationalbank has three governing bodies

Danmarks Nationalbank's management comprises a Board of Governors with three members, a Committee of Directors with seven members and a Board of Directors with 25 members. The three governors are charged with the day-to-day management of Danmarks Nationalbank and hold responsibility for the formulation and ongoing adjustment of monetary policy. As Governor by Royal Appointment Mr Nils Bernstein is Chairman of the Board of Governors. The two other members, who are appointed by the Board of Directors on the recommendation of the Committee of Directors, are Mr Torben Nielsen and Mr Jens Thomsen.

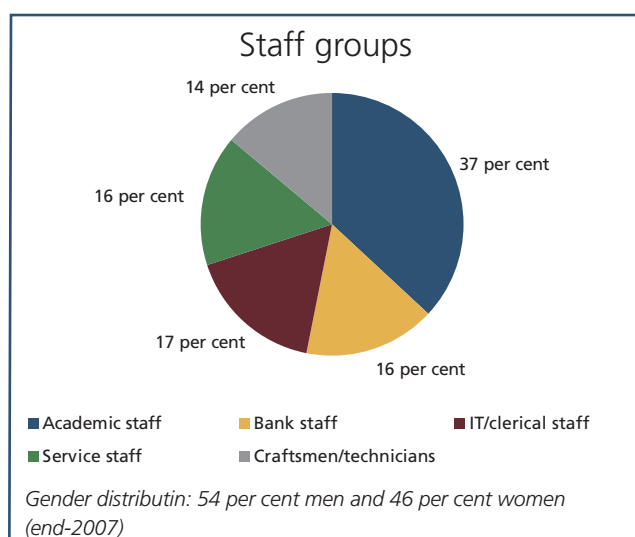
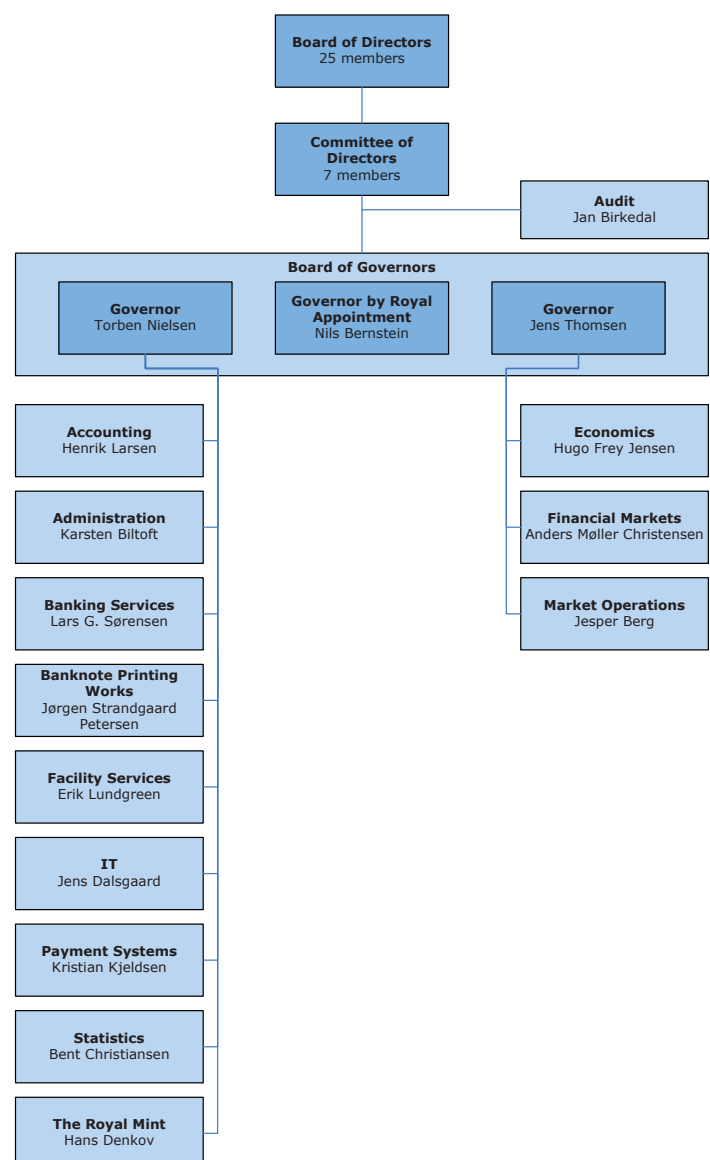
## Committee of Directors and Board of Directors

The Committee of Directors and Board of Directors have organisational and administrative functions. Their members come from outside the bank. The 25 members of the Board of Directors include eight MPs elected by the

Folketing (Danish parliament) from among its members, plus two members educated in economics and law, who are appointed by the Minister for Economic and Business Affairs. The Minister is the Royal Bank Commissioner and the formal link between the government and Danmarks Nationalbank.

The remaining 15 members of the Board of Directors are appointed on the basis of their insight into business matters. They should preferably come from different geographical areas and professions. In the Committee of Directors, the two members appointed by the Royal Bank Commissioner are permanent members. The remaining five members are elected by the Board of Directors from among its members, for one year at a time.

## Organisation



## Accounts and profit

Danmarks Nationalbank profits from its role as central bank. Most of the profit comes from "seignorage" and from return on the bank's equity. Danmarks Nationalbank also makes/loses money when exchange rates and bond prices fluctuate.

### Equity

Confidence in a central bank's financial soundness is important. Revenue considerations must not impede its conduct of monetary and foreign-exchange policy. This means that the bank should have considerable equity and ensure ongoing consolidation.

### Seignorage

Seignorage is the profit Danmarks Nationalbank makes from issuing banknotes and coins. When Danmarks Nationalbank distributes cash, this corresponds to raising an interest-free loan. The value of the loan can be invested in interest-bearing assets. When the costs for production and distribution of banknotes and coins are deducted, what remains is a solid source of income for Danmarks Nationalbank.

### Danmarks Nationalbank's gold

Under the Danmarks Nationalbank Act, Danmarks Nationalbank must hold a certain amount of gold. The profit contribution from gold fluctuates with the price of gold. Previously, the value of banknotes was ultimately based on the right to have them exchanged for gold, but Denmark finally abandoned the gold standard in 1931. Since then,

gold has been less and less important to Danmarks Nationalbank – and to many other central banks.

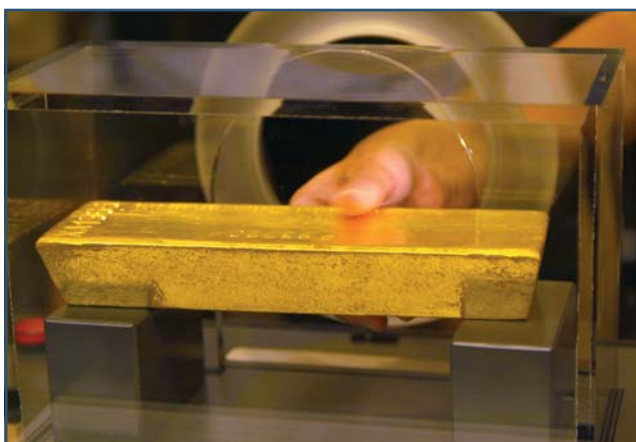
### Allocation of profits

The allocation of profits is determined every year when the accounts are presented. Since 2002, 80 per cent of the profit for the year, excluding value adjustments, has been paid to the central government. In this way Danmarks Nationalbank's profit ultimately benefits the Danish society as a whole. The remaining 20 per cent of the profit is allocated to the General Reserves, which are part of Danmarks Nationalbank's equity. The purpose of the General Reserves is to maintain Danmarks Nationalbank's financial strength.

1939

### Danmarks Nationalbank's gold is relocated

In the six months up to the German occupation of Denmark on 9 April 1940, Danmarks Nationalbank's gold was secretly transported from Copenhagen to the USA, where most of it remained during the war, though some was sold to cover interest costs on Danish government loans in the USA. Since some of the gold was already deposited in England, there was very little gold left when the German occupation came. After the war, the gold was transported back to Danmarks Nationalbank, but in 1951 most of it was shipped abroad again. This time the reason was the international political situation (the Cold War).



Most of Danmarks Nationalbank's 66.6 tons of gold is deposited with the Bank of England. Only a few ingots remain in Copenhagen. One of them is exhibited in a partly open glass showcase in the lobby at Danmarks Nationalbank.

### More information

In the publication *Report and Accounts* you can find the actual accounting figures for Danmarks Nationalbank, as well as an outline of the most important events in the preceding year. *Financial Management at Danmarks Nationalbank* provides more information about Danmarks Nationalbank's profit and risk management.



# International cooperation

Danmarks Nationalbank represents Denmark in several international contexts. Notably, it cooperates with other central banks and the European Central Bank, ECB. In some cases, participation is limited because Denmark does not participate in stage three of Economic and Monetary Union (EMU) – which means that it has not introduced the euro.

## The European Central Bank, ECB

The ECB is located in Frankfurt, Germany, and is a joint central bank for the 15 countries that have adopted the euro. The national central banks of the euro area member states work closely with the ECB. Together they make up the Eurosystem, which conducts the single monetary policy of the euro area.

