

MONETARY HISTORY OF DENMARK

1990-2005

DANMARKS NATIONALBANK 2010

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By

KIM ABILDGREN with an introductory
chapter by BODIL NYBOE ANDERSEN and
JENS THOMSEN

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October 2010

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Explanation of symbols:

- Magnitude nil

0 Less than one half of the unit employed

• Category not applicable

... Data not available

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Foreword

Working in collaboration with former Governor of Danmarks Nationalbank Bodil Nyboe Andersen and Governor Jens Thomsen, Kim Abildgren, Head of Division, has prepared this Monetary History of Denmark 1990-2005.

The authors have met regularly since the autumn of 2007 to discuss the topics and chapters of the book. In the autumn of 2009 and the spring of 2010 fruitful seminars were held with the participation of Jesper Berg, Anders Møller Christensen, Hugo Frey Jensen, Kai Aaen Hansen and Frank Nielsen, all of whom held key positions at Danmarks Nationalbank in the period 1990-2005. Furthermore, Torsten Gersfelt, Peter Birch Sørensen and Ole Zacchi have provided valuable input. Finally, a number of employees have made significant contributions by procuring material from archives and libraries or by checking the content of the book.

As indicated in the title, this volume of Monetary History of Denmark relates to the period 1990-2005, thereby supplementing earlier volumes, which cover the years up to 1990. For the sake of completeness, reflections on the years before 1990 have been included from time to time. Whenever possible, tables and charts include data for the years after 2005 to enhance their utility value. Other factual information for the period after 2005 has also been included in a few cases, but no analysis or detailed description of this period has been provided.

On behalf of the Committee of Directors and the Board of Directors of Danmarks Nationalbank I welcome this sixth volume in the Monetary History of Denmark series. I hope that this new volume will serve as part of the foundation for future assessments of developments in monetary and exchange-rate policy in the period 1990-2005.

Søren Bjerre-Nielsen

Chairman
of the Committee of Directors
and of the Board of Directors
of Danmarks Nationalbank

Introduction

Developments in the late 1980s have had a significant impact on the framework conditions for economic policy – especially monetary policy.

The "stability-oriented economic policy" of the 1990s was only possible because of the austerity measures introduced in the 1980s to bring the economy back on course and control domestic demand and the balance of payments.

Back in the early 1980s, the economy was characterised by high unemployment at around 10 per cent, double-digit inflation rates and a massive government budget deficit. As a result, long-term bond yields exceeded 20 per cent, and real interest rates were in the double-digit range.

Denmark's exchange-rate policy was based on the "currency snake" and from 1979 ERM with "fixed – but adjustable – exchange rates". But in reality Denmark took any opportunity to devalue the krone.

In the late 1970s, the serious Danish current-account problems were becoming an issue not only in Denmark, but also internationally. The outgoing Minister for Finance said on TV that he had seen the economic abyss looming. He defined this as a situation in which Denmark's economic policy was, directly or indirectly, dictated from abroad. The possibility of a national bankruptcy surfaced in the public debate, and government bond yields rose, but of course the competent authorities immediately ruled out that possibility.

In short, there was a strong awareness of the crisis, and concerns about Denmark's international reputation began to be a political theme. This crisis awareness paved the way for a number of economic reforms in the 1980s.

A key reform was the decision in 1982 to stop devaluing the krone. Denmark's Nationalbank was strongly in favour of this change, and with the formation of a new government in 1982 the opportunity arose to chart a new political course. This was a significant structural reform, and since then the fixed-exchange-rate policy has been a cornerstone of Denmark's economic policy.

In subsequent realignments within ERM, the value of the krone was maintained relative to the average, which meant minor devaluations vis-à-vis the D-mark. The last adjustment took place in 1987, resulting in the exchange rate against the D-mark that remained in place for the next

decade and was converted into the central rate between the krone and the euro at end-1998.

The transition to the fixed-exchange-rate policy in 1982 was seen as a very firm approach in view of Sweden's considerable devaluation at the same time. It was also followed up by fiscal tightening and suspension of wage indexation. This "package" helped to create positive expectations, and interest rates soon dropped significantly.

However, the fall in interest rates was so sharp that demand soared, and by the mid-1980s the current account showed an alarmingly large deficit.

Further fiscal tightening was required. The structural reforms implemented to curb demand by making borrowing less attractive were of major significance. The general public will undoubtedly remember the austerity measures known as the "potato diet", but the key measure was an extensive tax reform that significantly reduced the value of the tax deductibility of interest with effect from 1987.

The tax reform was a positive step towards stabilisation, but caused problems in relation to mortgage credit, and in the latter half of the 1980s both the housing market and the construction sector were hit by a crisis, reflected in enforced sales and bankruptcies. Developments in the 1980s would probably have been more stable if the tax reform had been implemented 2-3 years earlier.

The crisis amplified the consolidation trend in the financial sector that had characterised the 1980s, and during that decade Denmark's Nationalbank became involved in the efforts to find solutions for banks in financial distress.

Nevertheless, the economic policy of the 1980s is seen as an example of major structural reforms that were successful. This period laid the foundation for what has subsequently come to be known as "the stability-oriented economic policy". This policy had a strong impact on developments in the 1990s.

Framework conditions for Danish economic policy also changed materially in another area in the 1980s, as the last restrictions on capital movements between Denmark and abroad were lifted on 1 October 1988.

Capital movements had gradually been liberalised since the 1960s, and especially in the 1980s the EC pushed for complete abolition of restrictions. Denmark took a positive approach, provided that it was possible to retain the ban on non-residents' purchase of Danish summer cottages and the possibility of exercising tax control.

The liberalisation of capital movements meant that from the late 1980s Denmark was no longer able to isolate the Danish capital market

from the international market and thereby provide scope for some degree of independent interest-rate policy.

A third change that was to have a key impact on developments in the 1990s was the establishment of the Delors Committee in June 1988. The Committee's report described how economic and monetary union could be achieved in three stages. Stage 3 entailed setting up a common, independent central bank tasked with ensuring price stability. The central bank governors of all 12 EC member states were on the Delors Committee, and the report was unanimous. Over the next ten years, the central bank governors made significant contributions to realising the principles outlined in the report.

In 1990, Denmark's current account showed a surplus after more than 25 years with deficits and growing external debt. Consequently, the surplus was seen as both a real and a symbolic victory for the sustained economic recovery policy of the 1980s.

For Denmark's Nationalbank, this was the realisation of a long-standing ambition. Firstly, a current-account balance or surplus contributed strongly to boosting the credibility of the successful fixed-exchange-rate policy. Secondly, it was important to get away from a situation where interest payments on ever mounting foreign debts weighed heavily on the Danish economy.

In the first few years after the Delors Report, the foreign-exchange markets were fairly calm, and the start of the Intergovernmental conference in 1990 led to expectations that economic and monetary union would be implemented relatively fast.

Denmark gradually came to realise that the fixed-exchange-rate policy required so careful management of short-term interest rates that Denmark's Nationalbank was no longer able to conduct interest-rate policy with the domestic economic situation in mind. Interest rates in Denmark had to follow those of Germany with a spread that reflected the exchange-rate development.

Not all ERM member states found this conclusion as easy to draw as Denmark did. The dilemma posed by a wish for stable exchange rates, on the one hand, and the need to influence domestic activity, on the other, was key to the collapse of the fixed-exchange-rate system following a succession of currency crises in 1992 and 1993.

The unique situation created by Germany's reunification meant that Germany needed to pursue rather tight monetary policy. High interest rates did not match the cyclical position of the other European countries, but the Bundesbank maintained that its interest rates would be

governed by German, not European considerations. This gave market participants the impression that the exchange-rate mechanism was not functioning as it should, which led to speculative foreign-exchange transactions. In September 1992, the pound sterling made a dramatic exit from ERM after less than two years' membership, and this marked the start of a period of frequent currency crises. This was a huge loss of prestige for the UK, and market confidence in the ERM was seriously undermined.

Denmark's rejection of the Maastricht Treaty in June 1992 and the subsequent French referendum that produced a surprisingly narrow "yes" vote contributed to further unrest. Suddenly it was no longer a matter of course that economic and monetary union would steadily evolve on the basis of the existing central rates.

In most cases, crises relating to the Danish krone were triggered by events elsewhere, e.g. Sweden's and later Norway's abandonment of fixed exchange rates. But in February 1993 there was strong speculation against the Danish krone. It was brought on by the change of government, although the new government headed by the Social Democrats had firmly stated its intention to uphold the fixed-exchange-rate policy. Speculators tried to put this pledge to the test, perhaps recalling the previous Social Democratic tradition of frequent devaluation prior to 1982.

The government and Danmarks Nationalbank agreed to defend the krone rate with all means available, and the crisis in February 1993 became the most dramatic Danish currency crisis to date.

Danmarks Nationalbank raised the discount rate by two percentage points. In addition, the banks' normal access to liquidity from Danmarks Nationalbank was suspended, and krone liquidity was only provided at a maturity of 17 days and at 40 per cent interest. For speculators that had sold kroner for foreign exchange, it became very expensive to borrow kroner for delivery when the trade was to be effected. As part of the "psychological warfare" against the speculators, it was also essential that the central banks of the other core ERM member states plus Spain purchased kroner to support the exchange rate – and announced that they had done so. Soon afterwards, the Bundesbank lowered its interest rates by up to 0.5 percentage point.

The combination of the Danish authorities' clear refusal to devalue, support from the other central banks, a timely German interest-rate cut and the very high "penalty rate" on liquidity had the desired effect, and the exchange rate of the krone as well as the foreign-exchange reserve and the money-market interest rates stabilised in the subsequent period.

The summer of 1993 saw intermittent currency unrest, but the full-scale attack came in late July, and this time the entire ERM system was under attack by speculators.

A meeting was convened in Brussels over the weekend 31 July to 1 August. Denmark's stance was to preserve as much as possible of the existing system and not to change the central rate of the krone vis-à-vis the D-mark.

Basically, the crisis mainly reflected lack of confidence in the German-French relation within ERM. Despite several confidential meetings, these two member states had not succeeded in finding a common position on how to stem the crisis, as they had done on previous occasions. France did not want to be the member state that devalued or abandoned the system. And none of the smaller core member states could imagine a situation in which Germany left ERM; they all wanted to continue to peg their currencies to the D-mark. They were also of the opinion that the central rates were reasonable and should not be realigned. That they were right was reflected in the fact that these central rates were actually applied when France and the Benelux countries later joined the euro.

The negotiations were somewhat tangled, and many proposals were tabled. The aim was to establish a credible solution so as to remove the constant unrest that invited speculation.

A full transition to floating exchange rates was seen as being too drastic by most member states, so the discussion centred on a widening of the fluctuation band within a continued fixed-exchange-rate system. A key proposal was to widen the band to +/- 6 per cent, but a number of participants expressed concerns that this band would simply provide the markets with a new target for testing.

A proposal to continue the existing system with a smaller number of members was soon abandoned as no members wanted to be left out. So ultimately the issue always boiled down to whether Germany or France was to emerge as the country that "saved" the ERM.

After negotiations that lasted into the early hours of Monday, 2 August, a relatively speedy and surprising decision was reached, namely a – temporary – widening of the fluctuation band to +/- 15 per cent. This solution proved to be much more robust than most participants in the meeting had presumably imagined that Monday morning. Just as the meeting was drawing to an end, the Dutch delegation announced that it had concluded a separate agreement with Germany to maintain the existing band of +/- 2.25 per cent.

For Denmark, the overall agreement was not really satisfactory. However, it was utopian to think of concluding an agreement like the Dutch one, as the guilder had been exceptionally stable against the D-mark.

Not even Belgium/Luxembourg could obtain a special agreement with Germany.

So although Denmark had played by the rules and had learned to tackle episodes of currency speculation, this was of no avail when the whole system came under attack.

Both the Danish government and Danmarks Nationalbank expressed firm determination to stick to the fixed-exchange-rate policy on which Denmark's economic policy was based. The fluctuation band had been widened, and as such the krone had weakened, but the essential point was that the central rate remained unchanged, and future policies would be aimed at moving closer to the central rate.

On several occasions during the following years, Denmark tried to point out that the widening of the band was intended as a temporary measure and that the aim should be to narrow it again. However, this argument fell on fallow ground, as the other member states were satisfied with the functioning of the system and did not want to invite speculation by narrowing the band again.

Instead, Danmarks Nationalbank, supported by the Danish government, gradually sought to stabilise the krone with a view to *de facto* returning to the old, narrow band. This was achieved from mid-1995, following yet another currency crisis in the spring of the same year. From 1997 onwards, Danmarks Nationalbank stabilised the krone within a very narrow range around its central rate vis-à-vis the D-mark and subsequently the euro.

Viewed in retrospect the widening of the band must be said to have been necessary for exchange-rate cooperation in Europe, and in the next five years Denmark was given the necessary breathing space so that it could gradually return to the former narrow band. This gave Denmark a strong point of departure for negotiating exchange-rate cooperation vis-à-vis the euro when it was introduced on 1 January 1999.

A more general consequence of the +/- 15-per-cent band was that no intervention took place at the fluctuation margins, so no intervention credit was required. Intervention became much more of a national issue, thereby removing many of the multilateral characteristics of the system. As a result, the complex process of aligning the positions of the individual member states lost its importance. In other words: previously currency crises had been seen as a shared problem, from 1993 they became a matter for the individual member state.

As previously mentioned, Denmark's fixed-exchange-rate policy entailed that Danmarks Nationalbank managed monetary policy with a view to stabilising the exchange rate of the krone, while other economic pol-

icies, primarily fiscal policy, were to take domestic cyclical developments into account.

Like its predecessor, the government led by the Social Democrats that took office in 1993 declared itself to be in favour of a stability-oriented economic policy. But the government came in at a time when unemployment was very high, standing at around 12 per cent. Although exchange-rate considerations stood in the way of strong fiscal expansion, a certain degree of easing did take place in 1993. Temporary leave-of-absence schemes were introduced to reduce the workforce and thus unemployment.

The accommodative measures were supported by the expansion triggered by falling interest rates and extensive remortgaging. Legislative amendments facilitated this trend by expanding access to conversion of cash loans.

The political steps taken and the fall in interest rates contributed to stimulating the economy.

However, the many deficit years prior to 1990 had not been forgotten – either by the Danes in general or by politicians. And Danmarks Nationalbank took any opportunity to issue warnings about this risk. It was often illustrated by means of a chart (corresponding to Chart 1 in Appendix 1) showing the link between relative domestic demand and the current account of the balance of payments. The conclusion was that current-account considerations did not leave room for stronger growth in demand in Denmark than abroad – and thus there was no scope for expansionary fiscal policy.

This link became relevant in the late 1990s when the current account deteriorated notably, partly reflecting sharply rising public and private consumption. Danmarks Nationalbank warned the Danish government that it was necessary to tighten fiscal policy in order to bring the economy back on track. Indeed, the current account was the key argument for the measures introduced in the spring of 1998 with a view to curbing consumption, among them a reduction of the tax value of interest-rate deductibility. The measures were known as the "Whitsun package" and helped to ensure more stable developments over the next few years.

All the same, Denmark experienced currency unrest several times in 1998, but not because of the current account. In the spring, the underlying reasons were uncertainty up to the referendum on the Amsterdam Treaty and a major industrial conflict.

In August-September there were a number of reasons, notably Norway's decision to abandon its fixed-exchange-rate policy and the international currency unrest triggered by the Russian crisis and the failure of

the US hedge fund LTCM. Denmark was in a particularly vulnerable situation because, unlike most other ERM members, it was not about to join EMU. The autumn crises highlighted the uncertainty about Denmark's future monetary position. Therefore it was extremely important for the Danish authorities to settle these issues quickly so that Denmark would not have to await the official establishment of EMU on 1 January 1999.

In September 1998, agreement was reached on future Danish participation in ERM II with a fluctuation band around the central rate corresponding to the old, narrow band, i.e. +/- 2.25 per cent, while the standard band was still to be +/- 15 per cent. The reason was that Denmark had proved its ability to pursue stability-oriented policy and had been able to keep the krone very close to its central rate. In this way Denmark finally fulfilled its ambition from 1993 of returning to a narrow band – although it was now a bilateral band vis-à-vis the euro.

Danmarks Nationalbank participated in the preparations for EMU from the establishment of the Delors Committee in 1988 right through to the foundation of the European Central Bank, ECB, 10 years later.

The Edinburgh Agreement from December 1992, which was a purely Danish arrangement, paved the way for ratification of the Maastricht Treaty by Denmark. The Agreement specifically stated that Denmark would not participate in the single currency – unless a new referendum reversed this decision. With the Edinburgh Agreement, Denmark thus exercised its opt-out clause under the Treaty from the start.

All the same, Danmarks Nationalbank still participated in the preparatory work for the single currency and the ECB. These preparations took place under the auspices of the Committee of Central Bank Governors, one important task being the proposal for the statute of the ECB. At the start of Stage 2 of EMU on 1 January 1994, the Committee of Central Bank Governors was replaced by the European Monetary Institute, EMI. The main task of the EMI was to prepare the basis for the single currency and the single monetary policy, as well as the other central-bank tasks to be transferred to the ECB in Stage 3. Danmarks Nationalbank participated in the work of the EMI on a par with other EU central banks.

The Danish negotiators participated actively in the preparations in the Council as well as a large number of committees, and Danmarks Nationalbank's representatives in these forums regularly met to align their views.

Except when issues related directly to the future exchange-rate mechanism (ERM II), it was, however, an impediment for the Danish negotiators that Denmark would not be participating in Stage 3, or

not from the outset at any rate. Nevertheless, active participation in the preparations meant that Danmarks Nationalbank acquired considerable knowledge and insight and made personal contacts at many levels. In addition, there were widespread expectations that a referendum on Danish participation in the euro would be held within a foreseeable future.

Once the ECB had been established on 1 June 1998, Danmarks Nationalbank's participation was limited substantially. All the same, its employees sought to keep up personal contacts and update their knowledge about developments at the ECB. This proved to be useful. Already in 2000, the Danish government called a referendum on adoption of the euro with a view to joining the single currency from 1 January 2002.

Since the early 1990s, Danmarks Nationalbank had on several occasions expressed the view that participation in the single currency would be desirable for Denmark. When the referendum was approaching in 2000, Danmarks Nationalbank was asked to state a clear position. After all, Danmarks Nationalbank was the player who would feel the effect of joining the euro most strongly.

The Board of Governors of Danmarks Nationalbank expressed the view that it would be best for Denmark to join the euro. In reality, the fixed-exchange-rate policy vis-à-vis the euro corresponded to "outsourcing" Danish monetary policy to the ECB, at least when the currency markets were calm. However, Danmarks Nationalbank had no influence at all on the ECB's monetary-policy decisions, and unlike full participation in the single currency, the fixed-exchange-rate policy entailed potential vulnerability, especially in times of economic turmoil.

Danmarks Nationalbank had prepared for a fast transition to the euro in the event of a "yes" vote in the referendum, but naturally only analyses and sketch models had been carried out, no specific decisions had been made.

In the period up to the referendum there was some unrest in the currency market from time to time, and Danmarks Nationalbank took the usual steps to counter these tendencies. There was no large-scale speculation against the krone, presumably because all parties agreed that in the event of a "no" Denmark would stick to the fixed-exchange-rate policy pursued so far. When the "no" was a reality, this policy was officially confirmed in a joint statement by the Danish government and Danmarks Nationalbank. To underscore that this was seriously meant, Danmarks Nationalbank raised its lending rate by 0.5 percentage point. Once the market had calmed down, the interest-rate spread to the euro area could gradually be reduced again.

In the following years, Danmarks Nationalbank's representatives found themselves more and more marginalised in relation to the decisions of the ECB, and the insight acquired before 1998 soon became outdated. All the same, it was important for Danmarks Nationalbank to take part in the development of more technical areas such as payment systems and statistics, so as to avoid backlogs in these areas if the euro was adopted at a later date.

The actual risks of being outside the euro area did not materialise until 2008 during the international financial crisis – but that is beyond the scope of this volume of *Monetary History of Denmark*.

Over time, many European countries abandoned their fixed-exchange-rate policies and joined the euro or let their currencies float. The latter countries let domestic considerations govern their monetary policies, and "inflation targeting" became the new buzzword in monetary policy.

The UK and Sweden were the first European countries to develop and use such strategies, but during the 1990s this trend spread to many other countries.

In the late 1990s, foreign commentators often asked Danmarks Nationalbank why we did not opt for inflation targeting rather than the fixed-exchange-rate policy. After all, Denmark had opted out of the euro and therefore did not need to prove the sustainability of the fixed-exchange-rate policy, they argued.

Neither the Danish government nor Danmarks Nationalbank had any doubts that the fixed-exchange-rate policy had brought considerable stability to the economy, and that it worked well for Denmark. The stabilisation seen since the introduction of the fixed-exchange-rate policy in 1982 was to a large extent attributed to this policy.

In theory, managing monetary policy on the basis of domestic requirements could be expected to provide greater stability than a fixed-exchange-rate policy. But analyses of developments in the four Nordic countries in the period 1996 to 2009 actually show that it is not possible to prove that inflation targeting is best for the economy.