The objective of the ECB's monetary policy is to maintain price stability in the euro area. This has been defined as annual inflation close to, but below 2 per cent over the medium term. Via its monetary policy, the ECB can also support the general economic policies of the euro area member states, e.g. to promote high growth and employment, provided that the objective of low inflation is not jeopardised.

The three decision-making bodies of the ECB are the Executive Board, the General Council and the Governing Council. The latter makes decisions concerning the single monetary policy of the euro area member states, including interest rates. The top executive of the ECB – its President –

is Jean-Claude Trichet from France.

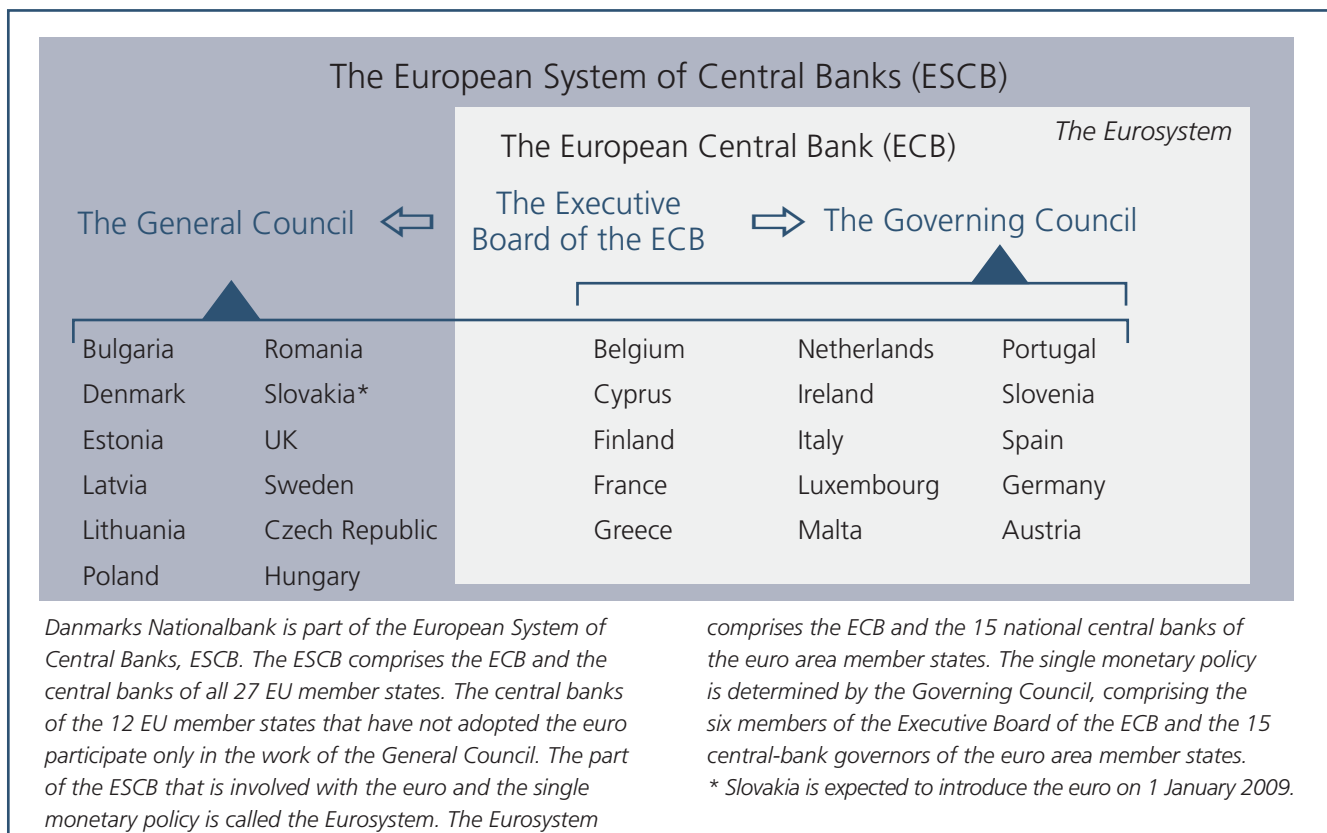
## Cooperation with the ECB

Since Denmark has chosen not to adopt the euro, Danmarks Nationalbank does not participate in the meetings of the Governing Council. Danmarks Nationalbank does participate in the meetings of the General Council, whose members are the centralbank governors of all EU member states, plus the President and Vice-President of the ECB. Among other things, the General Council discusses the economic situation and monitors the Exchange Rate Mechanism, ERM II. Danmarks Nationalbank also participates in various ECB committees to the extent that EU central banks outside the euro area have access.

## Cooperation with the International Monetary Fund

The International Monetary Fund, IMF, which is located in Washington, aims to promote trade and economic growth. It does so by advising countries on economic matters and by providing loans to countries with balance-of-payments problems.

Danmarks Nationalbank determines Denmark's viewpoints on IMF issues in cooperation with the Ministry of Finance and the Ministry of Foreign Affairs. The Chairman of the Board of Governors of Danmarks Nationalbank represents Denmark on the Board of Governors, the supreme decision-making body of the IMF.



# First main objective: Stable prices

Danmarks Nationalbank's first main objective is to maintain stable prices, i.e. low inflation. This is done by pursuing a fixed-exchange-rate policy against the euro.

A fixed-exchange-rate policy against the euro implies a close link between inflation in the euro area and in Denmark. One of the reasons for pursuing this policy is that Denmark is a small, open economy with large imports of goods from the euro area member states. Since the ECB's interest rates are aimed at keeping inflation low in the euro area member states, a basis is created for low inflation in Denmark too.

### Stable prices are important to the economy

Stable development in prices in Denmark helps to sustain confidence and trust in the economy and better utilisation of resources. In a market economy such as Denmark's,

households and companies make consumption, savings and investment decisions on the basis of the prices of different goods and services, and how these prices develop in relation to each other.

Stable prices are important for several reasons:

- ◆ high inflation tends to blur prices, making it difficult for companies and consumers to take decisions. The wrong decisions may lead to a waste of resources;
- ◆ high inflation results in random redistribution of wealth, which does not reflect differences in work performance and skills.



*Danmarks Nationalbank keeps the krone stable against the euro in order to maintain stable prices in Denmark. This means that interest rates must neither be too high nor too low compared with the level in the euro area.*

### ECONOMIC POLICY – DISTRIBUTION OF RESPONSIBILITIES

Economic policy is based on a clear distribution of responsibilities between Danmarks Nationalbank and the Danish government:

- ◆ The Board of Governors of Danmarks Nationalbank is responsible for the formulation and ongoing adjustment of monetary policy. This means that Danmarks Nationalbank can raise or cut interest rates as it finds necessary.
- ◆ The foreign-exchange policy is laid down by the government in consultation with Danmarks Nationalbank. Danmarks Nationalbank handles the day-to-day management of foreign-exchange policy, including e.g. intervention in the foreign-exchange markets.
- ◆ The government is responsible for all other economic policy, including fiscal policy.

# Inflation

Inflation means that the general price level is rising. In other words, the price of many goods, taken as one, is going up. Even though inflation prevails, the price of some goods may still fall. Inflation is an expression of price increases for comparable goods; higher prices due to improved quality is not inflation.

How high inflation can be before it creates problems, is something that economists do not quite agree about. In currency areas with inflation targets – such as the euro area, the UK and Sweden – the target for acceptable inflation is around 2 per cent over a period of 1-2 years.

What matters is to keep inflation at a stable, low level. This allows consumers and companies to consider the price of an article and see whether it has gone up or down. If inflation rises to a high level, prices become less transparent because the general perception will be that “everything goes up”.

If inflation is high, people may expect that prices will continue to rise, which could become a self-fulfilling prophecy. Unless inflation is curbed, this could trigger a price-wage spiral, whereby rising prices push up wages, and higher wage costs push up prices.

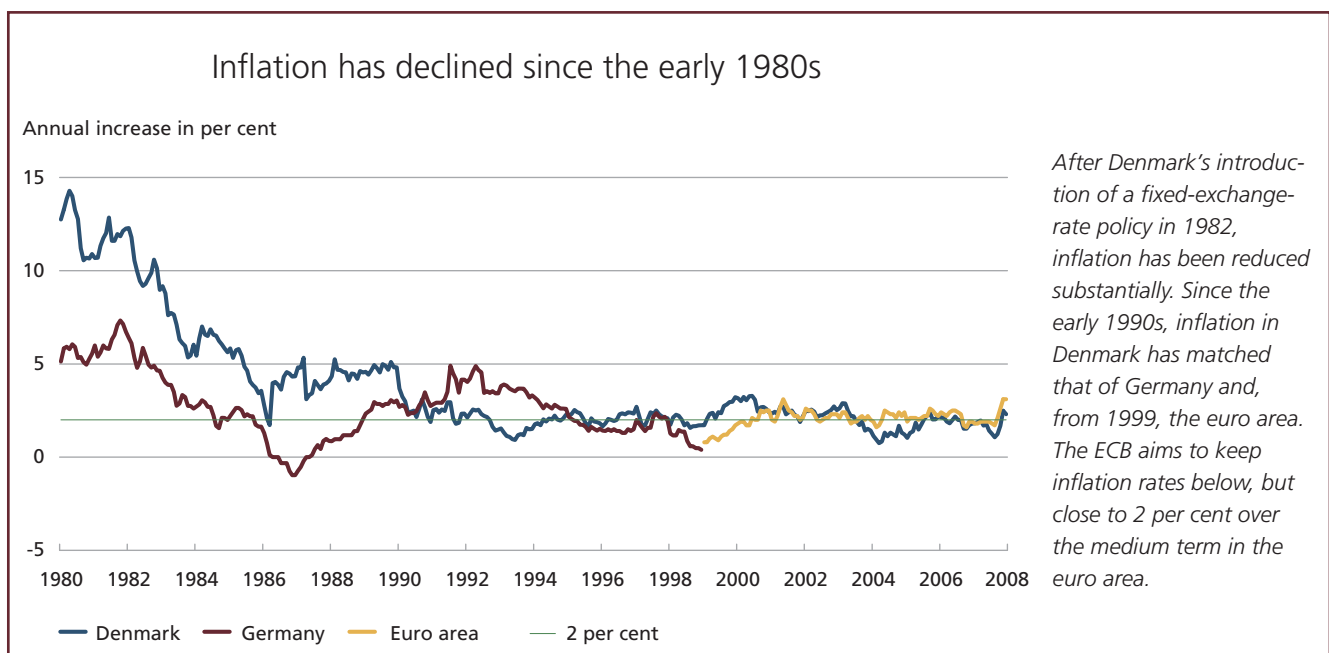
## Calculating inflation

The most frequently used measure of inflation in Denmark is the consumer-price index from Statistics Denmark. Once a month, Statistics Denmark collects data about the prices of a wide range of goods for private consumption. These

prices are compared with the prices of the same goods one year earlier, and the change is taken as an expression of the overall increase in prices – inflation. Since the early 1990s, inflation in Denmark has matched that of Germany and the euro area.



*In the 1920s, Germany experienced “hyper inflation”, leading to the collapse of its economy. Prices rose so fast that 1 US dollar eventually cost more than 4 trillion Reichsmark! In the end, the German currency was useless as a means of payment.*



# A fixed exchange rate to keep inflation low

Denmark conducts a fixed-exchange-rate policy against the euro. Consequently, monetary and foreign-exchange policy is aimed at keeping the krone stable against the euro. Danmarks Nationalbank is responsible for monetary policy in Denmark and implements foreign-exchange policy in practice.

The formal framework for the fixed-exchange-rate policy is the European Exchange Rate Mechanism (ERM II). Denmark participates at a central rate of 7.46038 kroner per euro and a fluctuation band of +/- 2.25 per cent. In other words, the exchange rate may fluctuate between 7.29252 and 7.62824 kroner per euro.

## The fixed-exchange-rate policy

The exchange rate of the krone is managed via Danmarks Nationalbank's monetary-policy interest rates and by intervening in the foreign-exchange market. In the short term, Danmarks Nationalbank can keep the krone stable around the central rate by buying and selling foreign exchange in the market. In addition, it can raise or cut its monetary-policy interest rates in order to influence the Krone rate.

Danmarks Nationalbank's interest rates are solely used to support the fixed-exchange-rate policy. When the ECB changes its interest rates to keep inflation below, but close to 2 per cent in the euro area, Danmarks Nationalbank typically follows suit. Other considerations than the exchange rate – such as the economic situation or housing prices – are not taken into account. If the fixed-exchange-rate policy is to succeed, it is essential that the outside world

## Introduction of the fixed-exchange-rate policy

1982

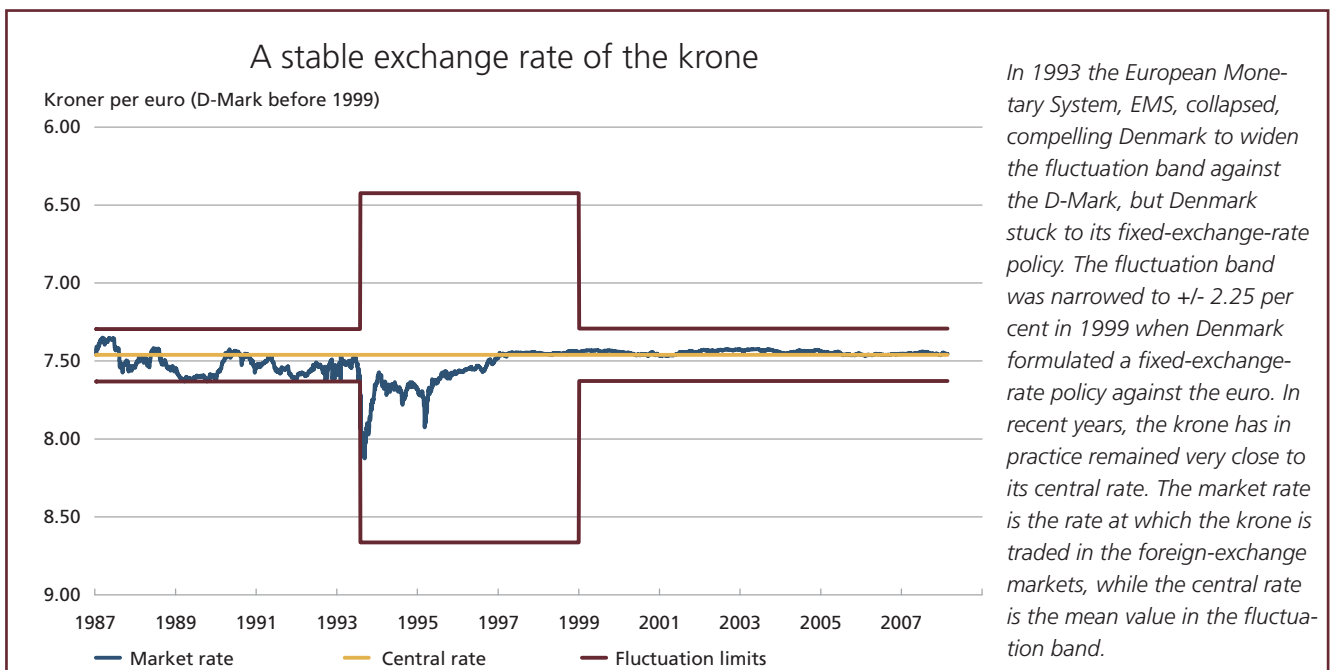
After some years with frequent krone devaluations, the new government introduced a fixed-exchange-rate policy within the European Exchange-Rate Mechanism (ERM). This policy has been maintained since then – first against the D-Mark and from 1999 against the euro.

trusts Danmarks Nationalbank's ability and willingness to pursue the chosen strategy.

Consequently, it is necessary for policymakers in Denmark to aim for a rate of price and wage development in line with that of the euro area member states.

### More information

Danmarks Nationalbank's *Monetary Review* outlines economic trends in Denmark and abroad. It also contains special chapters with analyses of economic and financial topics.



# The foreign-exchange reserve

The foreign-exchange reserve enables Danmarks Nationalbank to buy and sell foreign exchange in order to keep the krone stable. The foreign-exchange reserve comprises bonds and deposits with foreign banks, plus the gold stock.

## The day-to-day krone rate

Even with the fixed-exchange-rate policy against the euro, the krone fluctuates slightly from day to day. The reason is that kroner and euro are traded in the foreign-exchange markets every day.

In most cases, market participants trade in the expectation that the Danish krone will remain stable around its central rate, but sometimes its fluctuations become stronger. In such situations, Danmarks Nationalbank can influence the exchange rate by buying or selling foreign exchange against kroner in the market. This is known as intervention and occurs when it is necessary to support or weaken the exchange rate.

## When Danmarks Nationalbank intervenes

Danmarks Nationalbank intervenes by buying or selling foreign exchange to influence the krone rate. When Danmarks Nationalbank sells kroner (and buys foreign exchange), the foreign-exchange reserve grows. The supply of kroner increases, and the exchange rate tends to fall. In contrast, when Danmarks Nationalbank buys kroner

## Danish euro referendum

2000

On 28 September 2000 a referendum was held on Denmark's adoption of the euro. The proposal was rejected by 53.2 per cent, while 46.8 per cent voted in favour. Consequently Denmark has not adopted the euro, but the krone is still closely linked to the euro via the Exchange Rate Mechanism, ERM II.

(and sells foreign exchange), the krone strengthens. Other factors than intervention also affect the foreign-exchange reserve, e.g. if the central government raises or repays foreign loans.

Under the ERM II central-bank agreement from 1999, the ECB will intervene to support the Danish krone if it cannot stay within the agreed fluctuation band of  $\pm 2.25$  per cent around the central rate. So far this has not been necessary.

## WHAT IS THE FOREIGN-EXCHANGE MARKET?

In the foreign-exchange market, dealers trade one currency against another. The foreign-exchange dealers are the large banks. The exchange rate of a currency is determined by supply and demand. The foreign-exchange dealers trade for their own account or on behalf of clients, who may be private investors buying and selling securities, companies that need foreign exchange to pay for imported goods, or companies receiving foreign exchange for goods sold abroad. If more people want to buy than to sell a currency, the exchange rate strengthens, and vice versa.



The European Central Bank (ECB) is domiciled in Frankfurt, Germany. Under the ERM II agreement, the ECB can intervene to support the Danish krone.