In the period around the year 2000 the Danish economy was characterised by sound, stable developments. Against the backdrop of a slight increase in unemployment, the government found it expedient to ease fiscal policy in 2004, the "spring package". Danmarks Nationalbank pointed out that this was not necessary. There was a growing tendency for wages and unit labour costs to rise at a faster pace than in the euro area.

As had been the case in the 1980s, Danmarks Nationalbank was involved in resolving some of the large banking crises in Denmark and the Faroe

Islands in the 1990s. In addition, it stepped in as the lender of last resort in connection with a rumour-based liquidity crisis in Unibank in 1992. This was a role rarely assumed by central banks at that time.

Danmarks Nationalbank's involvement in finding solutions to the banking crises generated more in-house knowledge of and, not least, interest in financial sector developments. For a number of years, Danmarks Nationalbank had been performing internal analyses of stability in the financial sector, but from 2000 onwards these analyses were further developed and published as financial stability reviews. The reviews are not based on internal data from the Danish Financial Supervisory Authority, but purely on information that has been published. In this respect Danmarks Nationalbank followed an international trend, as many central banks had begun to publish such reviews.

In 2001 and the following years, Danmarks Nationalbank's Financial stability reviews pointed to the risk arising from the growing deposit deficit (customer funding gap). Moreover, experience showed that extensive lending growth can seldom be achieved without lowering the credit quality. The gap was filled by issuing short-term bonds and borrowing abroad, which increased the vulnerability of the banks' funding structures.

While the 1980s had been characterised by international cooperation on liberalisation of the financial markets, the 1990s saw the arrival of international agreements governing financial institutions' equity capital and financial statements.

The first round of harmonisation began in the early 1990s and led to easing of the capital requirements for Danish banks. This undoubtedly helped to make the banking crises in the early 1990s less serious in Denmark than in the neighbouring countries, as many Danish banks were able to absorb the losses thanks to the lower capital requirements.

Up through the 1990s, regulation of financial institutions and markets increasingly became an EU issue.

Not only were the capital-adequacy rules for banks amended, new accounting rules were also introduced. In reality, the existing Danish practice of making loan loss provisions under the prudence concept led to the build-up of buffers. The new accounting rules from 2005 introduced mark-to-market accounting, which did not permit the build-up of "hidden reserves". This reduced the buffers and provided scope for further credit expansion.

After the financial crisis, the tide has turned, and more stringent rules are being discussed, but that is beyond the scope of this volume of *Monetary History of Denmark*.

The traditional Danish mortgage-credit system is deemed to be very robust and is seen as a stabilising factor in the financial system. In international contexts, Danmarks Nationalbank has often highlighted the strengths of this system with long-term, fixed-rate callable annuity loans.

However, the system underwent a number of changes from the latter half of the 1990s with the introduction of adjustable-rate mortgages and subsequently the possibility of deferred amortisation.

Danmarks Nationalbank sounded a note of caution about the popularity of variable-rate loans since they made the households vulnerable to higher interest rates in the event of currency unrest. Danmarks Nationalbank made it quite clear that concerns about household borrowing costs would not limit Danmarks Nationalbank's freedom of action if a currency crisis arose. On the other hand, Danmarks Nationalbank did not at that time focus on the liquidity issues relating to financing 30-year loans by means of 1-year bonds.

Until now, adjustable-rate loans have not collided with foreign-exchange policy, but together with other factors they have had a substantial impact on property prices. Combined with the tax freeze, the opportunity to obtain financing with deferred amortisation at a low short-term interest rate exerted strong upward pressure on property prices.

Especially the adjustable-rate mortgages and the option to defer amortisation have fundamentally changed the features of the traditional mortgage-credit system, even though these changes have basically taken place within the existing legislative framework.

The structure of the financial sector has changed significantly since 1990. Extensive merger activity among banks led to the formation of two large banks, Danske Bank and Unibank, in 1990. The latter subsequently became part of the Nordic banking group Nordea. Danske Bank remained independent, but established subsidiaries and made acquisitions outside Denmark.

Except for Swedish banks, few foreign banks have set up activities in Denmark.

Cooperation between mortgage banks and banks changed considerably during the 1990s. Since the banks are the key link in the "food chain" for mortgage credit, there was a growing wish for closer and more formalised cooperation when remortgaging and new loan types led to a strong increase in mortgaging activity. The two large banks, Danske Bank and Unibank, established their own mortgage banks, while Nykredit chose to cooperate with a number of banks.

The National Bank of Denmark Act is unusually old – from 1936. The Act and the related by-laws stipulate that interest rates are fixed by the

Board of Governors. To ensure the independence of the Board of Governors, it is also stipulated that no Governor can be dismissed arbitrarily before the age of 70.

The Maastricht Treaty states that the central banks of the EU member states must be independent, even if the member state in question is outside the euro area. Experience from Germany, where the Bundesbank was independent, formed the basis for the Treaty provisions.

In 1998 the EMI Council performed an assessment of the issue of independence. The above two provisions of the National Bank of Denmark Act meant that Danmarks Nationalbank was assessed to be independent, and consequently the Act need not be amended unless Denmark joins the euro.

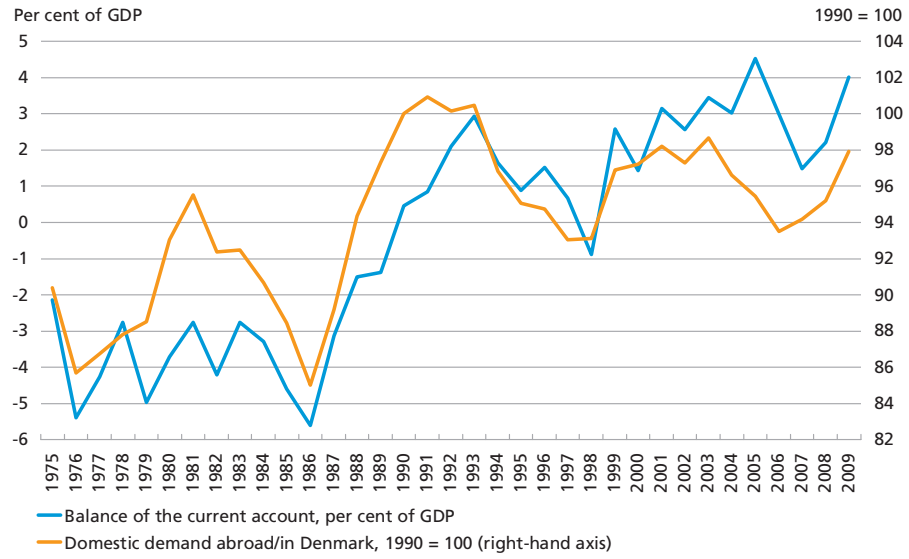
The Board of Governors of Danmarks Nationalbank determines its rates of interest, but obviously the choice of monetary-policy regime is not made by Danmarks Nationalbank alone. Foreign-exchange policy is the responsibility of the Danish government, which conducts negotiations with Danmarks Nationalbank in this respect. However, the foreign-exchange policy pursued is of paramount importance to interest-rate policy.

It goes without saying that the choice of a fixed-exchange-rate regime limits Danmarks Nationalbank's scope for conducting interest-rate policy. But within the regime chosen, the Board of Governors is responsible for the interest-rate and intervention policy pursued.

Consolidation of the fixed-exchange-rate policy since the 1980s has also meant that the various governments have not felt a need to question the interest-rate decisions of Danmarks Nationalbank. In view of the shared objective of keeping the exchange rate stable, politicians have seen Danmarks Nationalbank's interest rates as an instrument for realising the exchange-rate objective.

ANNEX 1: CHARTS

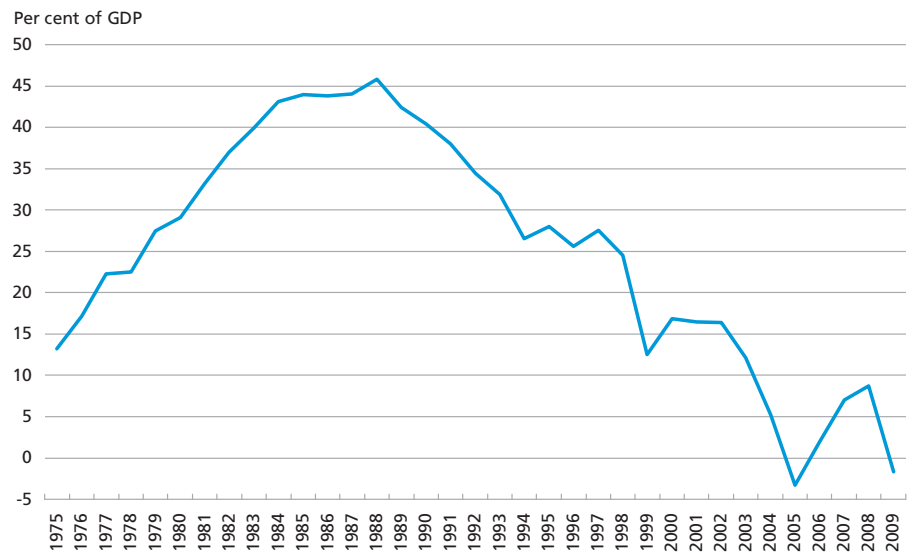
RELATIVE DEMAND AND BALANCE OF THE CURRENT ACCOUNT 1975-2009 Chart 1



Note: The current account of the balance of payments is calculated as external net lending as stated in the national accounts. Relative demand is calculated as domestic demand in OECD countries weighted by the weights in the effective krone-rate index set in relation to domestic demand in Denmark.

Source: Statistics Denmark and OECD.

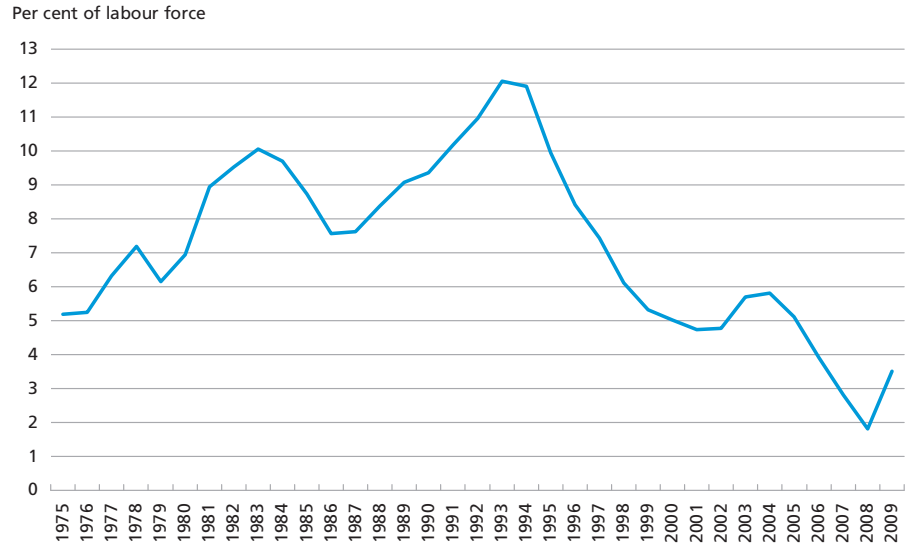
DENMARK'S FOREIGN DEBT 1975-2009 Chart 2



Source: Danmarks Nationalbank and Statistics Denmark.

UNEMPLOYMENT 1975-2009

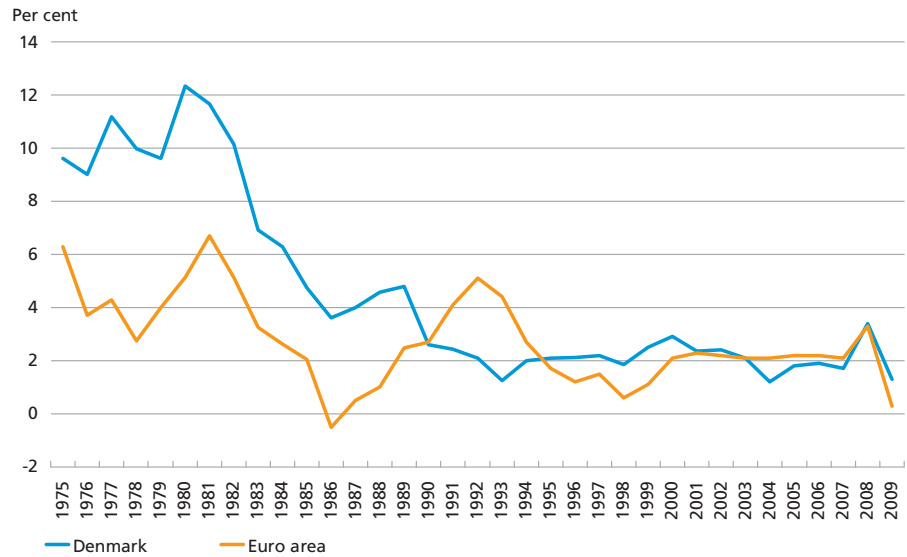
Chart 3



Source: Statistics Denmark.

CONSUMER PRICE INFLATION 1975-2009

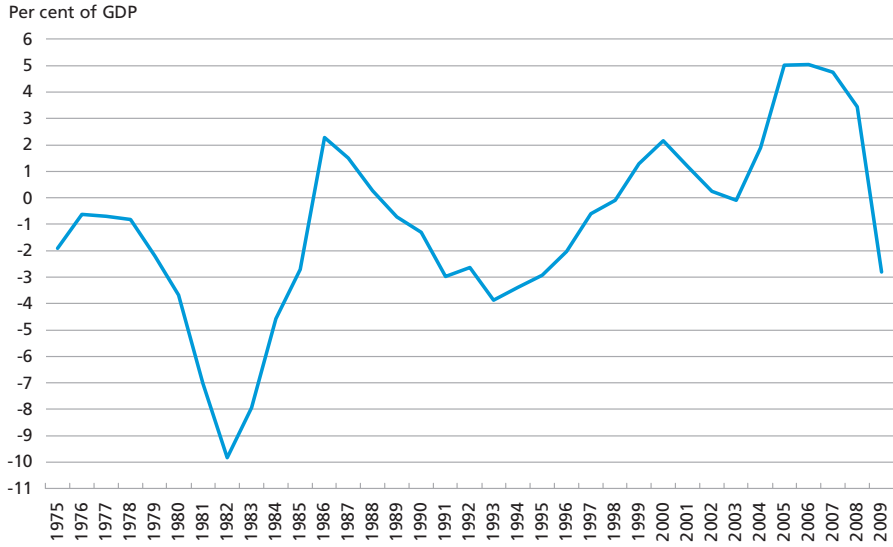
Chart 4



Note: Inflation in the euro area is represented by inflation in West Germany 1975-89 and in Germany 1990-98.
Source: Statistics Denmark, ECB and OECD.

GENERAL GOVERNMENT BUDGET BALANCE 1975-2009

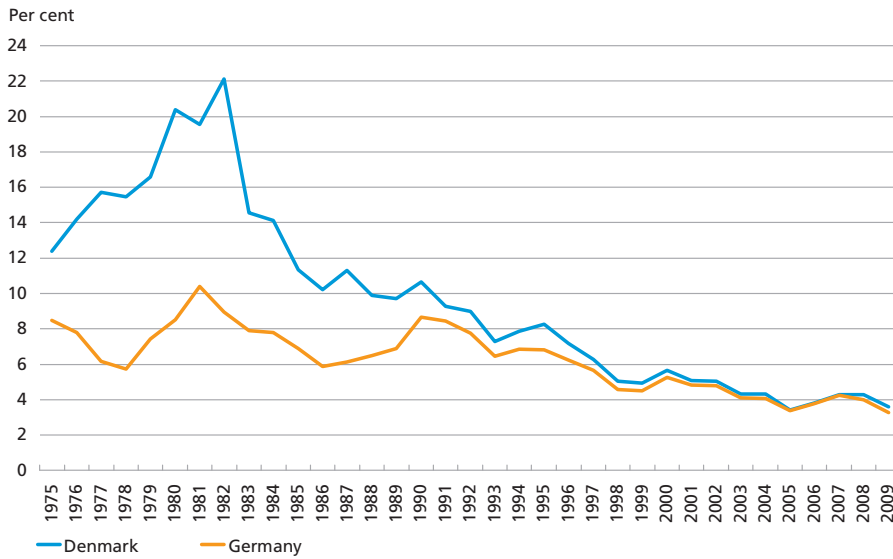
Chart 5



Source: Statistics Denmark.

LONG-TERM BOND YIELDS 1975-2009

Chart 6

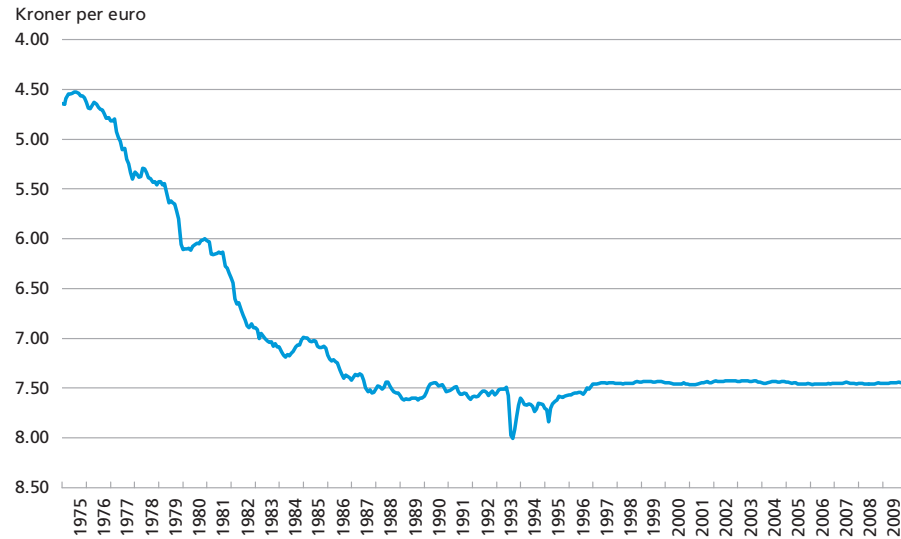


Note: German bond yields relate to West Germany in the period 1975-89.

Source: Danmarks Nationalbank.

BILATERAL EXCHANGE RATE OF THE KRONE VIS-À-VIS THE D-MARK (1975-98)
AND THE EURO (1999-2009)

Chart 7

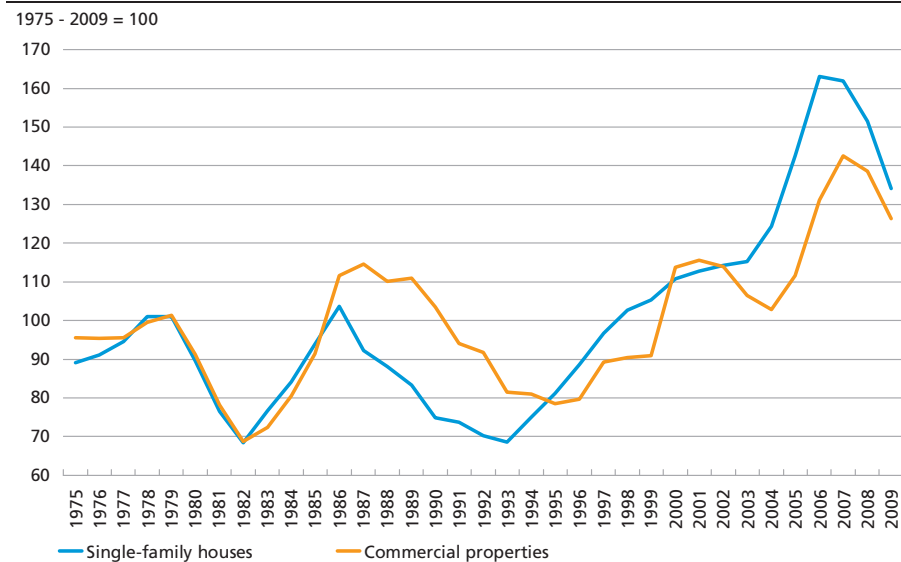


Note: For years before 1999, a synthetic exchange rate is used for the krone vis-à-vis the euro, calculated on the basis of the exchange rate of the krone vis-à-vis the D-mark and the locked conversion rate between the euro and the D-mark as at 1 January 1999.

Source: Danmarks Nationalbank.

REAL PROPERTY PRICES 1975-2009

Chart 8



Note: Annual averages. Real property prices are stated as property prices relative to construction costs. The index used for construction costs is the price deflator for residential investments. Price developments for commercial properties relate to purely commercial properties from 1980 onwards and mixed residential and commercial properties before 1980.

Source: Danmarks Nationalbank, Statistics Denmark and SKAT (Danish tax authorities).