# Monetary-policy interest rates

Danmarks Nationalbank conducts monetary policy by setting the monetary-policy interest rates, which are the discount rate, the current-account rate, the lending rate and the interest rate on certificates of deposit. Danmarks Nationalbank's interest rates guide the short-term interest rates in the money market – the market for exchange of liquidity between banks – as well as the deposit and lending rates that banks offer their customers.

## Mirroring the ECB's interest rates

The sole aim of Danmarks Nationalbank's interest-rate changes is to support the fixed-exchange-rate policy. When the foreign-exchange market is calm, Danmarks Nationalbank usually changes its interest rates when the ECB changes its key interest rate (the minimum bid rate).

In the event of large spreads between interest rates in Denmark and the euro area, investors might find it attractive to raise loans in one currency and invest in the other currency, provided that exchange rates are expected to remain stable. Higher interest rates in Denmark would increase the demand for kroner, thereby strengthening the krone. Lower interest rates would make kroner less attractive for investors, which would weaken the krone. This is why Danmarks Nationalbank mirrors the interest rates of the ECB closely.

## Unilateral interest-rate adjustments

In some cases, Danmarks Nationalbank changes its interest rates although the ECB does not, for example in a situation with upward or downward pressure on the krone after a prolonged inflow or outflow of foreign exchange.



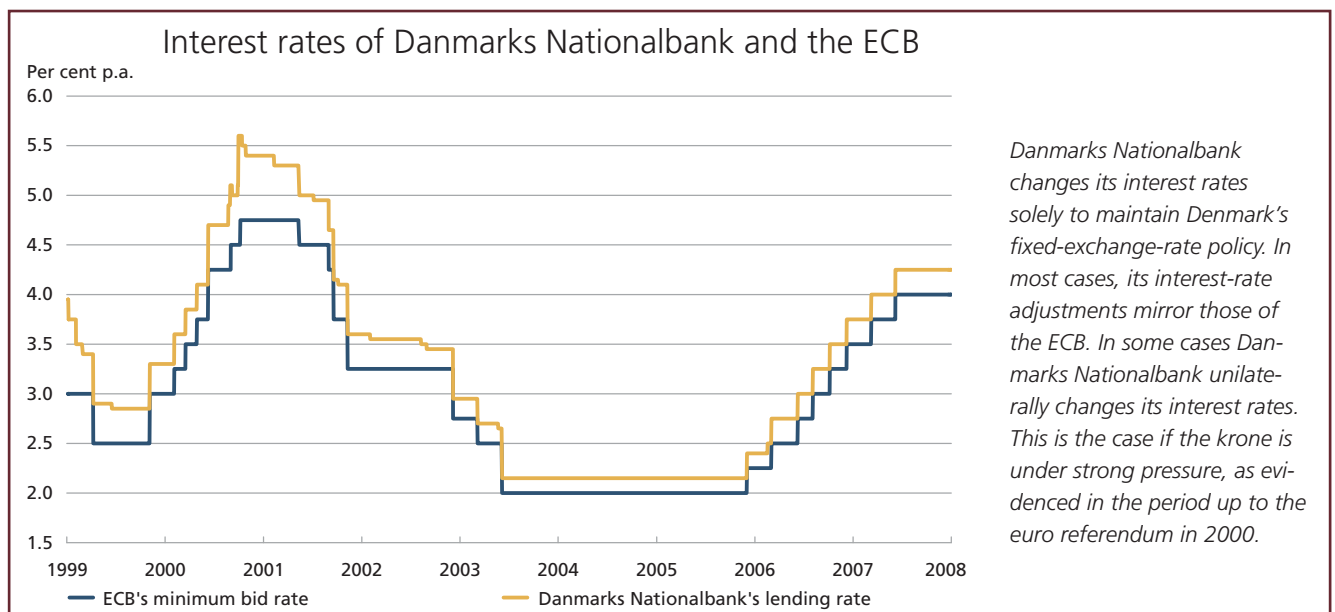
*Keeping the krone stable against the euro is one of Danmarks Nationalbank's tasks. The Danish foreign-exchange market is not located in one place, but is a virtual electronic market in which participants communicate by telephone and via PC.*

In any case, Danmarks Nationalbank first tries to support the krone by intervening in the foreign-exchange markets. If this does not bring the krone closer to its central rate, a unilateral interest-rate adjustment is an option.

If the krone is weak, Danmarks Nationalbank will raise its interest rates; this will stimulate demand for kroner. In contrast, Danmarks Nationalbank will cut interest rates if the krone is too strong so that the Danish krone becomes less attractive for investors.

### ▶ More information

The publication *Monetary Policy in Denmark* provides a comprehensive description of Danmarks Nationalbank's monetary and foreign-exchange policy.



*Danmarks Nationalbank changes its interest rates solely to maintain Denmark's fixed-exchange-rate policy. In most cases, its interest-rate adjustments mirror those of the ECB. In some cases Danmarks Nationalbank unilaterally changes its interest rates. This is the case if the krone is under strong pressure, as evidenced in the period up to the euro referendum in 2000.*



# Danmarks Nationalbank is banker to the banks

In practice, Danmarks Nationalbank conducts monetary policy via Danish banks and mortgage-credit institutes, also known as monetary-policy counterparties. Danmarks Nationalbank acts as banker to the monetary-policy counterparties and does not offer banking services to private customers.

## The banks can make deposits at Danmarks Nationalbank

When a bank or mortgage-credit institute has been licensed by the Danish Financial Supervisory Authority, it can open a current account at Danmarks Nationalbank. At the beginning of 2008, Danmarks Nationalbank had 115 current-account holders. The money deposited in current accounts can be withdrawn without notice and used to settle payments. For example, banks exchange payments for trade in securities or repayment of loans. Current accounts are also used for payments to Danmarks Nationalbank or to the central government.

For each bank or mortgage-credit institute, a maximum limit is set for the balance of the current account at the end of the day. The purpose is to prevent the build-up of large current-account deposits that may be used for speculation in changes in interest and exchange rates. No overdraft from day to day is allowed on current accounts.

## Current account and certificates of deposit

The deposits in the banks' and mortgage-credit institutes' current accounts accrue interest at the current-account rate, which is equivalent to the discount rate. Current-account interest is payable on funds deposited from the time when Danmarks Nationalbank closes in the afternoon until the next morning. In other words, it is a day-to-day interest rate. During the daytime on banking days, banks may withdraw money from or deposit money in their current accounts without notice.

If banks are willing to deposit money with Danmarks Nationalbank for a slightly longer period, they can buy

certificates of deposit. Such certificates have a maturity of seven days, so a seven-day interest rate is payable, which is slightly higher than the current-account rate. The amount payable for the certificates of deposit is deducted from the current-account balance.

## Banks can also borrow from Danmarks Nationalbank

Banks and mortgage-credit institutes can also borrow from Danmarks Nationalbank against bonds as collateral. Like the certificates of deposit, such loans run for seven days. The lending rate, is equivalent to the interest rate on certificates of deposit. Banks and mortgage-credit institutes can borrow the money they need at the rate of interest set by Danmarks Nationalbank, provided that they pledge bonds as collateral.

### OFFICIAL INTEREST RATES

Interest is the price of money, and there are many different interest rates. Danmarks Nationalbank operates with these monetary-policy interest rates:

- ◆ Discount rate: a signal rate indicating the overall level of Danmarks Nationalbank's monetary-policy interest rates.
- ◆ Current-account rate: the rate of interest on banks' current-account deposits at Danmarks Nationalbank.
- ◆ Lending rate: the rate of interest on monetary-policy lending against securities as collateral. Such loans normally run for seven days.
- ◆ Rate of interest on certificates of deposit: usually with a maturity of seven days. Equivalent to the lending rate.

## The pass-through of changes in interest rates



*Changes in Danmarks Nationalbank's interest rates are passed through the economy when banks and mortgage-credit institutes change their interest rates.*

## Second main objective: Safe payments

Danmarks Nationalbank's second main objective is to contribute to safe settlement of payments. This is done by issuing banknotes and coins with high protection against counterfeiting and ensuring that payments can be settled between banks. Safety in connection with payments is essential if people are to trust the monetary system.

### Safe cash payments

Production of banknotes and coins is probably the task that most people associate with Danmarks Nationalbank. Virtually everybody uses banknotes and coins on a daily basis and finds them valuable. First and foremost, Danmarks Nationalbank can support trust in its banknotes and coins by keeping inflation low. In addition, Danmarks Nationalbank aims to ensure a high level of security in the

design of its banknotes and coins. Danmarks Nationalbank must always seek to prevent counterfeiting, e.g. by introducing new security features on banknotes.

### Safe electronic payments

Besides promoting safe cash payments, Danmarks Nationalbank must also promote safe and efficient exchange of payments between banks. Most banks hold an account at Danmarks Nationalbank and these accounts are used for large payments between the banks. In that connection, Danmarks Nationalbank makes payment systems available for settlement of large payments between banks.



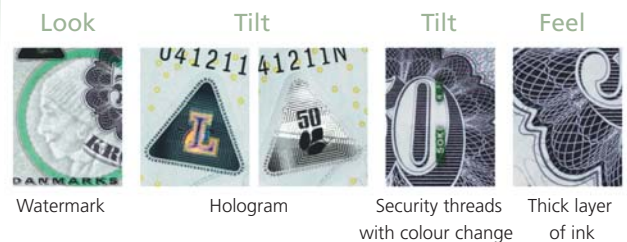
Technological advances mean that counterfeiters constantly gain access to improved counterfeiting tools. Consequently, Danmarks Nationalbank has decided to launch a new banknote series with new security features. The chosen motifs are Danish bridges and landscapes. The first banknote in the series is expected to be issued in 2009 and the last one in 2012. The pictures above show the preliminary version of the new 50-kroner banknote. Since 1949, Danmarks Nationalbank has also printed Faroese banknotes. A banknote series for Greenland is underway.

### More information

The folder *Use of banknotes and coins as illustrations* describes the rules that must be observed when reproducing banknotes and coins, e.g. in advertisements.

### Genuine or counterfeit?

Check whether your banknote is genuine



[www.nationalbanken.dk](http://www.nationalbanken.dk)

In 2007, 501 counterfeit banknotes were found out of a total circulation of 161 million banknotes. One of the reasons why the number is so low could be that Danmarks Nationalbank has upgraded its banknotes by introducing holograms and fluorescent colours. The penalty for counterfeiting is a fine or imprisonment for up to 12 years.

# Production of banknotes and coins

Denmark's banknotes are printed in the Danmarks Nationalbank building in Copenhagen under strict security procedures. A single printing press is used to print all Danish banknotes in circulation.

## Quality assurance of banknotes

After printing, checks and quality controls are performed at the Banknote Printing Works. The banknotes must comply with all quality requirements – for example, the colours must be right and the security thread and watermark correctly placed. Danmarks Nationalbank adds new security features to make the banknotes difficult to counterfeit or copy. Finally, Danmarks Nationalbank checks the quality of banknotes that are returned from circulation. If they are not suitable for recirculation, they are shredded and replaced.

## Banknote production to meet demand

Production of banknotes is adjusted according to demand so that the circulation is always adequate. For example, experience shows that demand soars in the month before Christmas. Production takes into account the differences in the "lifespan" of the various notes. A 50-krone banknote typically lasts for only 1½ years, while an average 1000-krone banknote is in circulation for at least 5 years before it is replaced.

## Production of coins and medals

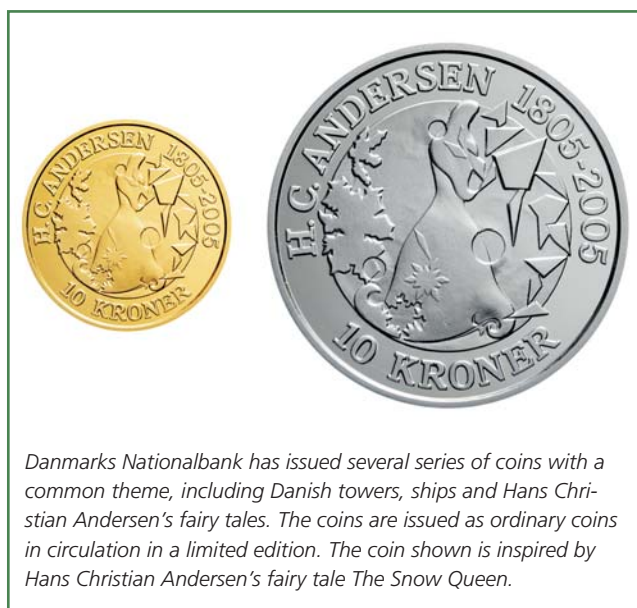
The key task of The Royal Mint in Brøndby is to manufacture coins for daily circulation. Usually the coins do not

change from one year to another, except for the indication of the year of manufacture. It is a minting tradition in Denmark and elsewhere to include the year on the coins. This is not the case for banknotes, where the year is stated only indirectly.



A minting machine at The Royal Mint can mint around 700 coins per minute. This machine and two others mint all the coins in circulation in Denmark. The coins are minted with a force of 35 to 90 tons, depending on size and thickness.

To supplement the ordinary coins in circulation, The Royal Mint in 2002 began to issue thematic coins with special motifs that change from coin to coin. These coins are 10-krone or 20-krone coins distributed via the banks as ordinary coins in circulation, but in limited editions. Since 2005, special collector's editions of some of the thematic coins have been minted in silver or gold. They are sold at a premium in relation to their nominal value, primarily due to high production costs. In addition, The Royal Mint manufactures various medals for the Danish Royal Family, the armed forces, the police and the universities.



Danmarks Nationalbank has issued several series of coins with a common theme, including Danish towers, ships and Hans Christian Andersen's fairy tales. The coins are issued as ordinary coins in circulation in a limited edition. The coin shown is inspired by Hans Christian Andersen's fairy tale *The Snow Queen*.

## ▶ More information

The folder *The Coins and Banknotes of Denmark* contains more details about banknote and coin production in Denmark. It also describes the security features of the present banknote series, e.g. the hologram and the fluorescent colours. For further information about coins and thematic coins, see the website of The Royal Mint, [www.royalmint.dk](http://www.royalmint.dk).

# The history of money at a glance

Through the ages people have always needed to give something in return for goods. Before money was invented, it was customary to exchange goods, e.g. domestic animals, agricultural produce, crafted products, etc. Later, gold and silver coins were used as means of payment.

Initially, banknotes were simply receipts for deposit of gold or silver in a bank. Until fairly recent times, issuers of banknotes guaranteed that they could be exchanged for gold or silver. In many cases the guarantee proved to be worth less than the paper it was printed on. Often the issuer could not resist the temptation to issue more banknotes than there was backing for in precious metals. The result was inflation and lack of trust in the money. This has changed, and now the volume of cash is regulated according to the demand from banks and citizens.

### The value of money is based on trust

Today, the value of money is based on trust among citizens and in society. When we buy and sell goods, we know from experience that cash is legal tender. In other words, we trust that money can be used for payments. Banknotes

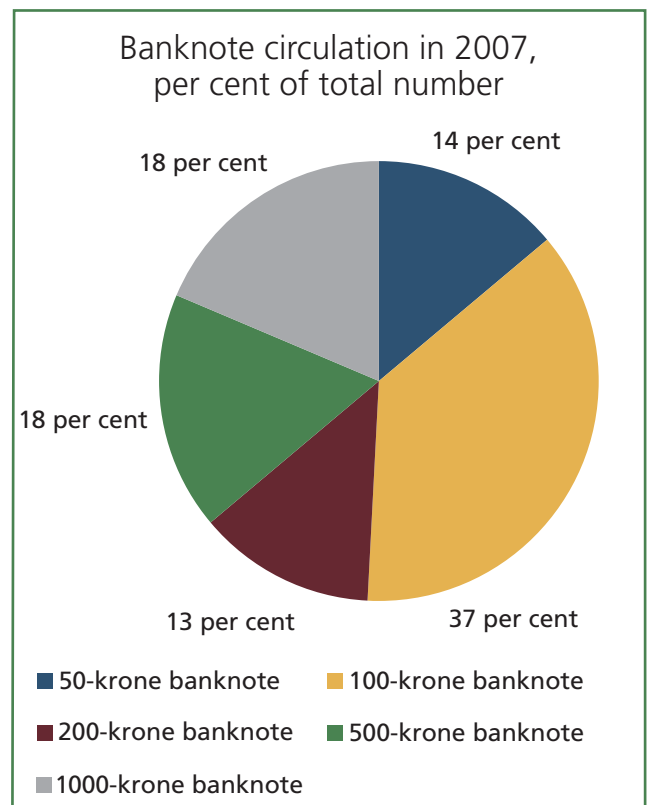
and coins cost less to produce than their denominations. The cost of producing a banknote is approximately 1 krone, while a coin costs 0.25-0.50 krone to mint.

### Electronic payments are gaining ground

As with cash, it is essential that people have faith in the validity of electronic transfers. This is testified by the popularity of the Dankort debit card. Since its introduction, the volume of electronic payments has been steadily rising. At the same time, the circulation of banknotes has also increased. One reason is that the economy has been growing and private consumption has also grown, which increases the number of transactions. In addition, banknotes are often used as savings.



When you use your Dankort at the supermarket, the supermarket's bank obtains a claim on your bank. Such claims are settled via a payment system called the Sumclearing, which is owned by the Danish Bankers Association and operated by PBS. The Sumclearing calculates the totals that the individual banks must pay to or receive from each other. Once every night the payments are settled via the banks' accounts at Danmarks Nationalbank. The money is then withdrawn from your bank account and deposited to the supermarket's bank account.