ANNEX 2: QUOTATIONS FROM THE REPORTS OF THE BOARD OF GOVERNORS OF DANMARKS NATIONALBANK 1990-2005

"The stabilization of price and cost developments and elimination of the deficit on the current account of the balance of payments mean that the basis for balanced growth in the Danish economy is better now than has been the case for many years. If growth is to lead to a lasting reduction of the too-high unemployment rate, the scope created must, however, be utilized very carefully ... How far this can be accomplished will depend significantly on what structural improvements can be achieved on the labour market it is crucial to maintain balance in public-sector finance ..." (Danmarks Nationalbank, *Report and Accounts*, 1990, p. 7.)

"Upholding the favourable development in competitiveness is the necessary basis for higher growth ... experience has shown that stimulating domestic demand inevitably leads to problems with balancing the economy." (Danmarks Nationalbank, *Report and Accounts*, 1991, p. 7.)

"The fixed-exchange-rate policy pursued over many years has made a decisive contribution to the stability of the Danish economy. This should not be allowed to be overshadowed by the short-term disadvantages imposed by Denmark's trading partners' devaluations. The better Denmark succeeds at maintaining the restrained development in costs of recent years, the faster output and employment levels can be increased." (Danmarks Nationalbank, *Report and Accounts*, 1992, p. 8.)

"From a Danish point of view it was unsatisfactory that the major countries did not show sufficient political willingness to combat the crisis within the existing set of rules, especially since a high degree of convergence had been achieved among the countries still in the narrow band – the core countries. It was also agreed that the relative exchange rates were in accordance with the economic fundamentals – as confirmed by subsequent developments.

The objective of Danish exchange-rate policy therefore continues to be stable exchange-rate relations vis-à-vis the core countries. However, the removal of the safety net of the narrow fluctuation margins reinforces the demand for the exchange-rate policy to be supported by a stability-oriented economic policy." (Danmarks Nationalbank, *Report and Accounts*, 1993, p. 7.)

"To maintain stable price development together with economic growth and a continued reduction of unemployment, a well-functioning labour

market and sound development in public finances are also necessary." (Danmarks Nationalbank, *Report and Accounts*, 1994, p. 8.)

"Real wages can be maintained by low nominal wage increases and the development in wages must respect competitiveness. ... Denmark's fiscal-policy stance is essential to maintaining low inflation and interest rates and to safeguarding the exchange-rate policy." (Danmarks Nationalbank, *Report and Accounts*, 1995, p. 10.)

"A prerequisite for maintaining international competitiveness is a dampening of wage growth in line with our trading partners. ... The need for tight fiscal policy is supported by the requirement to maintain the current-account surplus." (Danmarks Nationalbank, *Report and Accounts*, 1996, pp. 9-10.)

"Nonetheless, the danger signals are becoming more apparent: capacity utilization is high, wage growth is still excessive and the balance of payments is weakened. This imposes more stringent requirements on economic policy. ... In a situation with a prolonged economic upswing and low unemployment a small surplus is not sufficient to stabilize the development. It is important to use the favourable cyclical position to further consolidate public finances. ..." (Danmarks Nationalbank, *Report and Accounts*, 1997, pp. 9-10.)

"If Denmark is to retain its competitiveness vis-à-vis the euro area the scope for wage increases in coming years is limited. ... Since 1995 the monetary factors have had a clearly expansive effect on the domestic economy. This increases the demands of a tight fiscal-policy stance. The planned tightening of fiscal policy for 1998 does not appear to have been realised. The trend of recent years for fiscal-policy tightenings to be less effective than set out in the Finance Act thus continues." (Danmarks Nationalbank, *Report and Accounts*, 1998, pp. 16-17.)

"The high Danish wage increases can present a challenge to Danish competitiveness and the objective of price stability. Therefore it is important that the dampening of wage growth is sustained. ... Monetary conditions continue to be expansionary, which makes it even more imperative to maintain the fiscal-policy objectives." (Danmarks Nationalbank, *Report and Accounts*, 1999, pp. 16-17.)

"In March 2000 it was announced that a referendum would be held on Denmark's adoption of the euro. ... The outcome of the referendum was a rejection of Denmark's adoption of the euro. Since then, the National-

bank has emphasised that the fixed-exchange-rate policy is to continue unchanged within the framework of ERM II. ... The labour market is tight and price and wage increases are a little higher than the price and wage-increase rates in the euro area. In view of the prospect of relatively strong growth in government consumption in 2001 there is no scope for further relaxation of fiscal policy in the next few years." (Danmarks Nationalbank, *Report and Accounts*, 2000, pp. 11 and 17.)

"The rate of wage increase exceeds the level in the euro area, however, and there is a risk of sustained high wage increases and deteriorating competitiveness. It is necessary to ease the pressure on the labour market by ensuring a stronger influx to the labour force, and better utilisation of idle resources. ... A sound surplus will also give some leeway for the automatic stabilisers to offset any future cyclical downturn." (Danmarks Nationalbank, *Report and Accounts*, 2001, p. 15.)

"It is not necessary to stimulate the Danish economy by easing fiscal policy. The very low interest rates entail that the financial conditions are highly expansionary and stimulate consumption and investment significantly in the immediate future." (Danmarks Nationalbank, *Report and Accounts*, 2002, p. 13.)

"... in the longer term the ageing population will lead to higher expenditure and lower receipts from taxation. Continued medium-term orientation of fiscal policy with a view to debt reduction and growth in private employment is therefore required ... It is necessary to expand the labour force and improve competitiveness." (Danmarks Nationalbank, *Report and Accounts*, 2003, pp. 13-14.)

"Danish hourly wage costs are among the highest in the world, and in a future-oriented perspective globalisation will continue to make high demands on the innovation and adaptability of Danish enterprises if they are to remain competitive." (Danmarks Nationalbank, *Report and Accounts*, 2004, p. 13.)

"... there is still a risk of the economy overheating. If the positive development is to continue, fiscal policy must not contribute to increasing demand. ... Since the surplus is partly of a temporary nature, and as there are increasing capacity problems in the labour market, the surplus should be used solely to reduce government debt. ... So far, accelerating wage increases have not been registered, but the labour market should be monitored closely." (Danmarks Nationalbank, *Report and Accounts*, 2005, p. 13.)

CHAPTER 1

Exchange-Rate Cooperation and Currency Crises – Part I: the Krone in the D-Mark Block

THE EUROPEAN EXCHANGE-RATE MECHANISM, ERM¹

The European Exchange-Rate Mechanism, ERM, was based on "the currency snake". The "snake" had been established in Basle in April 1972 by the six original member states of the European Community (Germany, France, Italy, the Netherlands, Belgium and Luxembourg) shortly after the collapse of the Bretton Woods system. The UK, Ireland and Denmark joined the snake in May 1972, but the UK and Ireland left again already the following month. Consequently, the ambition to create a fixed-exchange-rate system for all EC member states was quickly thwarted.

The snake operated with a fluctuation band of +/- 2.25 per cent for the participating currencies vis-à-vis each other.² Moreover, the system had rules for intervention, and the central banks were to grant each other unlimited short-term credit in the event of intervention at the fluctuation limits.³

While it lasted, from 1972 to 1978, the snake was characterised by frequent realignments and changes in the group of participants, cf. Box 1.1. In practice, the snake ended up as a block consisting of the Benelux countries, Norway, Denmark and Germany, with the D-mark as the an-

¹ The structure and development of the ERM until 1990 are described in more detail in Jens Thomsen, *Det europæiske monetære samarbejde (European Monetary Cooperation – in Danish only)*, Handelshøjskolens Forlag, 1990; Finn Østrup, *The Development of the European Monetary System*, DJØF Publishing, 1992; Daniel Gros and Niels Thygesen, *European Monetary Integration*, Longman, 1992; Jens Pagter Kristensen, Thomas Alslev Christensen and Gitte Wallin Pedersen, *Europæisk monetært samarbejde – fra EMS til ØMU (European Monetary Cooperation – from EMS to EMU – in Danish only)*, Handelshøjskolens Forlag, 1998; pp. 219-241 of Helmut Schmidt, *Die Deutschen und ihre Nachbarn. Menschen und Mächte II*, Siedler Verlag, 1990; and pp. 166-170, 249-256 and 321-329 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990 (Monetary History of Denmark 1960-1990 – in Danish only)*, Danmarks Nationalbank, 1993.

² The 2.25 per cent reflected a compromise. The Netherlands and Belgium continued a previous agreement on limiting fluctuations between the Belgian franc and the Dutch guilder to 1.5 per cent. From April 1972 to March 1973, the currency snake was pegged to the dollar within the framework of the Smithsonian Agreement from December 1971, which allowed fluctuations of +/- 2.25 per cent around the dollar parities. Consequently, the currency snake was originally known as the "snake in the tunnel". After the collapse of the Smithsonian Agreement in March 1973, this joint peg vis-à-vis the dollar ceased ("the snake without the tunnel"), cf. p. 167 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993.

³ Cf. p. 167 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993.

PARTICIPANTS IN THE SNAKE 1972-1978		Box 1.1
	Joined (rejoined)	Left (left again)
Germany	24 Apr. 1972	
France	24 Apr. 1972 (10 July 1975)	19 Jan. 1974 (15 Mar. 1976)
Italy	24 Apr. 1972	13 Feb. 1973
Netherlands	24 Apr. 1972	
Belgium/Luxembourg ¹	24 Apr. 1972	
UK/Ireland ²	1 May 1972	23 June 1972
Denmark	1 May 1972 (10 Oct. 1972)	27 June 1972
Norway	23 May 1972	12 Dec. 1978
Sweden	19 Mar. 1973	29 Aug. 1977

¹ Until the introduction of the euro on 1 January 1999, the Luxembourg franc was pegged to the Belgian franc.

² Until 13 March 1979 the Irish pound was pegged to the pound sterling.

Source: Jens Thomsen, *Det europæiske monetære samarbejde*, Handelshøjskoleens Forlag, 1990

chor currency. Germany's economic policy was the driving force in the D-mark block, and the smaller EC member states found it necessary to adapt their economic policies accordingly.¹

France was politically motivated to rejoin a fixed-exchange-rate system. Such a system was perceived as a precondition for realising the ideas of an Economic and Monetary Union, EMU, that had reappeared on the EC agenda in 1977², cf. Chapter 7. In the spring of 1978, Chancellor Helmut Schmidt of Germany and President Giscard d'Estaing of France launched the concept of a European Monetary System, EMS, with a reinforced Exchange-Rate Mechanism, ERM, at its core.

France, however, was not willing to play the same minor role in relation to the D-mark as the small EC member states did. The outcome was the carefully designed symmetrical structure of the new system. The idea was that any member state diverging from the average had to adjust its economic policy by means of intervention, interest-rate adjustments, exchange-rate adjustments or other policy measures such as fiscal or structural measures. On the initiative of Belgium – supported by France, among others – a special "divergence indicator" was constructed to capture any currency/currencies diverging from the average, which would require the member state in question to make adjustments. However, the divergence indicator never played any practical role in the system or in realignments within the system, as France had probably hoped it would, and the D-mark remained the anchor currency.

¹ Cf. pp. 103-108 of Erik Hoffmeyer, *Pengepolitiske problemstillinger 1965-1990 (Monetary Policy Issues 1965-1990 – in Danish only)*, Danmarks Nationalbank, 1993.

² Cf. Niels Bartholdy and Jens Thomsen, Euro 2002, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2002.

The ERM commenced on 13 March 1979 as a symmetrical, multilateral system with bilateral central rates for each participating currency, within a fluctuation band, vis-à-vis each of the other currencies. Germany, France, the Netherlands, Belgium-Luxembourg, Ireland and Denmark participated in the ERM with the narrow fluctuation band of +/- 2.25 per cent around the central rates, while the wide fluctuation band of +/- 6 per cent applied to Italy. The threshold for how weak a currency was allowed to be relative to its central rate (-2.25 per cent or -6 per cent) was called the "lower intervention limit". Accordingly, the threshold for how strong a currency was allowed to be relative to its central rate (+2.25 per cent or +6 per cent) was called "the upper intervention limit". If a currency reached the bilateral limit against another currency, the two central banks in question were obliged to intervene automatically for unlimited amounts by buying the weak currency and selling the strong one.¹

The ERM included an agreement on mutual granting of unlimited intervention credit in case of intervention at the fluctuation limits. However, as a condition for ERM participation Deutsche Bundesbank had received assurance from the German government that the Bundesbank could suspend its intervention obligations if such intervention was in fundamental conflict with German monetary policy considerations.² Indeed, the effects on Germany's money stock (M3) from interventions and intervention credits were an issue repeatedly pointed out by the Bundesbank in an ERM context.

In the ERM, central rates could be aligned – subject to joint agreement between the ministers and central-bank governors of the participating member states and the European Commission – if the central rates were found to be inconsistent with the economic fundamentals. This procedure was to support the credibility of the ERM by ensuring that central rates were only aligned in consensus and after thorough consideration.

A particularly complex ERM issue was the ("green") exchange rates for conversion of the Community's common agricultural prices into national currencies and the related monetary compensatory amounts. Disagree-

¹ In principle, a currency could be at the top of the fluctuation band vis-à-vis each of the other participating currencies. In this hypothetical situation, all ERM central banks would thus be obliged to intervene. In practice, only very few central banks at a time were involved in intervention at the limits.

² Cf. pp. 130-131 of Erik Hoffmeyer, *The International Monetary System: An Essay in Interpretation*, North-Holland, 1992.

ment about these principles delayed the launch of the ERM by just over two months in 1979.¹

The first years of the ERM were characterised by frequent realignments, cf. Appendix 1.A, indicating that exchange-rate stability had not been achieved to any significant extent. In practice, the ERM appeared to be a direct continuation of the snake only with a few more participants. *De facto*, it was still a D-mark block, although the presentation of realignments was always given careful consideration. This contributed to maintaining the illusion of symmetry in the ERM, so as to take the sting out of the dissatisfaction which may have been felt especially in France and Italy. The point of dissatisfaction was that adjustments always had to be made by the member states with the "weak" currencies. It was never those countries with the "strong" ones (e.g. the D-mark), that were required to implement economic-policy adjustments by cutting interest rates to adjust to the other currencies.

At the European Council in Milan in June 1985, where the key topics were the single market and the Single European Act, the EC Heads of State or Government called for further work on the EMS project. This led to the Basle-Nyborg Agreement, which was discussed and announced at the informal meeting of the Ecofin Council² in Nyborg in September 1987.³ The Agreement confirmed and formalised the prevailing understanding of the ERM ground rules:

- All member states were to seek to keep their currencies within the fluctuation band through intramarginal intervention and interest-rate adjustments.

¹ In the snake, the guaranteed prices under the Community's agricultural schemes were fixed in a basket of member states' currencies (the European Monetary Unit of Account, EMUA). The "green" exchange rates were used to convert agricultural prices into national currencies in order to avoid daily exchange-rate fluctuations affecting agricultural prices in national currencies. The green exchange rates basically remained unchanged in the event of realignment in the snake. If a member state devalued – and the guaranteed agricultural prices in national currencies were kept unchanged in all member states – farmers in the devaluing member state would, all other things being equal, have an incentive to export agricultural produce to other member states rather than selling it in the domestic market. Conversely, farmers in a revaluing member state would have an incentive to sell produce in the domestic market rather than exporting it to other member states. The system of monetary compensatory amounts sought to compensate for this. The monetary compensatory amounts were indirect taxes or subsidies for crossing intra-Community borders, cf. pp. 134-139 of Jens Thomsen, *Det europæiske monetære samarbejde*, Handelshøjskolens Forlag, 1990.

² The Council of Ministers of Economic Affairs and Finance of the European Community (later the European Union). The Ministers of Economic Affairs and Finance and the central-bank governors of the member states participate in the informal meetings. These meetings are informal because no legally binding decisions are made.

³ Cf. pp. 27-28 of Danmarks Nationalbank, *Report and Accounts*, 1987; and Henning Dalgaard, *The Exchange Rate Mechanism after the Basle-Nyborg Agreement*, published in Age Bakker, Henk Boot, Olaf Sleijpen and Wim Vanthoor (eds.), *Monetary Stability through International Cooperation. Essays in Honour of André Szász*, Kluwer Academic Publishers, 1994 (printed on pp. 46-56 of Danmarks Nationalbank, *Monetary Review*, August 1994).

- The entire fluctuation band was to be exploited so that currency speculation would be associated with uncertainty about future exchange-rate fluctuations.
- A precondition for exchange-rate stability in the ERM was that the member states would generally pursue stability-oriented economic policies.
- Finally, the credit facilities for intervention were improved. The maturity of the unlimited and automatic credits for financing interventions at the fluctuation limits were extended, and the options to postpone the expiry of the credits were increased (although the quota system was retained). In addition, the access to financing of intramarginal interventions was improved¹ since these interventions had come to dominate the ERM compared with interventions at the fluctuation limits.

From the mid-1980s, the stability compatible with maintaining a stable exchange rate vis-à-vis the D-mark came to play an increasing role in the economic policies of a number of member states, including Denmark and France. This provided for a more stable ERM. From January 1987 until the outbreak of the currency crises in 1992, the ERM central rates remained unchanged – with the exception of a single realignment of the Italian lira in January 1990, when the fluctuation band for the lira was also narrowed from +/- 6 per cent to +/- 2.25 per cent.² Moreover, Spain joined the ERM in June 1989, the UK in October 1990 and Portugal in April 1992, all with the wide fluctuation band of +/- 6 per cent. All EC member states except Greece thus participated in the ERM. However, in the years after 1987, the exchange-rate stability in the ERM was very much attributable to wide interest-rate spreads to Germany, cf. Table 1.1. This reflected insufficient convergence in inflation rates.

The ERM stability generated confidence that the foundation for the fixed-exchange-rate policy was solid. This revived the idea of realising

¹ Credits for financing of intramarginal interventions could not be obtained automatically, however. The debtor member state was required first to have shown a willingness to use its own foreign-exchange reserves for the intervention. Furthermore, the creditor member state could demand repayment in its own currency. This reduced the creditor member state's exposure to losses compared with intervention credits for financing of interventions at the fluctuation limits since the latter credits were denominated in ECU (European Currency Unit). The ECU was a basket of currencies with fixed amounts of each EC currency, cf. Jens Thomsen, *SDR og ECU (SDR and ECU – in Danish only)*, *Juristen & Økonomen*, 1981. The weights in the basket reflected the economic significance of the member states and were regularly revised until the commencement of the Maastricht Treaty. Moreover, the single currency was called the ECU in the plans for Stage 3 of the Economic and Monetary Union in the EC until 1995, when it was renamed the euro.

² In the adjustment, one fluctuation limit remained unchanged.

SHORT-TERM INTEREST-RATE SPREADS VIS-À-VIS GERMANY 1987-91					Table 1.1
Percentage points	1987	1988	1989	1990	1991
Denmark	6.1	4.2	2.5	2.4	0.4
Belgium	2.9	2.3	1.4	1.2	0.0
Luxembourg	2.7	2.8	2.9	1.2	-0.2
Netherlands	1.2	0.4	0.2	0.0	-0.1
France	4.4	3.6	2.2	1.7	0.2
Ireland	6.8	3.5	2.5	2.6	1.1
Italy	6.8	6.5	4.9	3.0	2.2
Spain	10.4	6.4	6.3	5.9	3.3
UK	5.2	5.5	6.2	5.6	1.5
Portugal	9.6	8.0	5.6	4.6	6.2

Note: Annual averages.

Source: Danmarks Nationalbank and IMF.

the plans for Economic and Monetary Union within the EC. The EMU process gained significant momentum with the work of the Delors Committee in 1988 and 1989, cf. Chapter 7. The widespread confidence in the exchange-rate relations between the ERM currencies was accompanied by expectations of quick implementation of EMU. Most EC member states had liberalised capital flows with effect from 1 July 1990¹ on the introduction of Stage 1 of EMU, and in October 1990 the European Council decided to launch Stage 2 of EMU with effect from 1 January 1994. Furthermore, in December 1991 the Council approved the Maastricht Treaty, which was to form the basis of the implementation of the Stage 3 of EMU with irrevocably locked exchange rates among the member states.

Moreover, several non-EC countries showed signs of convergence towards the EC's exchange-rate mechanism. The Austrian schilling had followed the D-mark closely for many years, and during 1990 and 1991 Norway, Sweden and Finland had all unilaterally pegged their currencies to the ECU. These countries had also announced their intentions of applying for EC membership. Accession negotiations began in Brussels in February 1993 for Austria, Finland and Sweden and in April 1993 for Norway.

¹ By the end of 1992, all member states except Greece had liberalised capital flows in accordance with Community legislation. Greece was subject to a derogation until 1994, cf. p. 15 of The Committee of Governors of the central banks of the Member States of the European Economic Community, *Annual Report*, 1992; and p. 20 of the European Monetary Institute, *Annual Report*, 1994.

D-MARK INTERVENTIONS IN THE ERM 1979-93

Table 1.2

Billion D-marks	At the interven- tion limits	Within the band	Total
1979-91, annual average:			
Purchases	3.5	20.8	24.3
Sales	4.7	21.6	26.3
Net purchases	-1.2	-0.8	-2.0
1992:			
Purchases .....	...	75.1	75.1
Sales	63.7	199.7	263.4
Net purchases	-63.7	-124.6	-188.3
1993:			
Purchases .....	...	92.0	92.0
Sales	25.1	168.8	193.9
Net purchases	-25.1	-76.8	-101.9
Memo:			
3 June 1992 - 25 September 1992:			
Net purchases	-63.7	-120.4	-184.2
18 November 1992 - 7 July 1993:			
Net purchases	-0.4	-32.8	-33.1
8 July 1993 - 1 August 1993:			
Net purchases	-24.7	-82.4	-107.0

Note: Interventions against the D-mark performed by the Bundesbank or other ERM central banks. A sale means that the Bundesbank and/or other central banks in the ERM used D-marks to buy other ERM currencies for support purposes.

Source: Deutsche Bundesbank, *Annual Report*, 1990 and 1993.

THE CURRENCY CRISES IN 1992-93¹

In the autumn of 1992, the stability of the ERM was replaced by strong turbulence in the European foreign-exchange markets, lasting several years, and crisis in the ERM, cf. Box 1.2.

During the turmoil, interventions in the foreign-exchange market in support of the exchange-rate relations reached a higher level than ever before in the history of the ERM, cf. Table 1.2.

¹ The currency crises in 1992-93 are described in more detail on pp. 15-20, 32-37 and 44-45 of Danmarks Nationalbank, *Report and Accounts*, 1992 and pp. 14-21, 30-33 and 39-42 of Danmarks Nationalbank, *Report and Accounts*, 1993. Further analyses and assessments can be found in Jørn H. Kjær, Valuta- og renteutviklingen siden valutakrisen (Foreign-Exchange and Interest-Rate Developments since the Currency Crisis – in Danish only), *Økonomi & Politik*, Vol. 66(3), 1993; Finn Østrup, Valutapolitik og økonomisk aktivitet (Foreign-Exchange Policy and Economic Activity – in Danish only), *Økonomi & Politik*, Vol. 66(3), 1993; Peter Wendt, Valutasamarbejdet: Sammenbrud eller nybrud? (The ERM: Breakdown or Breakthrough – in Danish only), *Økonomi & Politik*, Vol. 66(3), 1993; Claus Vastrup, Dansk økonomisk politik i lyset af den europæiske udvikling (Denmark's Economic Policy in the Light of European Developments – in Danish only), *Økonomi & Politik*, Vol. 66(3), 1993; Svend Erik Hougaard Jensen and Christian Motzfeldt, Har ØMUen overhovedet en fremtid? (Is there a Future for the EMU? – in Danish only), *Økonomi & Politik*, Vol. 66(3), 1993; Erik Hoffmeyer, Current Danish Foreign-Exchange Policy, speech at the foreign-exchange conference held by the newspaper *Børsen* on 28 October 1993 (printed on pp. 18-22 of Danmarks Nationalbank, *Monetary Review*, November 1993); Bodil Nyboe Andersen, Valutaspekulanternes år (The Year of the Currency Speculators – in Danish only), *Udenrigs*, No. 3, 1993; Anders Møller Christensen and Jacob Topp, Monetary policy in Denmark since 1992, published in *Monetary policy in the Nordic countries: Experiences since 1992, BIS Policy Papers*, No. 2, 1997; and Willem H. Buiter, Giancarlo Corsetti and Paolo A. Pesenti, *Financial Markets and European Monetary Cooperation. The Lessons of the 1992-93 Exchange Rate Mechanism Crisis*, Cambridge University Press, 1998.

CURRENCY CRISES 1992-93 – CHRONOLOGY

Box 1.2

14 November 1991

The Finnish markka was devalued by just over 12 per cent.

8 September 1992

The Finnish markka's unilateral peg to the ECU was abandoned, and Finland let the markka float.

14 September 1992

The Italian lira was devalued by 7 per cent.

17 September 1992

The UK decided to leave the ERM and let sterling float. At the same time, Italy decided temporarily to refrain from intervening in the foreign-exchange markets, and the Spanish peseta was devalued by 5 per cent.

19 November 1992

Sweden abandoned the unilateral peg to the ECU and let the krona float.

23 November 1992

The Portuguese escudo and the Spanish peseta were devalued by 6 per cent.

10 December 1992

Norway abandoned the unilateral peg to the ECU and let the krone float.

1 February 1993

The Irish pound was devalued by 10 per cent.

14 May 1993

The Spanish peseta was devalued by 8 per cent, while the Portuguese escudo was devalued by 6.5 pct.

2 August 1993

The ERM intervention band was widened to +/- 15 per cent. The Netherlands and Germany concluded a bilateral agreement to maintain the previous fluctuation band of +/- 2.25 per cent between the D-mark and the Dutch guilder.

The beginning

The devaluation of the Finnish markka by just over 12 per cent in November 1991 was the first major European devaluation for a number of years. The backdrop for the realignment was the Finnish economy's deep recession, triggered by the collapse of trade with the former Soviet Union and deterioration of competitiveness as a result of soaring costs in the preceding years.

Although Finland's situation was special, it was questioned whether Finland had set too ambitious a course when deciding on unilateral peg-

ging to the ECU earlier that year. The Finnish devaluation put the Swedish krona under temporary pressure, while the ERM remained stable.

In the autumn of 1992, however, the ERM came under strong speculative pressure. The rejection of the Maastricht Treaty in the Danish referendum on 2 June 1992 weakened confidence in the ERM parities. All of a sudden, there were troubled waters ahead for the EMU. The faith in fast and smooth progress towards a single currency was further undermined by opinion polls indicating an uncertain outcome of the French referendum in September 1992. A French no vote would probably have made it necessary to shelve the EMU plans for many years.

In step with the growing uncertainty about the realisation of the EMU plans, the foreign-exchange markets increased their focus on economic fundamentals. Only few EC member states were able to meet the criteria of the Maastricht Treaty for transition to Stage 3 of EMU in terms of inflation, government budget balance, government debt and long-term interest rates, cf. Table 1.3, and a few member states' long-term com-

CONVERGENCE OF THE ERM MEMBER STATES 1991 Table 1.3

	Date of joining the ERM	Fluctuation band, Per cent	Inflation	Government budget balance	Government debt	Bond yield
			Per cent	Per cent of GDP	Per cent	Per cent
Belgium	13 March 1979	+/- 2.25	3.2	-6.4	129.4	9.3
Denmark	13 March 1979	+/- 2.25	2.4	-1.7	66.7	9.3
France	13 March 1979	+/- 2.25	3.1	-1.5	47.2	9.0
Netherlands	13 March 1979	+/- 2.25	3.9	-4.4	78.4	8.8
Ireland	13 March 1979	+/- 2.25	3.2	-4.1	102.8	9.4
Luxembourg	13 March 1979	+/- 2.25	3.1	2.0	6.9	9.3
Germany	13 March 1979	+/- 2.25	3.5	-3.6	45.6	8.4
		+/- 6				
Italy	13 March 1979	+/- 2.25	6.4	-9.9	101.2	11.3
Spain	19 June 1989	+/- 6	6.0	-3.9	45.6	12.5
UK	8 October 1990	+/- 6	5.9	-1.9	43.8	10.3
Portugal	6 April 1992	+/- 6	11.4	-5.4	64.7	14.6
Convergence requirement			4.4	-3.0	60.0	11.2

Note: The fluctuation band for Italy was narrowed from +/- 6 per cent to +/- 2.25 per cent from 8 January 1990. The convergence criteria for the transition to Stage 3 of EMU are as follows, according to the Maastricht Treaty: (a) The ratio of government deficit to the gross domestic product, GDP, must, as a general rule, not exceed 3 per cent, and the ratio of gross government debt to GDP must, as a general rule, not exceed 60 per cent. (b) The average inflation rate, measured by means of consumer prices compared with the same month in the preceding year and observed over a period of one year before the examination, must not exceed by more than 1½ percentage points that of, at most, the three best performing member states in terms of price stability. (c) Observed over a period of one year before the examination, the yield on long-term government bonds or comparable securities must not exceed by more than 2 percentage points that of, at most, the three best performing member states in terms of price stability. (d) The member state must have observed the normal fluctuation margins within the ERM for at least two year without severe tensions, including devaluation on its own initiative.

Source: European Commission and OECD.

petitiveness, and thus the credibility of the current exchange rates, was challenged.

The weak economic activity in several member states made it difficult to tighten fiscal policy and called for lower interest rates in these member states. At a confidential meeting in Paris on 26 August 1992, the ministers of finance of the UK, France and Italy rejected the Bundesbank's proposal to realign the central rates of, in particular, the Italian lira and the pound sterling. The German minister of finance was neutral.¹

At the subsequent informal Ecofin meeting in Bath on 4-6 September 1992, the UK especially pushed for a German interest-rate cut. However, against the backdrop of unsatisfactorily high inflation – by German standards – after the reunification of East and West Germany, the Bundesbank found no scope for easing monetary policy. The long meeting took place in a very bad atmosphere², which darkened the future of the ERM. In retrospect, the meeting in Bath marked a turning point in the cooperation.

The German reunification could be regarded as an example of what is called an "asymmetrical shock" in the academic literature, since the shock only occurred in one ERM member state. The reunification was followed by some years of strong economic growth in Germany, but also relatively high inflation by German standards. One underlying factor was that the public sector's costs in connection with the reunification had not been fully funded by taxes. The high level of interest rates in Germany was not in tune with the cyclical position of the other ERM member states.³

The peripheral currencies

The currency crisis started with the "peripheral currencies". The weakening of confidence in the ERM parities after Denmark's no in the referendum on the Maastricht Treaty on 2 June 1992 initially affected the Italian lira, which fell fast towards the bottom of the narrow intervention band. However, interest-rate increases and the new government's adoption of an economic crisis package at the end of July eased the pressure on the lira. During July, sterling declined towards the intervention rate relative to the Portuguese escudo, and both the Bank of England and the Banco de Portugal had to intervene, although to a modest extent.⁴

Confidence in the unilateral pegging of the Finnish markka and the Swedish krona to the ECU weakened substantially in the latter half of

¹ Cf. p. 768 of Deutsche Bundesbank (ed.), *Fifty years of the Deutsche Mark*, Oxford University Press, 1999.

² Cf. p. 144 ff. of Bernard Connolly, *The Rotten Heart of Europe*, London: Faber and Faber, 1995.

³ Cf. Daniel Gros, The long shadow of the fall of the wall, *VoxEU*, No. 5191, June 2010.

⁴ Cf. p. 1 of Danmarks Nationalbank, *Monetary Review*, August 1992.

August. Both member states were suffering from an economic crisis with large, partly structural budget deficits, and in September 1992, Finland abandoned the peg to the ECU and let the markka float. This put the Swedish krona under strong pressure and amplified the uncertainty about the ERM parities. It was rather obvious that Italy's economic fundamentals were out of order, and the lira was devalued by 7 per cent in mid-September 1992. This solution turned out to last only a few days. Italy's devaluation had failed to convince the market, and speculation against the lira flared up again, while the three currencies in the wide band (the pound sterling, the Spanish peseta and the Portuguese escudo) came under pressure. Later that month, the UK – after a considerable volume of intervention – chose to leave the ERM and let sterling float. Since then, the UK has not participated in any type of fixed-exchange-rate cooperation. At the same time, the intervention obligation for the lira was suspended, and the peseta was devalued by 5 per cent.

The pressure on the pound sterling in September 1992 was partly attributable to the market's doubts about the UK's willingness to defend sterling in the ERM via interest-rate increases in accordance with the ground rules that had most recently been confirmed by the Basle-Nyborg Agreement. This brought on a credibility problem for the UK, and the market was proved right. The UK was not willing to raise interest rates to any major extent in the light of weak domestic economic development and the popularity of variable-rate mortgage loans. On 16 September 1992, the UK was compelled to raise interest rates from 10 to 12 per cent. A further increase to 15 per cent was announced, with effect from the following day, but the UK decided to leave the ERM instead. Sweden, on the other hand, strongly increased the monetary-policy overnight interest rate, the marginal rate, to no less than 500 per cent¹ in mid-September to halt the intensive speculation.

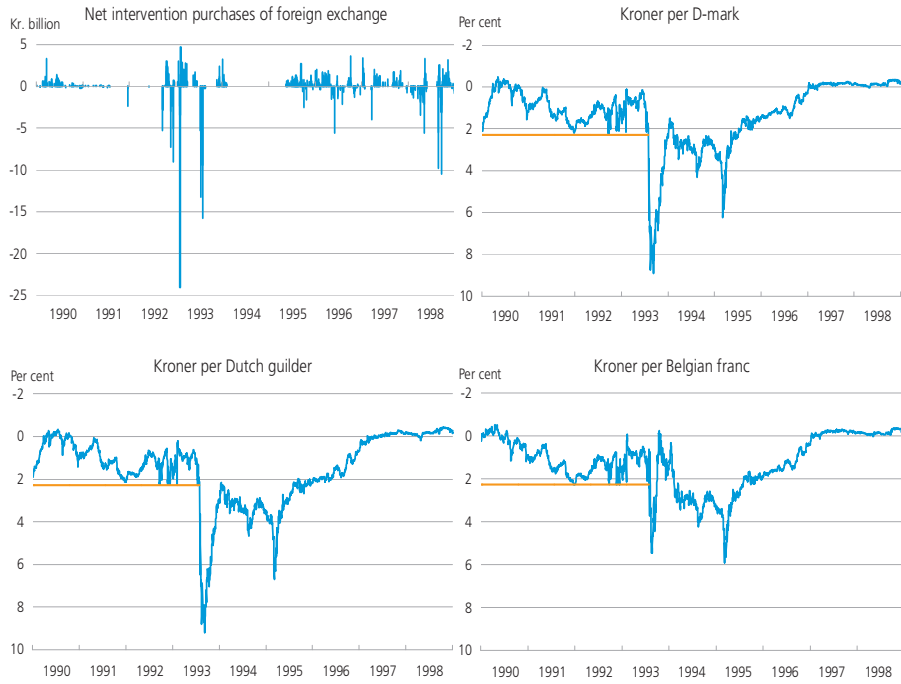
Core currencies under attack

These events did not bring the currency speculation against the ERM to an end. The French franc, the Irish pound and the Danish krone, which till then had been untouched by the turmoil, came under pressure on 17 September 1992 up to the French referendum on the Maastricht Treaty. Denmark's Nationalbank let the krone fall to the ERM intervention limit and intervened for around kr. 12 billion in support of the krone against the Dutch guilder and the Belgian franc from 17 to 22 September, cf. Chart 1.1. The interventions drained the money market of krone liquid-

¹ Cf. Bengt Dennis, *500%*, Bokförlaget DN, 1998.

KRONE RATE AND INTERVENTION 1990-98

Chart 1.1



Note: Daily observations.

Interventions are dated according to the trade date. Some of the major interventions in support of the krone during the currency unrest in 1992-93 were performed by other ERM central banks and not by Danmarks Nationalbank. These interventions have been included in the Chart. As from August 1993 all interventions were performed by Danmarks Nationalbank.

The exchange rates indicate the percentage deviation from the bilateral central rates (reverse scale). The yellow lines indicate the lower bilateral fluctuation limit for the krone against these currencies until 2 August 1993.

Source: Danmarks Nationalbank.

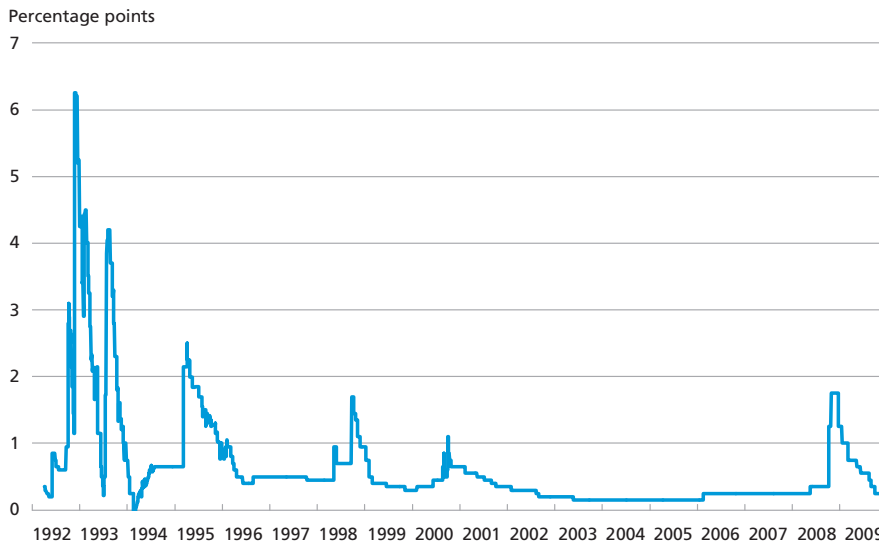
ity, which caused money-market interest rates to rise in the expectation that the monetary-policy stance would remain tight.

The result of the French referendum on the Maastricht Treaty on 20 September was only a narrow majority in favour, and the Banque de France had to raise interest rates on 23 September. At the same time, the central banks and ministries of finance of Germany and France issued a joint declaration stating that the existing central rate between the two currencies was consistent with the economic fundamentals.

Towards the end of September, the French franc and the Danish krone strengthened, enabling Danmarks Nationalbank to buy back considerable amounts of foreign exchange, totalling kr. 22 billion, during October and the first half of November. These purchases were almost twice as large as the amounts of foreign exchange sold in September 1992, and more favourable exchange rates applied than those in the sale. Consequently, the speculation against the krone generated losses for the market as a whole.

MONETARY-POLICY INTEREST-RATE SPREAD BETWEEN DENMARK AND GERMANY (1992-98)/THE EURO AREA (1999-2009)

Chart 1.2



Note: For Denmark, Danmarks Nationalbank's lending rate has been used for the entire period. For Germany, the Bundesbank's repo rate has been used. For the euro area, for the period from 1999 to 27 June 2000 the ECB's fixed allotment rate in the main refinancing operations has been used. After this time, the ECB's minimum bid rate has been used until 14 October 2008, followed by the ECB's fixed allotment rate. The first observation is 1 April 1992.

Source: Deutsche Bundesbank, ECB and Danmarks Nationalbank.

In mid-November, the mistrust of the Swedish krona flared up again, and Sweden reluctantly had to abandon the peg to the ECU on 19 November 1992. The ERM, including the Danish krone, came under renewed pressure. Danmarks Nationalbank had to raise the lending rate and the rate of interest on certificates of deposit considerably, widening the spread to the Bundesbank's repo rate to more than 6 percentage points, cf. Chart 1.2. The last part of November saw devaluation of both the Portuguese escudo and the Spanish peseta by 6 per cent.

The pressure against the Danish krone continued, and the situation came to a head on 10 December 1992, when Norway abandoned the peg to the ECU following strong intervention and interest-rate increases. Towards the end of November and in early December it was necessary to buy considerable amounts, totalling kr. 27 billion, of Danish kroner against Belgian francs and Dutch guilders in order to support the krone. On certain days in December, 1-month money-market interest rates in Denmark climbed to more than 25 per cent. The pressure on the Danish krone was brought to an end, however, when the agreement on Denmark's opt-outs in four Maastricht Treaty areas was concluded at the EC summit in Edinburgh on 11-12 December 1992.

The Irish pound remained under pressure. On account of Ireland's substantial trade with the UK, Ireland's competitiveness had been severely affected by sterling's depreciation since September 1992. This was the basis for the decision to devalue the Irish pound by 10 per cent on 1 February 1993.

The krone crisis

Immediately after, the Danish krone became an object of speculation. On 27 January 1993, the new Danish government under Social Democratic leadership¹ had presented its coalition agreement, and on 2 February the Prime Minister delivered his inauguration speech in the Folketing (Danish Parliament)², focusing on initiatives to reduce the high unemployment rate. This at once generated speculation among Danish³ and international⁴ opinion-makers on whether Denmark would devalue the krone to achieve a quick improvement of employment or let the krone float with a view to both a lower value of the krone and lower interest rates. Substantial purchases of kroner against the D-mark, the Dutch guilder and the Irish pound were called for, and Danmarks Nationalbank had to raise the lending rate and the rate of interest on certificates of deposit and press money-market interest rates upwards. The new Danish government announced its firm intention to stick to the fixed-exchange-rate policy,⁵ thereby ruling out that interest-rate policy would be used to stimulate the economy.

On 3 February, support purchases of kroner totalled around kr. 24 billion, equivalent to half of Danmarks Nationalbank's foreign-exchange reserve. On 4 February 1993, the discount rate was raised by 2 percentage points to 11.5 per cent, and, by agreement with the central banks of Belgium, France, Germany, the Netherlands and Spain, coordinated purchases of kroner in support of the krone were made within the intervention limits. The coordinated action came as a surprise for the market. The krone stabilised and strengthened further with the Bundesbank's announcement of an interest-rate cut on the same day. The banks' need for extra krone liquidity as a result of the outflow of foreign exchange was covered by Danmarks Nationalbank via collateralised lending at 17

¹ Besides the Social Democrats, the government consisted of the Centre Democrats, the Social Liberal Party and the Christian People's Party.

² Prime Minister Poul Nyrup Rasmussen's speech on the state of the realm and the government's intended measures, delivered on Tuesday, 2 February 1993.