# From sketch to printed banknote



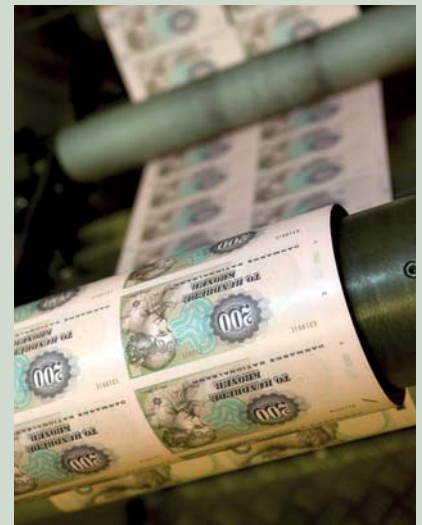
*Graphical design takes place at Denmark's National-bank's Banknote Printing Works in cooperation with external artists regarding the motifs.*



*Intaglio is an old printing technique which is still used for banknotes as it enables a wealth of detail.*



*Banknotes are printed on paper made from cotton fibres. Intaglio is the printing technique used for the main motif on the face of the banknote.*



*The banknotes are printed on large rolls of paper in a rotary press. This means that the face and reverse of the banknotes are printed in one go.*



*During the actual production process, the quality of the banknotes is checked on the basis of the very high standards set for Danish banknotes.*



*The cut banknotes are ready for quality assurance, packing in boxes and transport to the banks' decentralised cash centres.*

# Putting cash into circulation

In order to make a payment in cash, both the buyer and the seller must have access to sufficient banknotes and coins. The buyer must be able to pay a certain amount, and the seller must be able to give change. Danmarks Nationalbank's task is to ensure that the volume of cash in circulation is adequate.

Today cash is disbursed in many different ways. You can obtain cash from your bank, from cash dispensers or when shopping. Ultimately the cash always comes from Danmarks Nationalbank.

### Money is only of value when in circulation

Danmarks Nationalbank puts cash into circulation via the banks. When a banknote has been printed, checked and packed, it is stored until needed. The moment it leaves Danmarks Nationalbank it becomes part of the circulation of banknotes. A coin is not in circulation until it leaves The Royal Mint.

### Decentralised cash centre

To make it as easy and safe as possible for banks to obtain or return cash, there are a number of decentralised cash centre throughout Denmark. They are operated by the banks and are used to supply local banks with cash or to exchange cash with Danmarks Nationalbank.

### How banks receive cash

If a bank needs cash, it exchanges an amount in an account at Danmarks Nationalbank for banknotes and coins via a decentralised cash centre. Likewise, when a bank finds that it holds more cash than its customers need, it can deposit the excess cash at Danmarks Nationalbank via a cash centre.

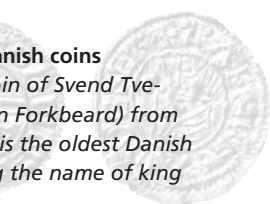
It is an advantage for banks not to hold too many banknotes and coins – because they are not interest-bearing, and because space and security requirements must also be taken into account.

Worn banknotes are taken out of circulation and returned to Danmarks Nationalbank, where they are tallied and checked for authenticity before they are shredded and destroyed.

## Timeline for payment systems

### 995: First Danish coins

The silver coin of Svend Tveskæg (Sweyn Forkbeard) from around 995 is the oldest Danish coin bearing the name of king and country.



### 1713: First Danish banknotes

Banknotes first became part of the Danish money supply in the years 1713-28. Danes did not trust this paper money and the banknotes were withdrawn again.



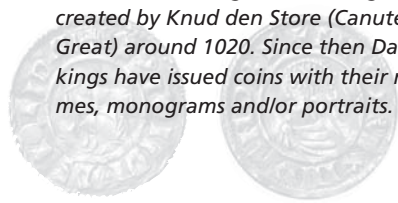
### 1875: From rigsdaler to kroner

The unit of coinage was changed from rigsdaler to kroner, and 1 rigsdaler was exchanged for 2 kroner. The transition was an element of the introduction of a Scandinavian Currency Union.



### 1030: The first Danish coinage

The first actual organised coinage was created by Knud den Store (Canute the Great) around 1020. Since then Danish kings have issued coins with their names, monograms and/or portraits.



### 1736: The Kurant Bank – Denmark's first bank

Denmark's first bank – the Kurant Bank – held the sole right to issue banknotes, which it was obliged to exchange for silver coins at any time. Owing to surplus issue of banknotes, the exchangeability of the Kurant banknotes for silver was abolished in 1757.



# Payments between banks

Danmarks Nationalbank plays a key role in connection with electronic payments between banks, which mostly take place via accounts at Danmarks Nationalbank.

Danmarks Nationalbank makes a payment system called Kronos available to the banks. For the banks Kronos is a kind of "home-banking system" since it is used to settle payments in Danish kroner between banks. It is essential for the banks that payments via Kronos are safe and efficient.

## Banks' claims on each other

Banks often need to exchange payments. For example, if a customer pays by Dankort at the local supermarket, and the supermarket and customer have different banks, one bank obtains a claim on the other. Claims also arise in connection with direct debit or payroll transfers – or when two banks for instance trade securities with each other.

All such payments from one bank to another are ultimately settled by transfer of funds between their respective accounts at Danmarks Nationalbank. The accounts accrue interest on a day-to-day basis.

## Sufficient liquidity


The settlement of payments between banks takes place in Kronos. In this connection, an important task for Dan-

marks Nationalbank is to ensure that the financial system has sufficient liquidity. If this is not the case, payments cannot immediately be settled. Consequently, Danmarks Nationalbank offers banks intraday credit against collateral in order to ensure ongoing settlement of payments.

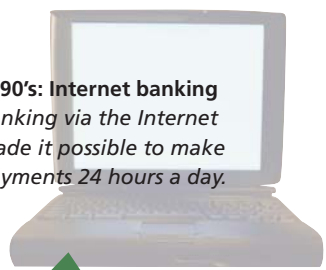
## Payments in euro

Banks can also make payments in euro, both within Denmark and to banks in other EU member states. From May 2008, all payments in euro take place via the trans-European payment system, TARGET2. The banks hold accounts in euro directly in TARGET2, but the legal owner of the euro-denominated accounts is Danmarks Nationalbank. TARGET2 is also a kind of "home-banking system" for banks, but for payments in euro.


**1971: Betalingservice (direct debit)**  
*Pengeinstitutternes Betalingsfor- midlingscenter – subsequently PBS (Payment Business Services) – introduces a computerised system for invoice collection all over Denmark.*




**1990's: Internet banking**  
*Banking via the Internet made it possible to make payments 24 hours a day.*



**1920: Post office giro gains ground**  
*In the 1920s, post office giro came into widespread use. Use of cheques really took off in the 1890s.*



**1983: Introduction of the Dankort**  
*The Dankort debit card was introduced in 1983. By the end of 2007, more than 3.9 million Dankort had been issued.*



# Third main objective: A stable financial system

Danmarks Nationalbank's third main objective is to contribute to the stability of the financial system. The financial system is a broad term, which includes:

- ◆ the financial institutions – banks and mortgage-credit institutes, insurance and pension companies
- ◆ the financial payment systems such as Kronos
- ◆ the financial markets such as the stock and bond markets

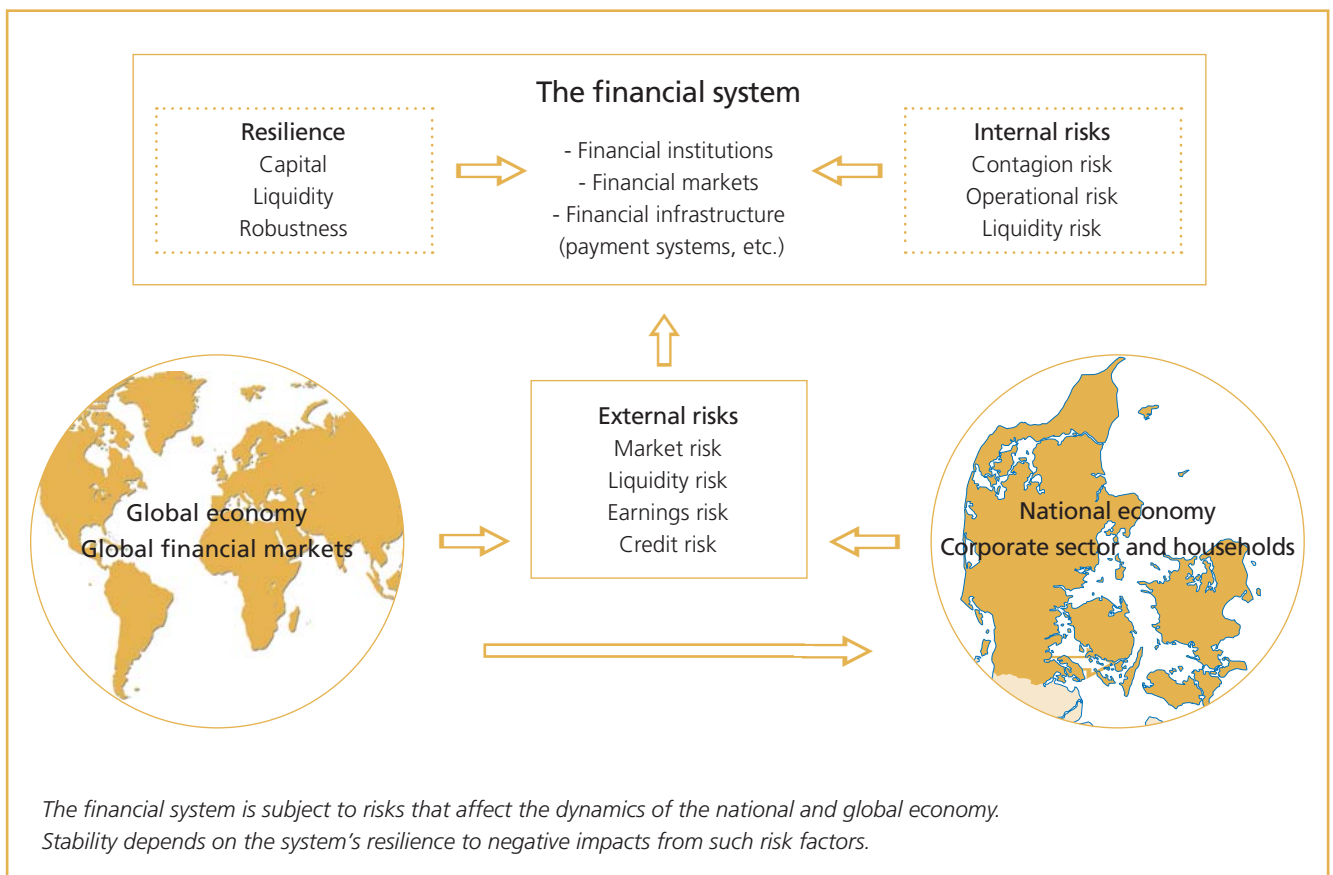
### Danmarks Nationalbank takes a holistic approach

A crisis in the financial system could have major economic consequences. Typically, not just a single participant – such as a bank – but large parts of the system will be affected. Financial stability exists when the financial system is

robust. An indication of a robust system is that any problems that may arise do not spread and prevent efficient exchange of capital and services. In other words, stability assessments focus on the interactions in the financial system.

### Conditions for a stable financial system

A stable financial system requires that several conditions are met. For example, the financial institutions must generally be robust so that they are able to withstand losses, and the design of payment systems should enable safe and efficient settlement of payments.



# Financial stability

Danmarks Nationalbank regularly analyses and assesses factors affecting financial stability. These include bank lending, business developments and the economic situation in general. The development in household finances and investment patterns in the financial markets are also monitored. The purpose of the analyses is to disclose any general threats to financial stability. Another objective is to make financial institutions aware of potential problems and address them before they evolve.

Danmarks Nationalbank maintains a dialogue with the banks about financial stability developments. The central banks of the Nordic region also share experience in this field.

## The financial institutions are accountable

Although Danmarks Nationalbank may point out potential risks to the financial sector, it is essentially the financial institutions themselves that are responsible for operating their business and steering clear of difficulties. The Danish Financial Supervisory Authority under the Ministry of Economic and Business Affairs supervises all financial institutions to ensure that they observe the requirements for e.g. solvency and liquidity. Danmarks Nationalbank's task is to assess the overall risk outlook, including systemic risk in the financial system, i.e. spill-over effects between different parts of the system.

## The Guarantee Fund for Depositors and Investors

To prevent ordinary depositors and investors from losing their money if a bank fails, the banks have financed a Guarantee Fund for Depositors and Investors. The Guarante



*Turmoil in the financial markets can create dramatic scenes in stock exchanges worldwide. In a matter of seconds, breaking economic news is transmitted across the globe. A short delay, and a favourable trade may have passed you by.*

tee Fund ensures that private individuals can recover up to 300,000 kroner in deposits, as well as securities worth up to 20,000 euro in the event that the bank is unable to return the securities held in custody. In addition, the Guarantee Fund covers certain special deposits in full, such as children's savings accounts and pension accounts. The specific provisions in this respect are laid down by the Guarantee Fund.

### More information

The annual publication *Financial stability provides analyses and assessments by Danmarks Nationalbank of potential threats to financial stability.*

### DANMARKS NATIONALBANKS' ROLE IN CONNECTION WITH THE BANK CRISES

Danmarks Nationalbank's role in connection with bank crises is not clearly defined. It depends on a concrete assessment of the situation and the – direct or indirect – consequences for the Danish financial system and the Danish economy. Danmarks Nationalbank has from time to time been involved in government measures to bail out banks. In some cases it has come to the rescue in cooperation with commercial banks, e.g. by issuing guarantees to creditors.

## Oversight of payment systems

Safe and efficient settlement of payments is a cornerstone of financial stability. Danmarks Nationalbank therefore oversees important electronic payment systems. This does not mean that Danmarks Nationalbank looks over your shoulder when you make payments at the supermarket or via your PC at home. Oversight takes place at an overall level, by assessing particularly important payment systems in relation to international standards. Danmarks Nationalbank's oversight of the systems is based on the Danish Securities Trading Act.

### Three core payment and settlement systems

In a modern economy, the settlement of payments, securities, etc. is concentrated on a few large systems that settle vast amounts every year. Danmarks Nationalbank oversees the three payment systems that are at the core of electronic payments in Denmark. These are:

- ◆ Danmarks Nationalbank's own payment system, Kronos, which is used for large, time-critical payments between banks with accounts at Danmarks Nationalbank.
- ◆ The Sumclearing, a retail payment system for clearing and settlement of retail payments such as Dankort transactions.
- ◆ The VP settlement system, which is the Danish system for settlement of securities transactions, securities lending and periodic payments (interest, repayments and dividend).

Of these three systems, Danmarks Nationalbank is responsible for operation of Kronos only. The other two systems are owned by the Danish Bankers Association and VP Securities Services, respectively. Danmarks Nationalbank ensures that operation and oversight of the systems are handled by separate functions. This applies to Kronos as well as the other two systems, which settle payments via accounts at Danmarks Nationalbank. In addition, Danmarks Nationalbank participates in the oversight of CLS (Continuous Linked Settlement), an international foreign-exchange settlement system.

Certain payments are not settled in these systems. They include transactions between customers of the same bank, which are settled within the relevant bank's own systems.

### International standards

Oversight by Danmarks Nationalbank focuses on the safety and efficiency of the systems, particularly with a view to limiting the negative effects of any system failures. Oversight takes place on the basis of international stan-

### Establishment of the Danish Securities Centre

1983

Denmark was one of the first countries to establish a paperless bond market and later a paperless stock market. The Danish Securities Centre was established, and paper-based securities trading was replaced by an electronic registration and settlement system. In 2000 the Danish Securities Centre was converted into a limited liability company, VP Securities Services, with Danmarks Nationalbank as one of its shareholders.

dards laying down the requirements that well-functioning systems should meet.

A system should minimise the following types of risk:

- ◆ Credit risk, i.e. the risk of financial loss if a counterparty fails to meet its obligations in connection with the settlement of payments, securities transactions, etc.
- ◆ Liquidity risk, i.e. the risk of incurring a loss because a payment is not received at the expected time.
- ◆ Legal risk, i.e. the risk of suffering a loss as a consequence of unforeseen interpretations of the contractual basis or legislation.
- ◆ Operational risk, i.e. the risk of loss resulting from human errors, system errors or external events such as terrorism.

The efficiency of the systems is assessed on the basis of the level of costs and usefulness to system participants.

### ▶ More information

*Payment Systems in Denmark* outlines the Danish payment systems. The publication describes Danmarks Nationalbank's role in relation to payment systems and illustrates the interaction between different payment flows.



# Management of central-government borrowing and debt

Under an agreement with the Ministry of Finance, Danmarks Nationalbank manages the Danish government's borrowing and debt.

## The central government's financing requirement

The objective is to cover the central government's financing requirement at the lowest possible cost, without taking too great risks. In this connection, Danmarks Nationalbank issues government bonds on behalf of the Danish government. The money paid by investors for the bonds is deposited to the central government's account, which is managed by Danmarks Nationalbank.

## The central government's account at Danmarks Nationalbank

When, for example, the central government makes block grants to the municipalities or repays a foreign loan, the central government's account at Danmarks Nationalbank is debited directly. In contrast, small payments by the central government, such as wages and salaries, child allowances and tax payments, go through the commercial banks. Citizens' payments of tax, etc. to the central government are also transferred by the banks to the central government's account at Danmarks Nationalbank. Deposits in the central government's account accrue interest at the discount rate.

The central government's account at Danmarks Nationalbank must never show a deficit. This has been agreed with the government and is also a requirement of the Treaty establishing the European Community.