³ Cf. the statements by the Director of the Danish Provincial Banks Association in the newspaper *Politiken* on 3 Februar 1993.

⁴ Cf. the statements by the chief economist of Citibank in the newspaper *Børsen* on 3 Februar 1993.

⁵ As stated by the Minister for Economic Affairs and the Minister of Finance, among others, at the press conference at 12:00 noon on 3 February 1993 on a new Economic Survey, and later that day by the Prime Minister on the evening news on TV.

days' maturity and an interest rate of 40 per cent.¹ Towards the end of the month the Danish 3-month money-market interest rate had dropped to 14 per cent. The krone had strengthened and there was a considerable inflow of foreign exchange. In the latter part of February, Danmarks Nationalbank could begin to lower its interest rates again.

The collapse of the ERM

The European foreign-exchange markets stabilised somewhat from February 1993, but new problems began to surface in May. The Spanish peseta was devalued by 8 per cent in mid-May, while the Portuguese escudo was devalued by 6.5 per cent. But this had no major impact on the currencies in the narrow band, and the interest-rate spreads narrowed.

The informal Ecofin meeting in Kolding on 21-23 May 1993 discussed two currency studies – by the Committee of Central Bank Governors² and the Monetary Committee³, respectively. The conclusions were that the currency unrest in the autumn of 1992 could be attributed to the interaction between the general economic conditions and the convergence among the member states. The way to strengthen monetary cooperation in the ERM should be that the individual member states would comply with the ground rules of the system, and both reports confirmed the main principles of the ERM (including the Basle-Nyborg Agreement).⁴ The two reports reflected the expectation that the last tremors after the currency unrest in the autumn was over.⁵

In June, short-term interest rates in France, the Netherlands and Belgium were lower than those in Germany, and interest rates in Ireland and Denmark were only slightly higher. This prompted a discussion of the role of the D-mark as the *de facto* anchor currency in the ERM, and the French Minister for Economic Affairs described the franc as a potential new anchor currency. However, in late June 1993 the events took a sudden turn after Germany had cancelled an economic summit with France – officially because of "calendar issues". There was a more and

¹ As mentioned previously, Sveriges Riksbank raised the marginal interest rate to 500 per cent in September 1992. Compared with this rate, Denmark's rate of interest of 40 per cent for 17-day loans would seem modest. However, it should be borne in mind that the Swedish marginal interest rate was an overnight rate. Had Danmarks Nationalbank offered overnight lending, the 40 per cent would have corresponded to around 500 per cent if liquidity was only needed overnight.

² The Committee of Central Bank Governors was established in 1964, originally as a forum of cooperation between the EC central banks.

³ The Monetary Committee was an EC advisory committee made up of two representatives from each member state (one from the civil service and one from the central bank) as well as two representatives from the Commission. The main tasks of the Monetary Committee were to prepare the Ecofin meetings and advise the ministers. On implementation of Stage 3 of EMU in 1999, the Monetary Committee was dissolved and replaced by the Economic and Financial Committee, EFC.

⁴ Cf. p. 12 of the Ministry of Economic Affairs, *Economic Survey*, May 1993.

⁵ Cf. p. 96 of the Ministry of Economic Affairs, *Økonomiministeriet i 50 år 1947-1997 (50 Years of the Danish Ministry of Economic Affairs 1947-1997 – in Danish only)*, Schultz, 1997.

more widespread perception of insufficient political willingness to cooperate and defend the current central rates and fluctuation limits. The new French government emphasised the need for interest-rate cuts to stimulate the economy. Germany, on the other hand, painted a relatively positive picture of the economic situation, pointing out that developments in inflation and the money stock provided scope for gradual and limited interest-rate cuts only.

Despite Germany's interest-rate reduction on 1 July 1993, which was mirrored by the other member states in the narrow band, except France, the tensions in the foreign-exchange market triggered renewed turmoil during the first week of July. On 14 July, the Danish krone fell to the intervention limit against the Dutch guilder, prompting considerable intervention. Danmarks Nationalbank's interest-rate increase on 15 July, together with the coordinated intervention on 16 July, brought the krone back from the intervention limit. On 14-16 July, support purchases of kroner totalled around kr. 25 billion. The French and Belgian francs were also affected by the unrest and had to be supported via intervention and interest-rate increases.

The fate of the ERM was increasingly linked to the Bundesbank's interest-rate decision at the last meeting before the summer break, on Thursday, 29 July 1993. On Wednesday, 28 July, Germany lowered the repo rate, generating strong expectations in the foreign-exchange market of a reduction of the discount rate the next day. The discount rate marked the bottom of the Bundesbank's interest-rate corridor, and if it was lowered, there would be scope for further reductions of the repo rate.

The Bundesbank meeting on Thursday, 29 July was longer than normal and did not result in the expected reduction of the discount rate, only a decision to lower the Lombard rate – the ceiling of Germany's interest-rate corridor – by 0.5 percentage point. This reduction – which was perceived as a compromise between domestic inflationary considerations and ERM considerations¹ – would have no impact on money-market interest rates in Germany. The German decision was announced at 2:10 p.m. and immediately sent the Danish krone falling to the intervention point. This prompted Danmarks Nationalbank to intervene substantially in support of the krone, that Thursday's interventions totalling just over kr. 9 billion. France too had to intervene substantially in support of the franc to keep it away from the lower limit of the band.

¹ Cf. e.g. the article Clear Choice. Bundesbank's Refusal To Cut Discount Rate Rips Monetary System, *Wall Street Journal*, 30 July 1993.

On Friday, 30 July, the financial markets clearly expected the ERM to collapse. Danmarks Nationalbank had to intervene in support of the krone against the Dutch guilder already shortly after the foreign-exchange market had opened. By mid-morning France abandoned the decision to keep the exchange rate against the D-mark within the band and let the franc drop to the intervention point. Moreover, intervention in support of the Belgian franc at the intervention limit took place.

The Danish krone also reached the intervention point against the D-mark. The interventions continued throughout the day. At 11:30 a.m. Danmarks Nationalbank had already sold foreign exchange for kr. 8 billion, and by 2:10 p.m. interventions in support of the krone had mounted to kr. 14 billion. The interventions were supplemented by several liquidity-absorbing operations in the money market conducted by Danmarks Nationalbank with a view to pushing the very short-term market interest rates upwards.

NEGOTIATIONS ON WIDENING OF THE ERM BAND IN AUGUST 1993¹

On Friday evening, 30 July 1993, Germany called a meeting of the Monetary Committee in the afternoon of Saturday, 31 July. The purpose was to discuss various models for resolving the currency crisis.

Denmark's mandate at the meeting had been discussed that morning at a meeting in the Prime Minister's Office with ministers and officials from the economic ministries. Danmarks Nationalbank was represented by Governors Erik Hoffmeyer and Bodil Nyboe Andersen. It was agreed that Denmark would make an effort to preserve the ERM, which had strongly benefited the Danish economy, and to avoid devaluation of the Danish krone.

At the meeting of the Monetary Committee, Denmark was represented by Jens Thomsen, Permanent Secretary at the Ministry of Economic Affairs, and Governor Bodil Nyboe Andersen, Danmarks Nationalbank. The participants in the meeting generally agreed that the economic fundamentals did not provide the basis for realignment of the central rates. This was the foundation for discussions of a wide range of solution models. One extreme was temporary complete suspension of the intervention obligations. The other extreme was to retain the system, while urging the member states to comply with the ERM ground rules. The positions of France and Germany were at the core of the discussions.

¹ Cf. pp. 203-212 of Hans Tietmeyer, *Herausforderung EURO*, Hanser, 2005.

France believed that the best way to contain the currency unrest was for Germany to reduce interest rates further and commit to buy – unilaterally – French francs for its foreign-exchange reserve.

Germany, on the other hand, found that there was no scope for further reduction of interest rates in the light of the continued high monetary growth and relatively high inflation in Germany. Moreover, Germany had, by that time, bought foreign exchange for support purposes to an extent which could jeopardise liquidity management.¹ Germany believed that a temporary widening of the fluctuation limits to +/- 6 per cent for all ERM member states would be the best way to restore confidence in the ERM.

Denmark argued in favour of retaining the ERM as far as possible in its existing form. Others pointed out that widening the fluctuation band to +/- 6 per cent would not be a viable solution for all currencies since the Spanish peseta and the Portuguese escudo had been under pressure despite their fluctuation band of +/- 6 per cent.

No solution was reached on the first day of the meeting, and the discussions continued on Sunday, 1 August 1993. In addition, it was acknowledged that the disagreement called for a meeting of the ministers. On Sunday evening, 1 August, and into the early hours of Monday, 2 August, a meeting was therefore held between the Ecofin ministers and the central-bank governors. Denmark was represented by Marianne Jelved, Minister for Economic Affairs, Jens Thomsen, Permanent Secretary at the Ministry of Economic Affairs, and Governors Erik Hoffmeyer and Bodil Nyboe Andersen, Danmarks Nationalbank.

The various solution models were discussed, but the meeting failed to reach agreement. After the meeting had been suspended several times, while the Chairman – Philippe Maystadt, Belgian Minister for Finance – negotiated with the individual delegations in smaller groups, during the early hours of Monday, 2 August, the Chairman tabled a proposal for temporary widening of the ERM fluctuation band to +/- 15 pct. Several member states argued for a narrower fluctuation band than +/- 15 per cent, but it was not possible to reach agreement. The final communiqué was then prepared.² At the end of the meeting, the Netherlands announced that Germany and the Netherlands had also concluded a bilateral agreement to maintain the fluctuation band of +/- 2.25 per cent

¹ The actual importance of this argument for Germany during the currency crisis in 1993 is questioned, however. The Bundesbank's interventions in June-August 1993 had a relatively modest effect on M3 in Germany compared to the effect of the interventions in September 1992, cf. Erik Hoffmeyer, European exchange rate cooperation, published in Age Bakker, Henk Boot, Olaf Sleijpen and Wim Vanthoor (eds.), *Monetary Stability through International Cooperation. Essays in Honour of André Szász*, Kluwer Academic Publishers, 1994 (printed on pp. 39-45 of Danmarks Nationalbank, *Monetary Review*, August 1994).

² Printed as Annex 2 in Danmarks Nationalbank, *Report and Accounts*, 1993.

between the D-mark and the Dutch guilder. The other participants knew nothing of this agreement, which did not appear from the communiqué issued.¹

In the months after the widening of the ERM fluctuation band to +/- 15 per cent, Danmarks Nationalbank explored the opportunities of gaining the Bundesbank's support for a narrow band of +/- 2.25 per cent between the D-mark and the Danish krone along the lines of the bilateral agreement between the Netherlands and Germany. However, Germany's support could not be enlisted.

The initial result of the widening of the ERM fluctuation band in August 1993 was suspension of the 21-year-old fixed-exchange-rate system, which had been a cornerstone in the Community since the establishment of the currency snake in 1972. From a Danish point of view it was unsatisfactory that the large member states had failed to muster sufficient political willingness to resolve the crisis using the existing set of rules. This was particularly regrettable given the agreement among the member states that the central rates were in accordance with the economic fundamentals. Denmark had consistently used all means to defend the krone in the ERM, but unfortunately some other participants had not allowed the system the same scope for functioning under pressure.

Developments in the years following August 1993, with the core currencies returning to their central rates, showed that the economic fundamentals for these member states had been in order.

FOREIGN-EXCHANGE POLICY AFTER THE COLLAPSE OF THE ERM IN AUGUST 1993

The widening of the ERM fluctuation band called for clarification of Denmark's foreign-exchange-policy objectives. A press conference took place in the Prime Minister's Office in the morning of 2 August, and the Prime Minister made a statement,² in which he emphasised that Denmark had sound economic fundamentals and that the fixed-exchange-rate policy would be maintained despite the widening of the ERM fluctuation band.

At the press conference, Erik Hoffmeyer, Governor of Danmarks Nationalbank, said that the widened band would not be exploited fully, and that easing of monetary policy should not be expected anytime soon. Danmarks Nationalbank followed up on the statement by an-

¹ The backdrop for the agreement between Germany and the Netherlands was that the exchange rate between the D-mark and the Dutch guilder had remained very stable throughout the period of unrest.

² Printed as Annex 3 to Danmarks Nationalbank, *Report and Accounts*, 1993.

nouncing in the afternoon that the liquidity requirement generated by the interventions in the foreign-exchange market would be partially covered by 1-month credit from Danmarks Nationalbank at rates of interest of 20-25 per cent.¹ The high interest rates were a signal to the market as a whole that there was a price to pay for speculating against the krone.

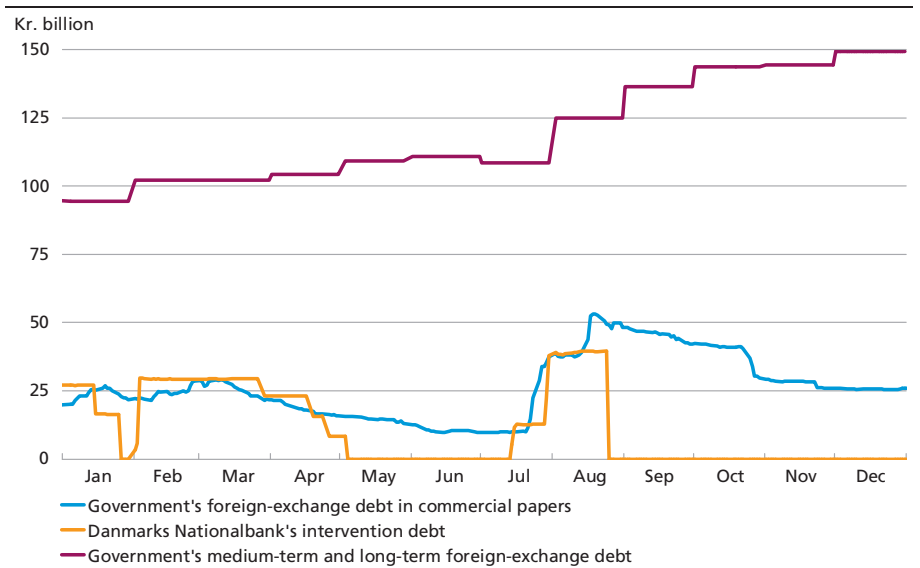
After the statement and the interest-rate signal, money-market interest rates remained high the following days, and the krone strengthened. During the subsequent normalisation of money-market interest rates, the krone fell back slightly, and this trend accelerated strongly on 12 August. Since it continued in the morning of 13 August, Governor Erik Hoffmeyer issued a statement on Denmark's foreign-exchange-policy issues in order to reduce the uncertainty in the foreign-exchange market.² It was emphasised that the government and Danmarks Nationalbank agreed that there were no grounds for changing the krone's central rate against the core ERM member states, i.e. Germany, the Netherlands, Belgium and France. Transitional problems under the new exchange-rate regime could, however, briefly weaken the krone more than the economic fundamentals would justify. The statement caused the krone to stabilise quickly.

The krone had weakened by just over 6 per cent vis-à-vis the D-mark and the Dutch guilder during the first weeks of August, cf. Chart 1.1 on page 38, but Danmarks Nationalbank could begin to normalise its interest rates in the autumn concurrently with the gradual renewed strengthening of the krone. This development was supported by Germany's slight reduction of the repo rate already on 3 August and further interest-rate reductions during the autumn. At the beginning of 1994, the Danish krone, the French franc and the Belgian franc were all close to or within the lower fluctuation limit against the D-mark in the previous narrow band, and these member states' short-term interest rates were again on a par with Germany's. The three member states were able to repurchase foreign exchange during the autumn of 1993 and at the beginning of 1994. On 5 January 1994, the krone was back within the previous narrow band against the D-mark for the first time since the collapse of the ERM in August 1993.

¹ Cf. p. 33 of Danmarks Nationalbank, *Report and Accounts*, 1993.

² Printed as Annex 4 to Danmarks Nationalbank, *Report and Accounts*, 1993.

DANMARKS NATIONALBANK'S INTERVENTION DEBT AND THE DANISH GOVERNMENT'S FOREIGN-EXCHANGE DEBT IN 1993 Chart 1.3



Note: The government's foreign-exchange debt in commercial papers and Danmarks Nationalbank's intervention debt are stated on a daily basis, while the government's medium-term and long-term foreign-exchange debt is stated on a monthly basis. The government's medium-term and long-term foreign-exchange debt has been compiled including the government's ECU-denominated bonds listed on the Copenhagen Stock Exchange and registered in VP, cf. Chapter 4, Eculån i København (ECU Loans in Copenhagen – in Danish only) of Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1991 and Chapter 5, Erfaringerne med statens eculån i København (Lessons of Government ECU Loans in Copenhagen – in Danish only) in Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1992.

Source: Danmarks Nationalbank.

FOREIGN FUNDING RULE FOR DANISH GOVERNMENT BORROWING 1993

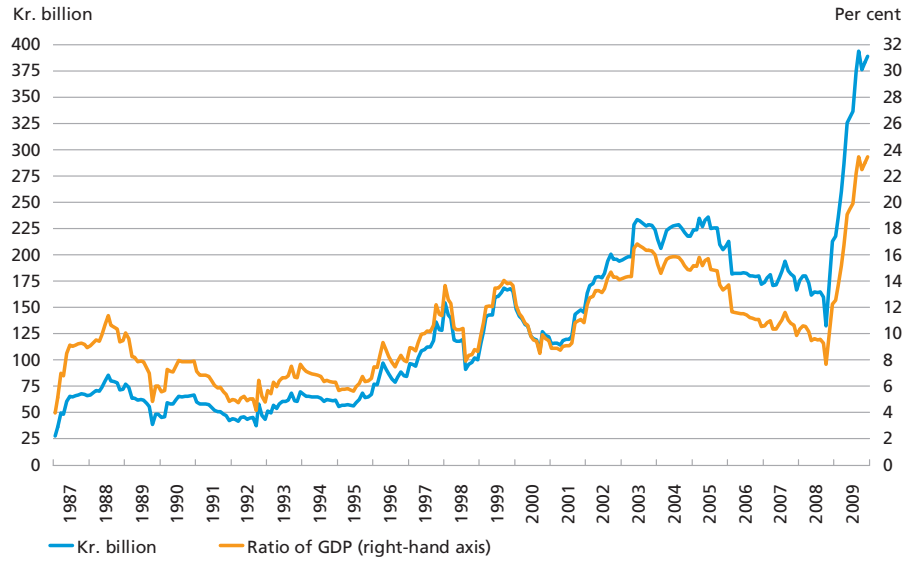
During the currency crises in 1992-93, several interventions in support of the krone had been financed by intervention credits under the ERM rules. In the light of the Bundesbank's long-standing concerns about the German money stock in the event of interventions in the ERM, Danmarks Nationalbank endeavoured to repay the intervention credits quickly,¹ either via repurchased foreign exchange or via government borrowing abroad. The typical pattern consisted of temporary drawings on the Danish government's short-term borrowing programmes in foreign exchange², until medium-term and long-term borrowing was in place, cf. Chart 1.3.

After the widening of the ERM fluctuation band to +/- 15 per cent, the ERM rules on automatic and unlimited intervention credit were in prac-

¹ Cf. pp. 41-42 of Danmarks Nationalbank, *Report and Accounts*, 1993.

² The Commercial Paper programmes. When the central government raised foreign loans, Danmarks Nationalbank bought the foreign-exchange proceeds from the central government, thus increasing the foreign-exchange reserve. The equivalent value in Danish kroner was credited to the central government's account at Danmarks Nationalbank.

DANMARKS NATIONALBANK'S FOREIGN-EXCHANGE RESERVE 1987-2009 Chart 1.4



Note: Net assets, end of month.
Source: Danmarks Nationalbank.

tice no longer relevant for Denmark as these credit rules applied only at the intervention limits. Consequently, Danmarks Nationalbank's foreign-exchange reserve needed to be strengthened to provide for efficient intervention in support of the krone even when it was nowhere near the intervention limits.

At a meeting with the economy-related ministers and the Prime Minister¹ at Danmarks Nationalbank on 1 September 1993, it was decided, on the basis of input from Danmarks Nationalbank, to establish a working group with representatives from the Ministry of Economic Affairs, the Ministry of Finance and Danmarks Nationalbank. The mandate of the working group was to review the principles for government borrowing in foreign exchange, while considering the foreign-exchange reserve, and also to assess the potential consequences for government borrowing of the prohibition on monetary financing that entered into force on 1 January 1994 with the introduction of Stage 2 of EMU, cf. Chapters 7 and 8. Under the prohibition, the central government's account at Danmarks Nationalbank must not be overdrawn.