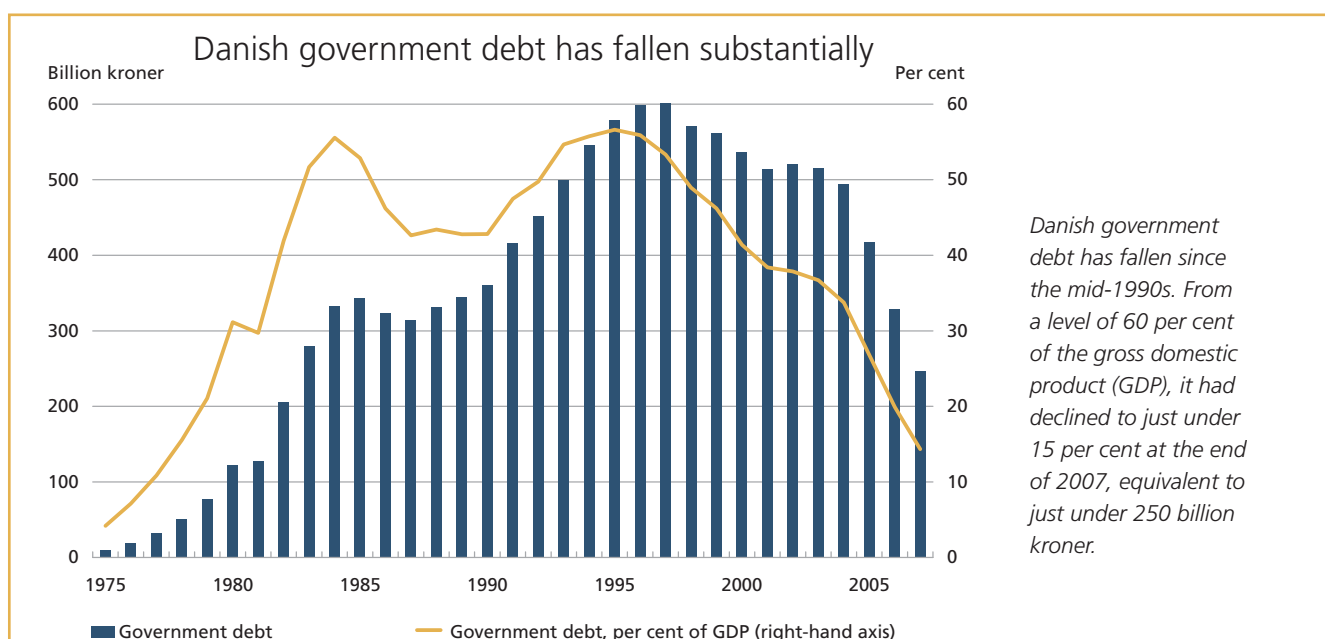
*The newspapers sometimes refer to the "government coffers". Previously, the state stored its wealth in large iron coffers. Today, the central government's funds are deposited in an account at Danmarks Nationalbank.*

## Government bonds as indicators

Danmarks Nationalbank covers the central government's financing requirement by issuing government bonds on behalf of the Danish government. Traditionally, government bonds are regarded as very safe assets, partly because the central government has the right to collect taxes. Consequently, government bonds are often used as an indicator when pricing other bonds. Therefore government bonds increase transparency in the financial markets.

### ▶ More information

The publication *Danish Government Borrowing and Debt* describes the development in Danish government debt and the principles for Danish government debt policy. See also [www.governmentdebt.dk](http://www.governmentdebt.dk).



# Statistics

Danmarks Nationalbank compiles statistics to illustrate different financial aspects. The data can be used for analysis of household investment patterns or the corporate sector's borrowing and financing conditions. The statistics also throw light on Denmark's external accounts, including direct investments by Danish and foreign companies. Finally, the statistics include a day-to-day element – developments in exchange and interest rates, etc.

The statistics are available to a wide range of users, but are mainly aimed at people whose work relates to the financial sector.

### Cooperation with other authorities

Danmarks Nationalbank has worked closely with Statistics Denmark in recent years. Danmarks Nationalbank's data can now also be found at the website [www.statistikbanken.dk](http://www.statistikbanken.dk), which is operated by Statistics Denmark.

Danmarks Nationalbank also works with the Danish Financial Supervisory Authority to coordinate statistical reporting by the financial sector. The aim is to reduce the administrative burden for the reporting companies.

### International guidelines

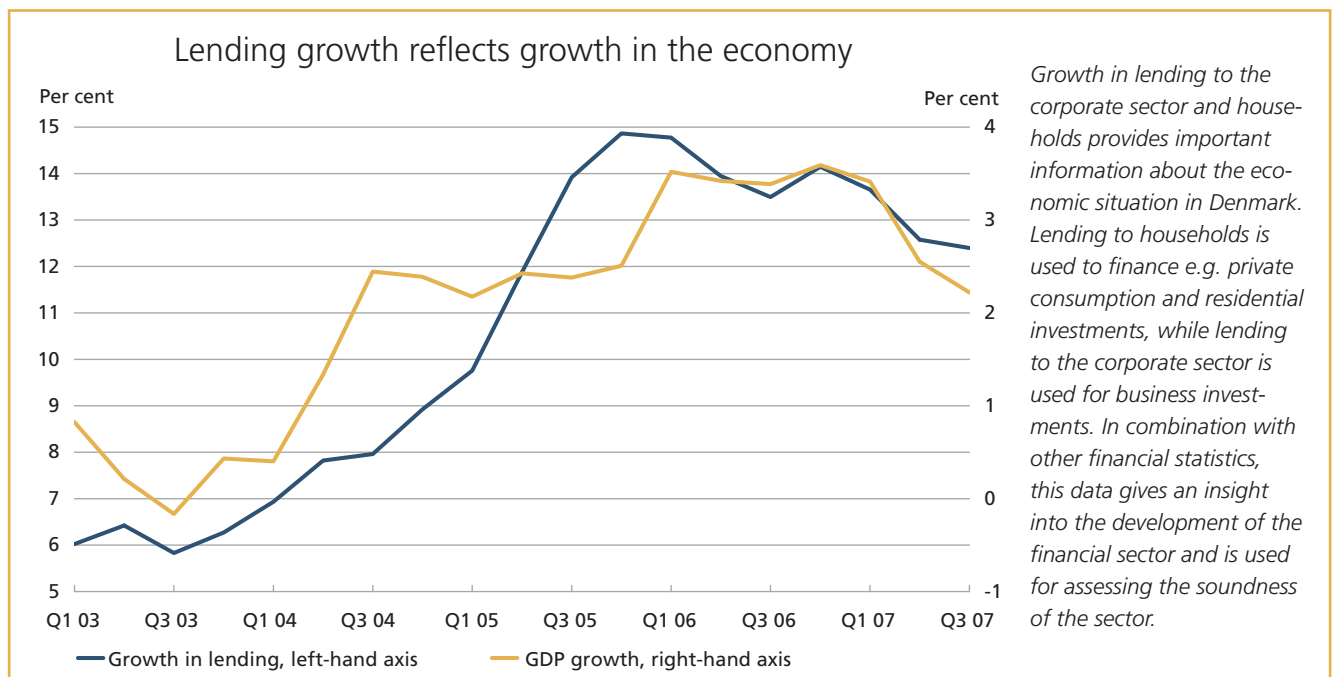
Since the late 1990s, statistical output has been influenced by EU initiatives to prepare guidelines for harmonised financial statistics. These guidelines are now fully implemented in Danish financial statistics so that they are comparable with statistics from other European countries.

### STATISTICS AT DANMARKS NATIONALBANK

The first Danish financial statistics date back to the forerunner of Danmarks Nationalbank, the Kurant Bank, which from 1736 compiled statistics of the issuance of Kurant banknotes in rigsdaler. In Danmarks Nationalbank's first years, statistical output was limited. Its annual report included an appendix of tables with statistics of the circulation of banknotes, as well as Danmarks Nationalbank's lending and receivables. After World War II, Danmarks Nationalbank collected balance-of-payments statistics for control of the foreign-exchange restrictions. Since the late 1990s the statistical output has grown in connection with the establishment of the ECB and the work to harmonise financial statistics in the EU.

### ▶ More information

Danmarks Nationalbank regularly publishes financial statistics. These statistics are available at [www.nationalbanken.dk](http://www.nationalbanken.dk), along with analyses of developments. The primary publication is the electronic publication *NYT*. Data can also be found in the data bank at [www.statistikbanken.dk](http://www.statistikbanken.dk).



## More information

It is important to Danmarks Nationalbank that the population at large, the political system and the financial markets are aware of the tasks and objectives of Danmarks Nationalbank. Clear external communication is therefore a priority for Danmarks Nationalbank.

### Danmarks Nationalbank online

Danmarks Nationalbank's website [www.nationalbanken.dk](http://www.nationalbanken.dk) is a key source of information. The website provides access to Danmarks Nationalbank's publications, articles, press releases, current data and market information, as well as information about the tasks of Danmarks Nationalbank. Via the website, you can subscribe to a news service or RSS feed with updates on new publications.

The Royal Mint's website, [www.royalmint.dk](http://www.royalmint.dk), contains information about Danish coins, including the current series, thematic coins, medals, etc. Via the website, you can subscribe to a newsletter with information about future coin events. You can also order collector's coins online.

### Publications

Danmarks Nationalbank provides information via a number of publications, including *Report and Accounts*, *Monetary Review*, *Financial stability*, *Danish Government Borrowing and Debt*, *Monetary Policy in Denmark*, *Payment Systems in Denmark* and *Financial Management at Danmarks Nationalbank*. Like all other information from Danmarks Nationalbank, these publications are free. They are available in both electronic and printed versions.

### Speeches and lectures

Speeches and lectures by the Governors are part of Danmarks Nationalbank's external communication, e.g. at annual meetings in the financial sector, as well as occasional events at Danmarks Nationalbank and elsewhere in Denmark. Talks are also given at Danmarks Nationalbank by a lecture team of young economists. The main target group is students in upper secondary school and at commercial colleges with some knowledge of economics.



Danmarks Nationalbank's lecture team gives talks to students in upper secondary school and at commercial colleges. See the contact details below.

### ▶ More information

For inquiries or to order printed publications, please contact Communications. To book the lecture team, go to [www.nationalbanken.dk](http://www.nationalbanken.dk).

Danmarks Nationalbank

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Danmarks Nationalbank's lobby is open to the public on weekdays between 9.00 am and 4.00 pm.



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