On the basis of the working group's results, in the autumn of 1993 the government and Danmarks Nationalbank concluded an agreement on

¹ Since the beginning of the 1960s, the monthly meetings at Danmarks Nationalbank, in which the Prime Minister and the economic ministers participate together with their Permanent Secretaries, have been an important source of contact between the government and Danmarks Nationalbank, cf. p. 20 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993.

covering the overall government borrowing requirement.¹ The agreement stipulated a foreign and a domestic funding rule. According to the domestic funding rule, which formalised many years' practice, the government deficit and repayments on domestic debt should be financed by government borrowing in kroner. No funding rules had previously applied to Danish government borrowing abroad. Under the new foreign funding rule, the primary aim of Danish government borrowing in foreign exchange was to ensure an adequate foreign-exchange reserve at Danmarks Nationalbank, cf. Chart 1.4. The funding rule² was mentioned in the explanatory notes to the Act on authority to raise loans of 22 December 1993.³

THE KRONE'S PATH BACK TO THE CENTRAL RATE

During most of 1994, Danmarks Nationalbank did not intervene in the foreign-exchange market, and the krone was relatively stable against the D-mark at a slightly weaker level than the lower intervention limit in the previous narrow band. Moreover, the krone remained stable throughout the year against the other core currencies in the ERM. At the turn of the year 1994/95, Austria, Sweden and Finland joined the EU, but only Austria joined the ERM and the group of core member states. As mentioned above, Austria had let the schilling follow the D-mark closely for many years.

The first months of 1995 were characterised by significant exchange-rate shifts between the major currencies – the dollar, the D-mark and the Japanese yen – which prompted strong fluctuations among the European currencies. Most currencies weakened notably vis-à-vis the D-mark, especially those that had lost most value since the outbreak of the currency unrest in 1992. With effect from 6 March 1995, the Spanish peseta and the Portuguese escudo were written down by 7 per cent and 3.5 per cent, respectively, relative to the other ERM currencies.

At the beginning of March 1995, the unrest spread to several of the core currencies, and the krone weakened markedly. The central banks of

¹ Cf. Danmarks Nationalbank, *Danish Government Borrowing and Debt 1993*, Chapter 5: Ny lånebemyndigelseslov og norm for statslig låntagning (New Act on the Authority to Raise Loans and Funding Rule for Government Borrowing – in Danish only).

² The importance of the funding rule for the general credibility of the fixed-exchange-rate policy was the subject of a major academic debate in 1995, cf. Torben M. Andersen, *Statsgældspolitik* (Government Debt Policy – in Danish only), *Nationaløkonomisk tidsskrift*, Vol. 133(1), 1995; Anders Møller Christensen, *Statsgældspolitik – en kommentar* (Government Debt Policy – a Comment – in Danish only), *Nationaløkonomisk tidsskrift*, Vol. 133(1), 1995, and Torben M. Andersen, *Statsgældspolitik – en replik* (Government Debt Policy – a Reply – in Danish only), *Nationaløkonomisk tidsskrift*, Vol. 133(1), 1995. The key issue in the debate was whether it was expedient to finance the budget deficit entirely by borrowing in kroner (as the funding rule implied) or whether it would be an advantage to include financing in foreign exchange.

³ Printed on pp. 65-69 of Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1993, Chapter 5, Ny lånebemyndigelseslov og norm for statslig låntagning.

France, Belgium and Denmark reacted by raising interest rates in a coordinated action, which turned the development around. Interest rates could be normalised again concurrently with the strengthening of the krone, and foreign exchange could be bought back. In the 2nd half of 1995, the krone was stable against the D-mark within the previous narrow band.¹

The crisis in March 1995 marked the last time in the history of the ERM when the core member states were hit by a common currency crisis. By adopting the Edinburgh Agreement in 1993, the population of Denmark had indicated that it did not wish to participate in Stage 3 of EMU. Consequently, the Danish krone was not subject to the "forces of convergence", which, in the years up to 1999, more or less automatically ensured stable exchange-rate relations between the EU member states that were expected to participate in Stage 3 of EMU from the outset.

1996 was a calm year for the ERM currencies. The core currencies were close to their central rates, and the non-core currencies all strengthened against the D-mark. The Finnish markka joined the ERM in October 1996, and the lira rejoined in November 1996. The interest in rejoining the ERM was spurred by the fact that one of the convergence criteria for membership of Stage 3 of EMU and the single currency, the euro, was:

"... the observance of the normal fluctuation margins provided for by the exchange-rate mechanism of the European Monetary System, for at least two years, without devaluing ..."²

NEW INTERVENTION STRATEGY IN 1996

In 1996, Danmarks Nationalbank changed its strategy for intervention in the foreign-exchange market. In the 2nd half of 1995, the interventions had been aimed at repurchasing the foreign exchange sold in the period 1992-93, but the new strategy implied buying and selling foreign exchange more frequently in order to dampen the daily fluctuations in the krone rate. The krone was thereby stabilised closer to its central rate.³

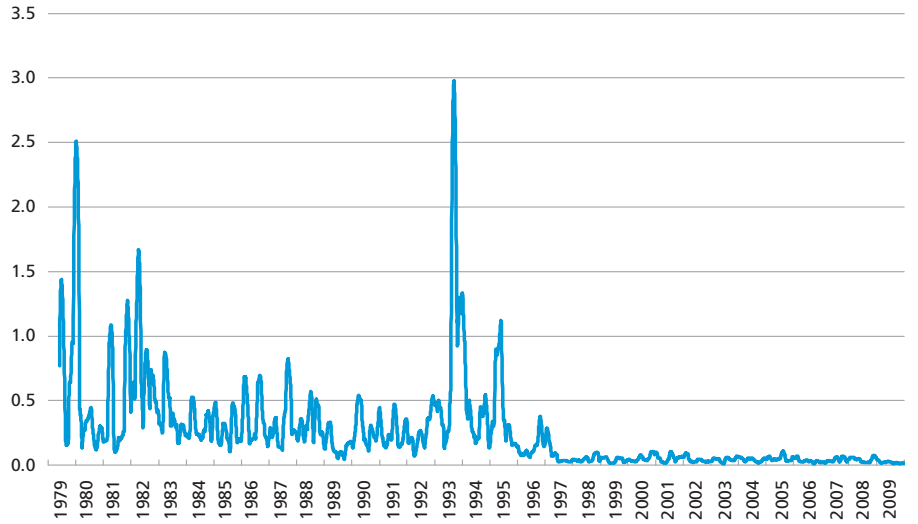
In 1997, the krone was more stable than ever before in the history of the ERM, cf. Chart 1.5. The short-term fluctuations in the krone rate were now so small that they brought Denmark in line with the Nether-

¹ As from 7 July 1995, the krone was permanently stronger than the lower fluctuation limit against the D-mark in the previous narrow band.

² Article 140 of the Lisbon Treaty.

³ Cf. pp. 37-38 of Danmarks Nationalbank, *Report and Accounts*, 1996.

VOLATILITY OF THE KRONE EXCHANGE RATE AGAINST THE D-MARK (1979-98)/EURO (1999-2009) Chart 1.5



Note: Volatility is a 60-day moving standard deviation in per cent. Before 1999 a synthetic krone rate against the euro has been used, compiled on the basis of the krone rate vis-à-vis the D-mark and the irrevocably locked conversion rate between the euro and the D-mark on 1 January 1999. The first observation is 13 March 1979.
 Source: Danmarks Nationalbank.

lands, Belgium and Austria, whose currencies had followed the D-mark closely for many years.¹

Given the wide ERM fluctuation band (+/- 15 per cent), the central rate was the only natural focal point, and the strategy of stabilising the krone close to the central rate was maintained in the following years – even after the establishment of ERM II, cf. Chapter 2. Danmarks Nationalbank's Annual Report 1997 formulated the strategy a little cautiously as follows:

"Monetary policy is designed to maintain a stable krone rate based on the central rate."²

As confidence in the fixed-exchange-rate policy grew, the strategy announcements could be formulated in more concise and exact terms, e.g. in Governor Bodil Nyboe Andersen's speech at the annual meeting of the Danish Bankers Association on 4 December 2002:

¹ Cf. p. 31 of Danmarks Nationalbank, *Report and Accounts*, 1997.
² Quotation from p. 30 of Danmarks Nationalbank, *Report and Accounts*, 1997.

"Danmarks Nationalbank's aim is to ensure that the krone's rate against the euro is stabilised close to the central rate within ERM II, and the exchange rate is the sole basis for our monetary-policy deliberations."¹

¹ Quotation from Governor Bodil Nyboe Andersen's speech at the annual meeting of the Danish Bankers Association on 4 December 2002 (printed on pp. 89-93 of Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2003).

APPENDIX 1.A: REALIGNMENT PERCENTAGES IN THE ERM 1979-98

REALIGNMENT PERCENTAGES¹ Table 1.A.1

With effect from	24 Sep. 1979	30 Nov. 1979	23 Mar. 1981	5 Oct. 1981	22 Feb. 1982	14 June 1982
D-mark (DEM)	+ 5.0	+ 5.0	-	+ 5.5	-	+ 4.25
French franc (FRF)	+ 3.0	+ 5.0	-	- 3.0	-	- 5.75
Dutch guilder (NLG)	+ 3.0	+ 5.0	-	+ 5.5	-	+ 4.25
Belgian franc (BEF)	+ 3.0	+ 5.0	-	-	- 8.5	-
Italian lira (ITL)	+ 3.0	+ 5.0	- 6.0	- 3.0	-	- 2.75
Irish pound (IEP)	+ 3.0	+ 5.0	-	-	-	-
Spanish peseta (ESP)	•	•	•	•	•	•
Pound sterling (GBP)	•	•	•	•	•	•
Portuguese escudo (PTE)	•	•	•	•	•	•
Austrian schilling (ATS)	•	•	•	•	•	•
Finnish markka (FIM)	•	•	•	•	•	•
Greek drachma (GRD)	•	•	•	•	•	•
Danish krone (DKK)	-	-	-	-	- 3.0	-

¹ Corresponding to the official wording of the press communiqués issued.

CONTINUED Table 1.A.1

With effect from	21 Mar. 1983 ¹	22 July 1985	7 Apr. 1986	4 Aug. 1986	12 Jan. 1987	8 Jan. 1990
D-mark (DEM)	+ 5.5	+ 2.0	+ 3.0	-	+ 3.0	-
French franc (FRF)	- 2.5	+ 2.0	- 3.0	-	-	-
Dutch guilder (NLG)	+ 3.5	+ 2.0	+ 3.0	-	+ 3.0	-
Belgian franc (BEF)	+ 1.5	+ 2.0	+ 1.0	-	+ 2.0	-
Italian lira (ITL)	- 2.5	- 6.0	-	-	-	²
Irish pound (IEP)	- 3.5	+ 2.0	-	- 8.0	-	-
Spanish peseta (ESP)	•	•	•	•	•	-
Pound sterling (GBP)	•	•	•	•	•	•
Portuguese escudo (PTE)	•	•	•	•	•	•
Austrian schilling (ATS)	•	•	•	•	•	•
Finnish markka (FIM)	•	•	•	•	•	•
Greek drachma (GRD)	•	•	•	•	•	•
Danish krone (DKK)	+ 2.5	+ 2.0	+ 1.0	-	-	-

¹ As the sterling rate rose strongly after the realignment on 21 March 1983, it was decided in May 1983 to carry out a formal EMS realignment designed to place sterling in the ECU at the market rate of 13 May 1983 at the same time as the agricultural price agreement. Bilateral parities and intervention rates remained unchanged.

² On 8 January 1990 the fluctuation band for the Italian lira was reduced from +/- 6 per cent to +/- 2.25 per cent around the bilateral central rates. In connection with the narrowing of the fluctuation band the intervention rates for the lira vis-à-vis the other ERM currencies were adjusted. The lower limit for the lira vis-à-vis the other currencies remained unchanged whereas the upper limit was adjusted.

CONTINUED		Table 1.A.1						
With effect from	14 Sep. 1992	17 Sep. 1992	23 Nov. 1992	1 Feb. 1993	14 May 1993	6 Mar. 1995	16 Mar. 1998	
D-mark (DEM)	+ 3.5	-	-	-	-	-	-	
French franc (FRF)	+ 3.5	-	-	-	-	-	-	
Dutch guilder (NLG)	+ 3.5	-	-	-	-	-	-	
Belgian franc (BEF)	+ 3.5	-	-	-	-	-	-	
Italian lira (ITL)	- 3.5	•	•	•	•	•	-	
Irish pound (IEP)	+ 3.5	-	-	- 10.0	-	-	+ 3.0	
Spanish peseta (ESP)	+ 3.5	- 5.0	- 6.0	-	- 8.0	- 7.0	-	
Pound sterling (GBP)	+ 3.5	•	•	•	•	•	•	
Portuguese escudo (PTE)	+ 3.5	-	- 6.0	-	- 6.5	- 3.5	-	
Austrian schilling (ATS)	•	•	•	•	•	-	-	
Finnish markka (FIM)	•	•	•	•	•	•	-	
Greek drachma (GRD)	•	•	•	•	•	•	-	
Danish krone (DKK)	+ 3.5	-	-	-	-	-	-	

Source: Pp. 158-59 of Danmarks Nationalbank, *Report and Accounts*, 1998.

CHAPTER 2

Exchange-Rate Cooperation and Currency Crises – Part II: the Krone outside the Euro Area

NEW FRAMEWORK FOR DENMARK'S FIXED-EXCHANGE-RATE POLICY

With the establishment of the European Monetary Institute, EMI,¹ on 1 January 1994, an institution had been set up specifically to prepare the third and final stage of Economic and Monetary Union, EMU, in the EU. This added momentum to the EMU process, cf. Chapter 7. Towards the end of 1995 it was decided to change the name of the future single currency from ECU to euro. A plan was also laid down for introducing the single currency as book money in 1999.

Renewed confidence in the realisation of the single currency created a new situation in respect of Denmark's foreign-exchange policy. Until then, the krone had been a firm part of the D-mark block, and during the currency crises in 1992-93 the fate of the krone had been linked to other core currencies in the Exchange-Rate Mechanism, ERM. By adopting the Edinburgh Decision in 1993, the population of Denmark had indicated that it did not want to participate in Stage 3 of EMU. This left Denmark as the only ERM member state that wished to maintain a fixed-exchange-rate policy without joining the single currency. Denmark could therefore expect to be "isolated" in the event of future currency crises in the European foreign-exchange markets.

At the informal Ecofin² meeting in September 1997 a political decision was made to the effect that the conversion rates to apply between the currencies of the euro area member states from January 1999 would be

¹ The EMI was established on implementation of Stage 2 of EMU in January 1994. The EMI was to continue the monetary-policy and foreign-exchange cooperation between the central banks of the EU member states that had previously been coordinated by the EC Committee of Central Bank Governors. Furthermore, the EMI was to prepare the framework for the single monetary and exchange-rate policy in Stage 3 of Economic and Monetary Union. In October 1993 it had been decided that the EMI was to be based at the "Eurotower" building in Frankfurt, Germany, but until November 1994 it was temporarily based at the premises of the Bank for International Settlements, BIS, in Basle, Switzerland.

² The Economic and Financial Affairs Council of the EC (and subsequently the EU). Participants in the informal Ecofin meetings are the member states' ministers for economic and financial affairs and their central bank governors. The meetings are informal in that no legally binding decisions are made.

announced in May 1998, when the participants would also be selected. The foreign-exchange market expected the conversion rates to be based on the central rates in ERM¹, and in 1997 and early 1998 nearly all ERM currencies were very close to their central rates vis-à-vis the D-mark. Both short-term and long-term yield spreads between the expected euro area member states also narrowed further.

The Greek drachma joined ERM in March 1998. Greece's membership of ERM reflected its wish to participate in Stage 3 of EMU from 1 January 2001. At the same time, the central rate of the Irish pound was revalued by 3 per cent vis-à-vis the other ERM currencies as the market rate had exceeded the central rate for some time.

In May 1998 a formal decision was made as to which member states were to participate in Stage 3 of EMU and the single currency, the euro, from its launch on 1 January 1999. The following 11 member states were selected: Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain, i.e. all ERM member states except Denmark and Greece. At the same time, the bilateral conversion rates between the currencies in question were announced. In line with expectations, it was decided that the euro conversion rates were to be based on the central rates in ERM.

On 31 December 1998 the participating currencies were irrevocably locked against the euro, which became an independent currency on 1 January 1999. The procedure on 31 December 1998 was governed by the requirement in the Maastricht Treaty that 1 euro was to be equal to 1 ECU on introduction of the euro. First, the national central banks calculated the exchange rates of their national currencies and ensured that the mutual exchange rates between the participating currencies matched the conversion rates preannounced in May 1998. After that, the exchange rate of the official ECU was calculated, and the exchange rate of 1 euro could be determined. This procedure reflected the fact that the ECU basket also included the currencies of member states not participating in Stage 3 from the outset (e.g. the pound sterling and the Danish krone).²

Greece and Denmark were the only non-euro area member states wishing to participate in ERM II from its start in 1999. At the request of Greece, the central rate of the drachma in ERM II was revalued by 3.5 per cent against the euro in January 2000. For a prolonged period up to the revaluation, the drachma had been 6-7 per cent stronger than the

¹ Cf. p. 33 of Danmarks Nationalbank, *Report and Accounts*, 1997.

² Cf. pp. 81-82 of Danmarks Nationalbank, *Report and Accounts*, 1998; and Winnie Jakobsen, *Fastlåsning af valutakurserne når ØMU'en starter* (Locking of Exchange Rates at the Start of EMU – in Danish only), Danmarks Nationalbank, *Monetary Review*, 4th Quarter 1997.

central rate. On 1 January 2001, Greece joined the euro area with a conversion rate corresponding to the central rate of the drachma in ERM II. After that Denmark was the only participant in ERM II for some years.

THE CURRENCY UNREST IN 1998¹

In 1998 the international financial markets were affected by the turmoil that began in South-East Asia in 1997, cf. Chapter 9. At the beginning of 1998 the krone tended to weaken against the D-mark, especially due to the market uncertainty about the outcome of the Danish referendum on the Amsterdam Treaty on 28 May 1998. Danmarks Nationalbank intervened in the foreign-exchange market by selling foreign exchange for kroner.

From early April this tendency strengthened, and the krone weakened further, to a level close to its central rate, since the uncertainty in the foreign-exchange market had been spurred on by a labour dispute in Denmark. In April 1998 alone, Danmarks Nationalbank sold foreign exchange for kr. 14 billion net in support of the krone. In reality this was the first incidence of isolated pressure on the Danish krone as a result of the situation in Denmark since the widening of the fluctuation band in ERM in August 1993. Sales of foreign exchange continued into May, and on 6 May 1998 Danmarks Nationalbank raised its interest rates by 0.5 percentage point. This step took the market by surprise, and after elimination of the uncertainty that had arisen in the foreign-exchange market prior to the referendum, Danmarks Nationalbank was able to lower its interest rates by 0.25 percentage point on 29 May.

From the interest-rate cut in May until the end of August 1998 Danmarks Nationalbank's intervention in the foreign-exchange market was negligible. However, the situation in the international financial markets changed when the Norwegian krone came under sustained pressure as a result of falling oil prices and uncertainty about economic policy. At the same time turmoil prevailed in Russia, cf. below. In response to the pressure against the Norwegian krone, Norges Bank, after having raised interest rates several times, in reality let the Norwegian krone float on 24 August by announcing that it would not raise interest rates further or support the Norwegian krone by intervening in the foreign-exchange market. The Danish krone briefly came under pressure and Danmarks Nationalbank intervened for considerable amounts in the foreign-

¹ The currency unrest in 1998 is described in more detail on pp. 39-42 and 51-57 of Danmarks Nationalbank, *Report and Accounts*, 1998; the turmoil in the international financial markets in 1998 is discussed in Leif Lybecker Eskesen, *Is Last Autumn's Financial Crisis Over?*, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 1999.

exchange market, but kept its monetary-policy interest rates unchanged. On 25 August, Danmarks Nationalbank thus intervened for around kr. 5 billion to support the krone. On the morning of 26 August the krone came under further pressure when a major news agency erroneously reported that trading in the Danish currency had been suspended. The error was soon corrected, but in the morning of 26 August Danmarks Nationalbank was compelled to purchase kroner for a further kr. 10 billion or so. As on previous occasions, money-market interest rates soared, making speculation more expensive and underpinning the krone. The wave of speculation ceased, and already in the afternoon of 26 August Danmarks Nationalbank was able to repurchase a small amount of foreign exchange while the krone also strengthened. In the period from 27 August to 2 September, Danmarks Nationalbank was able to repurchase foreign exchange for around kr. 6 billion and at the same time interest rates in the money market began to normalise.

September 1998 saw renewed pressure against the krone in connection with general turmoil in the international financial markets. The main underlying reason was that Russia in August suspended payments on foreign debt. At the same time Russia gave up its attempts to stabilise the rouble vis-à-vis the dollar, cf. Chapter 9. In many countries the turmoil led to widening of the yield spread between mortgage/corporate bonds and government bonds. One consequence of the market turmoil was that a large US hedge fund, Long Term Capital Management, LTCM, experienced problems.¹ LTCM and other investors had taken considerable positions in the Danish mortgage market, which led to concerns that the pricing of Danish mortgage bonds could be influenced by sell-backs of mortgage bonds. It should be noted that at that time mortgage bonds were not eligible as collateral for monetary-policy loans from Danmarks Nationalbank. All other things being equal, this made Danish mortgage bonds less liquid in a situation of financial market turmoil.

In the period 10-18 September 1998, Danmarks Nationalbank supported the exchange rate by purchasing kroner for foreign exchange for just under kr. 13 billion. Unlike in August, the need to intervene proved to be more persistent, and the monetary-policy interest rates were raised with effect from 21 September. Pressure against the krone continued immediately after the interest-rate increase, as the Swedish krona became subject to uncertainty following an election in Sweden, and once again Danmarks Nationalbank had to intervene. Intervention on 21 September totalled just under kr. 11 billion. However, the pressure soon

¹ Cf. Roger Lowenstein, *When Genius Failed*, HarperCollinsPublishers, 2002.

subsided. Danmarks Nationalbank was able to purchase foreign exchange and at the same time the krone strengthened. The communiqué of 26 September 1998 on Danish participation in ERM II contributed substantially to stabilising the krone, cf. Box 2.1 p. 64. In the last three months of the year, Danmarks Nationalbank was able to buy back a substantial proportion of the foreign exchange used to support the krone in August and September. It was also possible to lower interest rates on several occasions in the last months of 1998 and the beginning of 1999. During the currency unrest in September 1998, the spread between money-market interest rates in Denmark and Germany was briefly around 2 percentage points. By early 1999, it had narrowed to around 0.5 percentage point.

The option-adjusted yield spread between Danish 30-year mortgage bonds and Danish 10-year government bonds had widened by around 0.5 percentage point during September and October. From September to November non-residents resold mortgage bonds for a net amount of kr. 25 billion, but in December non-residents repurchased mortgage bonds for kr. 6 billion net.¹

The turmoil in the foreign-exchange markets in the autumn of 1998 could be addressed within the framework of Danmarks Nationalbank's monetary-policy instruments. At the end of 1998, when preparations were underway to revise the range of instruments – e.g. by expanding the collateral base for monetary-policy loans to include Danish mortgage bonds – it was nevertheless decided to review the instruments once more with special focus on their robustness to currency crises. As a result, current-account limits were reintroduced in connection with the launch of the new instruments in 1999, cf. Chapter 3.

In the autumn of 1998 work was also in progress to introduce new guidelines for borrowing by government-guaranteed entities, cf. Supplement B. In November 1998, the Ministry of Finance and Danmarks Nationalbank concluded a new agreement on guidelines for borrowing by certain government-guaranteed entities.² In this connection a provision was inserted into the agreements between the government-guaranteed entities and the ministries stating that Danmarks Nationalbank could order an entity to conclude or reverse certain transactions if the entity's borrowing behaviour was deemed to be contrary to monetary-policy interests.³ This gave Danmarks Nationalbank an additional instru-

¹ Cf. p. 60 of Danmarks Nationalbank, *Report and Accounts, 1998* and Leif Lybecker Eskesen, *Is Last Autumn's Financial Crisis Over?*, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 1999.

² Corresponding agreements in relation to the other government-guaranteed entities were subsequently concluded between Danmarks Nationalbank and the relevant ministries.

³ Cf. p. 56 of Danmarks Nationalbank, *Danish Government Borrowing and Debt, 1998*, and Danmarks Nationalbank, *Danish Government Borrowing and Debt, 1999*, Chapter 7: Government-Guaranteed Entities.

ment in case the government-guaranteed entities in a future currency crisis took positions that could amplify pressure against the Danish krone.

ERM II AND NEGOTIATIONS ON THE NARROW BAND FOR THE DANISH KRONE IN 1998

Initially, the widening of the ERM fluctuation band to +/- 15 per cent in August 1993 entailed *de facto* suspension of the fixed-exchange-rate mechanism that had been so beneficial to the Danish economy. The widening was originally launched as a temporary measure. In a statement on 2 August 1993, the Danish Prime Minister expressed the government's hope that:

"...before the end of the year agreement can be reached on a substantial narrowing of the temporarily wide fluctuation margins."¹

In a statement on 13 August 1993, Governor Erik Hoffmeyer, Danmarks Nationalbank, also announced that:

"...agreement on a considerable narrowing of the wide fluctuation margin temporarily fixed at +/- 15 per cent will be sought under the auspices of the EC."²

In the relevant international meeting forums, both the Ministry of Economic Affairs and Danmarks Nationalbank repeatedly expressed Denmark's wish that the fluctuation band in ERM be narrowed. However, this was a relatively isolated Danish view. Most other ERM participants saw the wide fluctuation band as an advantage since it allowed currencies to appreciate and depreciate considerably. This increased uncertainty about the outcome of speculation against a currency – the expression used was that the wide band gave speculators a "two-way risk". The other ERM member states could present this argument more forcefully after the Asian crisis in 1997, when several South-East Asian countries had to abandon their fixed-exchange-rate policies vis-à-vis the dollar, cf. Chapter 9. The widening of the ERM fluctuation band to +/- 15 per cent that was originally to have been temporary thus became permanent.

¹ Quotation from the statement, which was printed as Annex 3 to Danmarks Nationalbank, *Report and Accounts*, 1993.

² Quotation from the statement, which was printed as Annex 4 to Danmarks Nationalbank, *Report and Accounts*, 1993.

In October 1996, the EMI completed a report on a new exchange-rate mechanism, ERM II, that was to replace ERM at the start of Stage 3 of EMU on 1 January 1999. The main objective of ERM II was to support the stability of the exchange rate between the single currency (the euro) and the currencies of the non-euro area EU member states. The EMI report was annexed to the conclusions of the European Council in Dublin in December 1996. The EMI's proposed principles and objectives of ERM II were incorporated, without major changes, into the Resolution adopted by the European Council in Amsterdam in June 1997.¹

Participation in ERM II was to be voluntary, but, as mentioned in Chapter 1, at least two years' prior participation in the exchange-rate mechanism was a precondition for joining the euro. In ERM II a bilateral central rate would be fixed for each participating currency vis-à-vis the euro, and unless otherwise agreed the fluctuation band would be +/- 15 per cent around the central rate.² If the exchange rate of a member state's currency approached one of the fluctuation margins in ERM II, both the European Central Bank, ECB, and the central bank of the member state in question were to purchase the weak currency and sell the strong one to ensure that the exchange rate remained within the fluctuation band.³ In principle, intervention at the fluctuation margins would be automatic and unlimited, but the ECB and the central bank of the relevant member state had the option to suspend intervention if it was contrary to the interests of price stability. It would be possible to perform coordinated intervention within the fluctuation band. Any decisions on central rates and fluctuation bands would require agreement between euro area ministers, the ECB and the ministers and central bank governors of the non-euro area member states participating in ERM II and would take place according to a codecision procedure in which the European Commission would also participate. Finally, ERM II, like ERM, was to include provisions on the granting of unlimited short-term intervention credit in the event of intervention at the fluctuation margins.

¹ Cf. Resolution of the European Council on the establishment of an exchange-rate mechanism in the third stage of economic and monetary union, Amsterdam, 16 June 1997 (Official Journal, C 236, 2.8.1997).

² The euro was thus to be at the core of ERM II since the participating currencies would have central rates against the euro, but not against each other, as had been the case under the former ERM. Consequently, ERM II was described as a "hub and spokes" model without the same multilateral design as ERM. The structure of ERM II compared with ERM is discussed in more detail in Majken Köhler and Jesper Ulriksen Thuesen, *Institutionelle forhold for Danmark uden for ØMU* (Institutional Conditions for Denmark outside EMU – in Danish only), Danmarks Nationalbank, *Monetary Review*, May 1997; and Kirsten Rohde Jensen, *Inside EU, outside EMU: institutional and legal aspects of the Exchange Rate Mechanism II*, published in ECB, *Legal aspects of the European system of central banks*, 2005. Intervention was never seen at the margins of +/- 15 per cent in ERM.

³ The other ERM II participants were not to have any obligation to intervene.

The text of the Resolution from the Amsterdam summit enabled a member state with positive convergence results to obtain a narrower fluctuation band than ± 15 per cent., During the negotiations on ERM II, Denmark had attached importance to this option¹ and from the outset Denmark expressed a clear interest in an arrangement that tied the krone closer to the euro. Officially, negotiations had to await the establishment of the ECB on 1 June 1998, as the Amsterdam Resolution stipulated that the ECB was to participate in the decision.

Already in October 1997 the UK government had announced that the UK wished to exercise its Treaty-bound right not to participate in Stage 3 of EMU from the beginning.² On the recommendation of the Swedish government, the Riksdag (Swedish parliament) in December 1997 decided that Sweden would not participate in Stage 3 of EMU from the beginning either. Sweden had no Treaty-bound right to opt out of the euro, but by not joining ERM Sweden did not meet the exchange-rate criterion for participation in the single currency.³ Greece and Denmark were thus the only non-euro area member states wishing to participate in ERM II from its start in 1999.

At one of the monthly meetings with the Danish ministers for economic and financial affairs and the Prime Minister in the spring of 1998, Danmarks Nationalbank proposed that Denmark should aim for a fluctuation band of ± 2.25 per cent in ERM II. The government ministers agreed. A narrower band than ± 2.25 per cent might be seen as "over-ambitious" among players in the foreign-exchange markets, with a risk that they would speculate against the krone to "test" the limits. On the other hand, Danmarks Nationalbank had a proven track record of keeping the krone within a fluctuation band of ± 2.25 per cent. A wider band would not have the same signal value in relation to the fixed-exchange-rate policy as ± 2.25 per cent, which was identical to the narrow band in ERM before the widening of the fluctuation band in August 1993. At the meeting of ministers in June 1998, Danmarks Nationalbank proposed that Denmark should make tentative enquiries at the ECB concerning a narrow band for the krone in ERM II since ERM II would inevitably crop up at the informal meeting of the Ecofin Council

¹ Cf. Danmarks Nationalbank, Monetary Policy Strategy in the Third Stage of EMU, *Monetary Review*, November 1996

² In June 2003, the UK Treasury published a report on five economic tests to be passed before any decision on UK participation in the euro could be made, and at the time only one of the five tests could immediately be fully passed. This concerned the beneficial value of euro participation for the financial sector. The five economic tests are described in more detail on p. 78 of Danmarks Nationalbank, *Report and Accounts*, 2003.

³ In September 2003 Sweden held a referendum on introduction of the euro. The proposal was rejected by a majority of 56 per cent.

in Vienna in September. This proposal was also supported by the government ministers.

In June and July 1998, governors Bodil Nyboe Andersen and Jens Thomsen and a number of other employees from Danmarks Nationalbank had meetings and telephone contacts with ECB staff at various levels, and the Danish wish for a narrow band of ± 2.25 per cent was presented. On 18 August the Danish wish for a narrow band was formally approved by the Currency Committee¹ and at a subsequent meeting of the Prime Minister, the Minister for Economic Affairs and the Minister for Finance. On 26 August, Marianne Jelved, Minister for Economic Affairs, notified the Economic and Political Affairs Committee and the European Affairs Committee of the Folketing (Danish parliament) about the preparations for participation in ERM II. After that the chairman of the Ecofin Council was approached concerning negotiations about the Danish wish for a narrow band and a political decision to this effect at the informal Ecofin meeting in Vienna in September.

Some uncertainty arose as to whether the Danish request would be met. As previously mentioned, the Danish krone had come under pressure in August 1998 following Norway's transition to a floating exchange-rate regime. It did not make matters better that the Danish krone was also under pressure in September in connection with the international financial turmoil. Moreover, according to the press², a member of the Folketing representing one of the parties in government had hinted on the possibility of devaluing the krone if it strengthened too much. However, normally politicians supported the fixed-exchange-rate policy, and Mogens Lykketoft, Minister for Finance, immediately spoke out against this statement.

After some discussion, the Danish wish for a narrow band won support at the meeting of the Monetary Committee³ on 16 September. Denmark's narrow band was finally confirmed in the agreement concluded at the informal Ecofin meeting on 25-27 September 1998 in Vienna between the ministers of economic and financial affairs and the central bank governors of the EU member states.

¹ *Valutaudvalget*, a committee with representatives of Danmarks Nationalbank and senior civil servants from the Prime Minister's Office, the Ministry of Economic Affairs and the Ministry of Finance.

² Cf. p. 13 of the financial newspaper *Børsen*, 9 September 1998 and p. 16 of *Børsen*, 10 September 1998.

³ The Monetary Committee was an EC advisory committee made up of two representatives from each member state (one from the civil service and one from the central bank) and two representatives from the Commission. The main task of the Monetary Committee was to prepare the Ecofin meetings and advise the ministers. On implementation of Stage 3 of EMU in 1999, the Monetary Committee was dissolved and replaced by the Economic and Financial Committee, EFC.

COMMUNIQUÉ: DANISH AND GREEK PARTICIPATION IN THE NEW
EXCHANGE-RATE MECHANISM (ERM II), VIENNA, 26 SEPTEMBER 1998

Box 2.1

The ministers of the euro area Member States, the ECB and the Ministers and Central Bank Governors of the Kingdom of Denmark and the Republic of Greece discussed the participation in ERM II of non-euro area Member States. The European Commission has been involved and the Monetary Committee was consulted. They:

- welcomed the decision by the Greek and the Danish Governments to carry on from ERM I into ERM II their participation in the exchange-rate mechanism linking their currencies to the euro area;
- agreed that the Greek drachma will participate in ERM II with the standard fluctuation band around its central rate against the euro of +/- 15 per cent;
- agreed that the Danish krone will participate in ERM II with a fluctuation band around its central rate against the euro of +/- 2.25 per cent.

The agreement concerning the Greek drachma is a continuation of satisfactory participation in the exchange-rate mechanism following progress towards convergence and recognizes that the flexibility provided by the standard fluctuation band enhances the effectiveness of the stability-oriented monetary policy pursued at present.

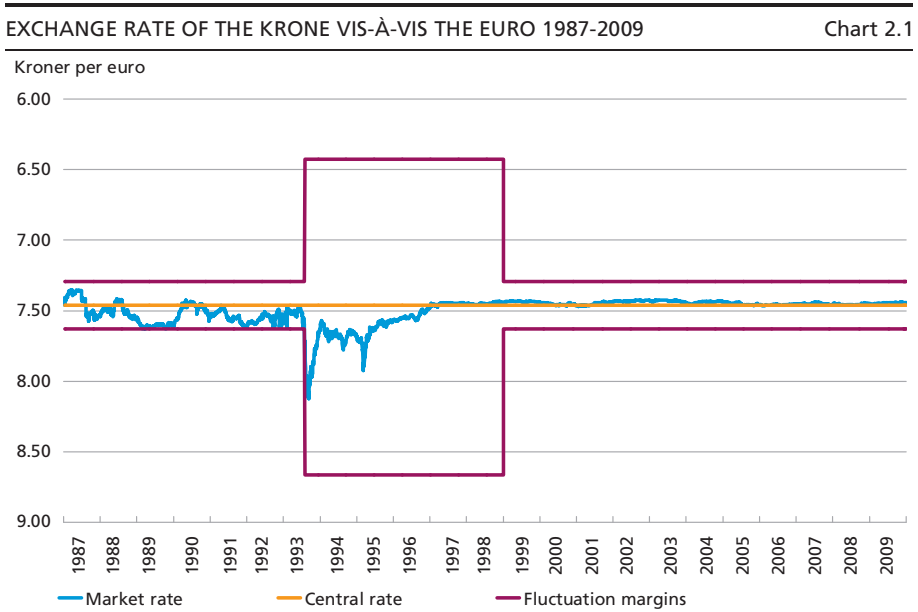
The agreement concerning the Danish krone is based on the high level of convergence achieved by Denmark in terms of the convergence criteria, including the very high degree of stability of the krone in the markets and the unchanged parity within ERM I since January 1987. This is the result of sustained stability-oriented economic policies.

The above agreements will be implemented in accordance with the formal procedure envisaged under the ERM II Resolution of the European Council so as to become effective from the opening of foreign exchange markets on 4 January 1999.

Source: P. 21 of Danmarks Nationalbank, *Monetary Review*, 4th Quarter 1998.

The communiqué from the meeting is shown in Box 2.1. Under the agreement, the Danish krone – in view of Denmark's high level of convergence and stability-oriented economic policy – would join ERM II with a fluctuation band around its central rate against the euro of +/- 2.25 per cent, while the Greek drachma would join with the standard fluctuation band of +/- 15 per cent. The central rates of the krone and the drachma vis-à-vis the euro could not be determined until 31 December 1998, when the conversion factor between the national currencies and the euro was laid down. As regards the Danish krone, the eventual central rate vis-à-vis the euro, 7.46038 kroner per euro¹, corresponded to the central rate against the D-mark that had previously applied in ERM since 12 January 1987, cf. Chart 2.1.

¹ Cf. press release from Danmarks Nationalbank of 31 December 1998, printed on p. 130 of Danmarks Nationalbank, *Report and Accounts*, 1998.



Note: Reverse scale. Prior to 1999 a synthetic exchange rate of the krone vis-à-vis the euro has been calculated on the basis of the krone/D-mark rate and the conversion rate between the euro and the D-mark fixed as at 1 January 1999. The earliest observation is from 12 January 1987.

Source: Danmarks Nationalbank.

In addition to the Amsterdam Resolution and the communiqué from the informal Ecofin meeting in Vienna in September 1998, the rules governing ERM II were to comprise a central bank agreement. In 1997, the EMI had prepared a draft agreement, and on 1 September 1998 this agreement was formally concluded between the ECB and the central banks of the non-euro area EU member states.¹

The central bank agreement concerned the more technical and operational procedures in relation to ERM II and e.g. included a system of prior agreement in connection with intervention exceeding a certain amount within the framework of ERM II. For instance, prior agreement from the ECB was required if Danmarks Nationalbank wished to conduct intramarginal intervention in euro for amounts exceeding certain mutually agreed limits. Furthermore, the central bank agreement included certain provisions on prior notification of foreign-exchange transactions other than intervention. For example, the ECB and the national central banks of the euro area member states were to contact Danmarks Nationalbank in advance if they wished to conduct foreign-exchange transactions in Danish kroner in excess of an agreed limit. This enabled Danmarks Nationalbank and the relevant central bank to settle the

¹ Cf. the Official Journal, C 345, 13.11.1998.

transaction in part or in full outside the foreign-exchange market, thereby avoiding an undesirable impact on the exchange rate of the krone.¹

In the opinion of Danmarks Nationalbank, the system of prior agreement on intervention within the framework of ERM II was to some extent a relic from the past. Naturally, it was important for the exchange-rate cooperation that the ECB was informed immediately when Danmarks Nationalbank had intervened, but prior agreement should not be necessary. Although the system of prior agreement in practice operated smoothly, it was in theory possible that Danmarks Nationalbank needed to intervene very quickly for large amounts, which did not really leave time for a formal agreement procedure. In that case, Danmarks Nationalbank would have to intervene in dollars rather than euro.² At a meeting of the ECB's General Council in March 2004, Danmarks Nationalbank therefore proposed that the system of prior agreement be reconsidered. In September 2004 this led to a minor adjustment of the central bank agreement to the effect that Danmarks Nationalbank and the central banks of the other ERM II member states no longer needed prior agreement from the ECB for large interventions in euro, but the ECB was to be informed immediately.³

THE FOREIGN-EXCHANGE MARKET UP TO THE EURO REFERENDUM IN 2000⁴

Trading of euro as book money in the international foreign-exchange markets began on 4 January 1999. The practical transition to the euro was smooth, and in August 1999 the Danish Prime Minister announced that a referendum would be held on Danish participation in the euro. In March 2000 the Prime Minister announced that the date of the referendum would be 28 September 2000, and in May 2000 the Danish government presented its bill for Danish participation in the single currency, cf. Chapter 8.

In early 2000 the spread between Danmarks Nationalbank's and the ECB's monetary-policy interest rates was 0.30 percentage point, and the spread between 3-month money-market interest rates in Denmark and the euro area was more or less the same. In the first months of 2000, the krone continued the slight downward trend against the euro that began

¹ Cf. Kim Abildgren, *Sterilised and Non-Sterilised Intervention in the Foreign-Exchange Market*, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2005.

² For a given exchange rate between dollars and euro, Danmarks Nationalbank could have an indirect impact on the krone/euro exchange rate by intervening in dollars for kroner.

³ Cf. p. 29 of Danmarks Nationalbank, *Report and Accounts*, 2004.

⁴ The foreign-exchange situation in 2000 is discussed in more detail on pp. 31-35 of Danmarks Nationalbank, *Report and Accounts*, 2000.

in the latter half of 1999. The underlying tendency for the krone to weaken in this period was attributable to factors such as substantial portfolio shifts into foreign securities by major Danish investors. With a view to dampening fluctuations in the exchange rate, Danmarks Nationalbank in January and February 2000 sold foreign exchange for kroner for approximately kr. 19 billion. The krone's weakening trend continued into March, where opinion polls on Danish participation in the euro also affected the exchange rate. The turning point came in mid-March when NKT announced its sale of GIGA to US-based Intel for kr. 9.4 billion.¹ From March until late May 2000, the outflow of foreign exchange was small, and throughout this period the spread between money-market interest rates in Denmark and the euro area remained relatively stable.

In relation to an increase in the interest rates of the ECB, Danmarks Nationalbank decided to widen the spread to the ECB's monetary-policy interest rate by 0.10 percentage point to 0.45 percentage point with effect from 9 June 2000. This was motivated by a substantial outflow of foreign exchange at the end of May and in early June, when the krone fell below its central rate following several opinion polls that showed waning support for Danish participation in the euro.

Over the summer of 2000, Danmarks Nationalbank's monetary policy was complicated by the fact that at the end of June the ECB began to allocate liquidity in its weekly main refinancing operations at a variable rather than a fixed rate of interest.² The ECB's new procedure meant that in a transitional period Danmarks Nationalbank had to adapt its practice of mirroring the ECB's interest-rate adjustments. Danmarks Nationalbank's current-account and discount rates were now changed in step with changes in the ECB's minimum bid rate, while Danmarks Nationalbank's lending rate and rate of interest on certificates of deposit were changed in the event of a substantial spread between the

¹ Cf. the announcement "Intel køber GIGA – et selskab i NKT koncernen" (Intel Acquires GIGA – a Company in the NKT Group – in Danish only) from NKT Holding to the Copenhagen Stock Exchange dated 15 March 2000.

² The background to the ECB's adjustment of its instrument in June 2000 was that the previous fixed-rate tenders had been characterised by an increasing degree of overbidding in relation to the liquidity requirements of the banking system, cf. Kim Abildgren, Experience with the Eurosystem's Weekly Open Market Operations, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2002. This overbidding problem was solved by introducing variable-rate tenders. The minimum bid rate was the lowest rate at which the ECB would allow banks to submit bids for liquidity in the variable-rate tenders. These were conducted as multiple price auctions, whereby allotment was made first for the bids for the highest interest rate, and the bid rate applied. The ECB successively accepted bids for lower interest rates until the liquidity allotment decided by the ECB had been reached. The lowest rate at which liquidity was allotted was called the marginal interest rate. In October 2008, the ECB provisionally switched back to fixed-rate tenders with a fixed allotment rate, but this time with full allotment of the liquidity requested.

marginal rate and the minimum bid rate in the ECB's refinancing operations.¹

The declining support for the euro in the Danish opinion polls contributed to a widening of the spread between money-market interest rates in Denmark and the euro area, which increased by nearly 1 percentage point, to just under 1.40 percentage points, from early June until mid-July. This widening reversed to some extent in the period from mid-July until late August.

In the final period before the referendum on 28 September 2000 the krone once again fell below its central rate, although it was not a case of actual currency unrest. A number of minor adjustments were made to Danmarks Nationalbank's lending rate and rate of interest on certificates of deposit, so that the spread to the ECB's minimum bid rate was as wide as 0.60 percentage point on 27 September. The spread between money-market interest rates in Denmark and the euro area briefly widened to just over 2 percentage points, and the spread between the 3-month money-market interest rate in Denmark and Danmarks Nationalbank's lending rate widened to just under 2 percentage points. The reaction in the money market reflected the market participants' expectations that interest rates would be raised if the krone came under pressure. Although short-term money-market interest rates began to decline in the second half of September, the 3-month rate remained substantially higher than Danmarks Nationalbank's rates of interest. To dampen fluctuations in the krone rate, Danmarks Nationalbank in September sold foreign exchange for around kr. 11 billion.

In the referendum on 28 September 2000, the bill on Danish participation in the euro was rejected by a majority of 53 per cent. On the night of the referendum, the Danish government and Danmarks Nationalbank issued a joint press release² stating that Denmark would continue its fixed-exchange-rate policy within the framework of ERM II. Danmarks Nationalbank raised its lending rate and rate of interest on certificates of deposit by 0.50 percentage point with effect from 29 September in order to prevent uncertainty about the exchange rate of the krone after

¹ In periods when interest rates were expected to rise, as was the case in the 2nd half of 2000, there was a tendency for the marginal rate to be somewhat higher than the minimum bid rate. The reason was that the expected development in the minimum bid rate during the reserve maintenance period affected the banks' bidding behaviour. If interest rates were expected to be raised at the end of a reserve maintenance period, this gave the banks an incentive to bid for relatively more liquidity in the tenders early in the period so that a larger share of the reserve requirement could be met while interest rates were low. In March 2004, the ECB changed its monetary-policy instruments in order to reduce the impact of interest-rate expectations on bidding behaviour and the marginal rate. The maturity of monetary-policy loans was reduced from 14 to 7 days, and the reserve maintenance periods were adapted to match the calendar of monthly meetings of the Governing Council, at which monetary-policy interest rates were discussed. This ensured that, as a general rule, the minimum bid rate would not be changed during a reserve maintenance period, cf. pp. 30-31 of Danmarks Nationalbank, *Report and Accounts*, 2004.

² Printed on p. 142 of Danmarks Nationalbank, *Report and Accounts*, 2000.

the referendum. The spread to the ECB's minimum bid rate thus increased to 1.1 percentage points. In the subsequent period, the krone strengthened against the euro and the outflow of foreign exchange reversed to an inflow. In October, Danmarks Nationalbank purchased foreign exchange for around kr. 17 billion, and a gradual normalisation of Danmarks Nationalbank's interest rates and the money-market interest rates could begin. However, the interest-rate spread was not back at the level from the beginning of 2000 until the autumn of 2001.

NEW EU MEMBER STATES AND ERM II

After Greece had joined the euro in January 2001, Denmark was the only participant in ERM II for some years.

On 1 May 2004, 10 new member states (Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia) joined the EU. On 1 January 2007, Bulgaria and Romania also became members. The new member states joined the EU with their own currencies and their own monetary-policy regimes, but ultimately they were under an obligation to introduce the euro. However, first they had to meet the convergence criteria, including having participated in ERM II for at least two years without devaluing their currencies.

The standard ERM II fluctuation band around the central rate was +/- 15 per cent, but by special agreement with the ECB and the euro area member states, ERM II member states might operate with a narrower fluctuation band. However, in December 2003 the Governing Council of the ECB announced that such agreements would be exceptional as the standard fluctuation band was seen as appropriate for member states at the beginning of the convergence process with the euro area. Agreements on narrow bands could be used only at an advanced stage of the convergence process.¹

Prior to joining the EU, the new member states had had a wide range of different monetary-policy regimes.² For example, the Baltic states pursued fixed-exchange-rate policies (Estonia and Lithuania via currency boards³), while Poland and the Czech Republic had inflation targets

¹ Cf. p. 76 of Danmarks Nationalbank, *Report and Accounts*, 2003.

² Cf. Niels Peter Hahneemann and Jens Anton Kjærgaard Larsen, The Accession Countries and the Convergence Criteria, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2003; Jens Thomsen, The 2004 Enlargement of the EU, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2004; and Peter Ejler Storgaard, Monetary-Policy Targets and Instruments, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2004.

³ A currency board is an extreme type of fixed-exchange-rate policy. In countries with currency boards, a fundamental element of monetary policy is that domestic base money (i.e. banknotes and coins and the banks' deposits with the central bank) is fully covered by foreign exchange or gold. At the same time, anyone is free to exchange money to and from an anchor currency at a fixed exchange rate without restrictions, cf. Ulrik Bie and Niels Peter Hahneemann, Currency Boards, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2000.

combined with floating exchange rates. ERM II would be compatible with a number of the exchange-rate regimes existing in the accession countries, but for some countries participation in ERM II would require amendment of the monetary-policy regime. The Ecofin Council had thus stated that, in principle, a currency board was a viable option within ERM II if it was found to operate satisfactorily, whereas e.g. "crawling pegs" and fixed-exchange-rate regimes vis-à-vis other currencies than the euro would be incompatible with ERM II.¹

For Denmark's Nationalbank it was essential that ERM II remained a well-functioning fixed-exchange-rate mechanism vis-à-vis the euro, a point that Denmark emphasised in discussions on the participation of the new EU member states in ERM II. To ensure confidence in the fixed-exchange-rate system and to support economic convergence, it was important that the new EU member states adjusted their monetary and fiscal policies prior to joining ERM II to bring their stabilisation-policy frameworks in line with the requirements of a fixed-exchange-rate policy. In ERM II, monetary policy was to be used to stabilise the exchange rate, while fiscal policy and other economic policies were the main economic-policy instruments for addressing any economic imbalances. The latter also applied to euro area member states. A key prerequisite of successful participation in ERM II was therefore that government budgets were under control.²

The new member states were at different stages of the convergence process, and fixing an exchange rate prematurely might lead to currency unrest.³ An underlying fear at Denmark's Nationalbank was that unrest in relation to the currencies of the new ERM II member states might rub off on the krone. This concern proved to be unfounded. The new member states joined ERM II in 2004 and the subsequent years, cf. Box 2.2, without giving rise to any tensions.⁴

The smooth functioning of ERM II with a broad membership with varying degrees of exchange-rate stability vis-à-vis the euro should probably be seen in light of the design of ERM II. In ERM II the participating currencies had central rates against the euro only, not against each other, as had been the case under the former Exchange-Rate Mechanism, ERM. Under ERM II, the foreign-exchange market therefore assessed the

¹ Cf. p. 74 of Denmark's Nationalbank, *Report and Accounts*, 2002. As part of its preparations to join ERM II, Lithuania changed the anchor of its currency board from the dollar to the euro in February 2002, while Latvia changed the anchor of its fixed-exchange-rate system from SDR to the euro at end-2004.

² Cf. Jens Thomsen, Comment on EU enlargement and monetary integration, published in Carsten Detken, Vitor Gaspar and Gilles Noblet (eds.), *The New EU Member States. Convergence and Stability*, European Central Bank, 2005.

³ Cf. p. 28 of Denmark's Nationalbank, *Report and Accounts*, 2003.

⁴ The same applied in connection with the revaluation of the central rate of the Slovak koruna by 8.5 per cent in March 2007 and by 17.6472 per cent in late May 2008.

ERM II PARTICIPATION OF NEW EU MEMBER STATES		Box 2.2
	Joined ERM II	Left ERM II and introduced the euro
Estonia	28 June 2004	1 January 2011 ¹
Lithuania	28 June 2004	
Slovenia	28 June 2004	1 January 2007
Cyprus	2 May 2005	1 January 2008
Latvia	2 May 2005	
Malta	2 May 2005	1 January 2008
Slovakia	28 November 2005	1 January 2009

¹ In July 2010, the Ecofin Council approved Estonia's membership of the euro area as from 1 January 2011.
Source: European Commission and ECB.

individual exchange rates against the euro so that the exchange-rate mechanism as such and the central rates of the other currencies were not called into doubt in the event of pressure on one participating currency. Moreover, the ERM II members were small economies.

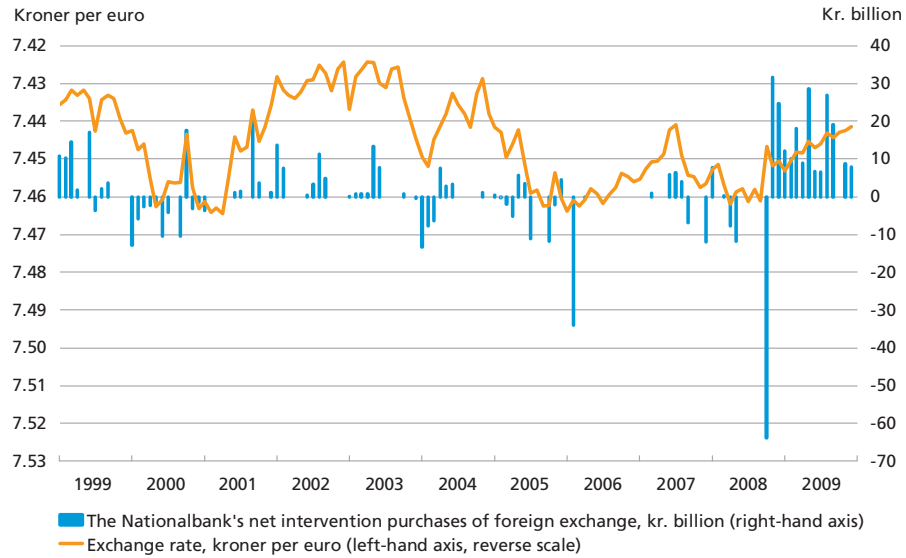
CAPITAL FLOWS, KRONE RATE AND INTERVENTION SINCE 1999

The introduction of the euro on 1 January 1999 did not change Denmark's fixed-exchange-rate policy. From then on, the krone was pegged to the euro via participation in ERM II with a fluctuation band of +/- 2.25 per cent and a central rate corresponding to the previous central rate vis-à-vis the D-mark.

Danmarks Nationalbank continued the policy of stabilising the krone at a rate close to the central rate, as it had done since 1996. Basically, this meant that Danmarks Nationalbank's interest rates normally followed those of the ECB for the euro area. Minor fluctuations in the exchange rate of the krone were countered by purchasing or selling foreign exchange for kroner, cf. Chart 2.2. In the event of a more persistent tendency for the krone to weaken or strengthen, Danmarks Nationalbank's interest rates were adjusted unilaterally.

In the years from the Danish referendum on the euro in 2000 until the financial crisis in 2008 the situation in relation to the krone was generally characterised by calm and stability. It was possible to stabilise the krone with a relatively limited volume of intervention and on few days only, cf. Table 2.1 on page 73. As trust in the fixed-exchange rate policy increased – and the Danish economy remained stable – the market participants themselves contributed strongly to ensuring a stable krone rate by taking positions in the foreign-exchange market in the expect-

EXCHANGE RATE OF THE KRONE AND INTERVENTION 1999-2009 Chart 2.2



Note: Monthly data. Interventions have been accrued according to the value date. Exchange rate at month-end. All interventions were performed by Danmarks Nationalbank.
Source: Danmarks Nationalbank.

ation that the krone would remain stable ("stabilising speculation").¹ During the currency crises in the first half of the 1990s, speculation had also contributed to stabilising the krone on several occasions. Moreover, experience from the periods of currency unrest in 1993 showed that residents took positions in the forward foreign-exchange market with – and not against – the krone.²

In the short term, mainly capital flows derived from cross-border portfolio investments – i.e. trading in Danish and foreign securities between Danish and foreign investors – could affect the exchange rate of the krone vis-à-vis the euro, and intervention by Danmarks Nationalbank was usually a suitable instrument for stabilising such short-term fluctuations. Based on the experience from the period 1999-2004, it was, on average, necessary to purchase or sell foreign exchange for around kr. 7.5 billion to affect the krone rate by kr. 0.10 per 100 euro.³ In the same

¹ Cf. Speech by Bodil Nyboe Andersen at the Annual Meeting of the Danish Bankers Association on 5 December 2001, printed on pp. 77-82 of Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2002.

² Cf. p. 38 of Danmarks Nationalbank, *Report and Accounts*, 1993.

³ Cf. Allan Bødskov Andersen, Exchange-Rate Impact of Danmarks Nationalbank's Interventions in the Foreign-Exchange Market, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2005. For further analyses of Danmarks Nationalbank's intervention in the foreign-exchange market in the period 2002-04 using high-frequency data (5-minute intervals), see Rasmus Fatum and Jesper Pedersen, Real-time effects of central bank intervention in the euro market, *Journal of International Economics*, Vol. 78(1), 2009.

INTERVENTION IN THE FOREIGN-EXCHANGE MARKET FOR DANISH
KRONER 1990-2009

Table 2.1

	Purchase of foreign exchange	Sale of foreign exchange	Net purchase of foreign exchange	Number of intervention days
	Kr. billion			
1990	30	1	29	84
1991	1	3	-2	19
1992	23	39	-16	33
1993	54	84	-31	73
1994	11	0	11	21
1995	37	5	32	84
1996	46	22	23	96
1997	40	6	34	63
1998	42	71	-30	86
1999	62	5	56	65
2000	21	58	-37	55
2001	27	4	24	11
2002	41	0	41	35
2003	25	1	24	20
2004	15	28	-12	34
2005	16	34	-18	35
2006	0	34	-34	13
2007	17	19	-2	17
2008	66	86	-20	48
2009	154	0	154	46

Note: Interventions have been accrued according to the value date, except for interventions in the forward foreign-exchange market in 1990-91, which have been included at the trade date. Some of the large interventions in support of the krone during the currency unrest in 1992-93 were made by other ERM central banks, not by Danmarks Nationalbank. Such intervention is also included in the table. From August 1993 all interventions were performed by Danmarks Nationalbank.

Source: Danmarks Nationalbank.

period, capital flows linked to portfolio investments had a similar impact on the exchange rate of the krone.¹

Capital flows linked to portfolio investments were more or less fully liberalised in the mid-1980s, and developments up through the 1990s were characterised by a rising volume of cross-border capital flows. In the years after 2000, portfolio investments could, even when the foreign-exchange markets were calm, reach a volume that had previously been seen during currency crises only, cf. Chart 2.3. In the years after 1999, net capital outflows from portfolio investments were the order of the day. This reflected factors such as the pension sector's increased placement need in step with growth in labour-market pensions.²

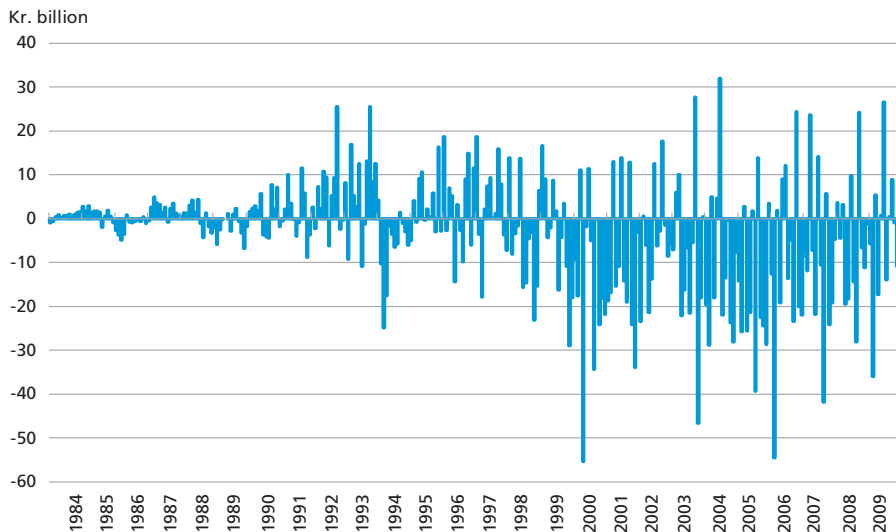
In spite of the rising volume of cross-border capital flows, Danmarks Nationalbank was able to manage the exchange rate of the krone, pri-

¹ Cf. Jakob Lage Hansen and Peter Ejler Storgaard, Capital Flows and the Exchange Rate of the Krone, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2005.

² Cf. Box 2, "Institutional Investors' Purchases of Foreign Securities" in Danmarks Nationalbank, Recent Economic and Monetary Trends, *Monetary Review*, 2nd Quarter 2006.

NET CAPITAL FLOW INTO DENMARK FROM PORTFOLIO INVESTMENTS IN
1984-2009

Chart 2.3



Note: Monthly totals. Excluding banks' and mortgage banks' transactions in securities in foreign currency for own account and the central government's net borrowing in foreign currency.

Source: Kim Abildgren, Short-term impacts on exchange rates from portfolio flows to and from Denmark 1984-2004, *Nationaløkonomisk Tidsskrift*, Vol. 146(2), 2008. Updated with new, revised data from the sources stated in Abildgren, *op.cit.*

marily because the impact of the portfolio flows on the exchange rate had diminished over time as trust in the fixed-exchange-rate policy increased and the foreign-exchange market for kroner became more liquid.¹ Furthermore, capital flows in periods without actual turmoil in the financial markets had become more sensitive to interest rates so that even very modest adjustments to Denmark's Nationalbank's monetary-policy interest rates could halt or trigger large capital flows.

In the years after 1999, there were generally no indications of a systematic impact on the krone from transactions linked to direct investment, although in some cases company acquisitions – combined with other factors – could have an observable impact on the exchange rate of the krone.² The reason could be that mergers and acquisitions often in-

¹ Econometric calculations indicated that a net capital inflow from portfolio investments of kr. 10 billion strengthened the exchange rate of the krone vis-à-vis the euro by 12 pips (i.e. from, say, 744.01 to 743.89 kroner per 100 euro) in the period 1999-2004, 149 pips in the period 1989-98 and 661 pips in the period 1984-88, cf. Kim Abildgren, Short-term impacts on exchange rates from portfolio flows to and from Denmark 1984-2004, *Nationaløkonomisk Tidsskrift*, Vol. 146(2), 2008. Calculations for the period prior to 1999 are based on a synthetic exchange rate against the euro calculated on the basis of the exchange rate of the krone vis-à-vis the D-mark and the locked conversion rate between the euro and the D-mark as at 1 January 1999.

² Cf. the analysis covering the period 1999-2004 in Jakob Lage Hansen and Peter Ejler Storgaard, Capital Flows and the Exchange Rate of the Krone, Denmark's Nationalbank, *Monetary Review*, 2nd Quarter 2005. Although this survey did not show a significant effect from direct investment on the exchange rate, the sign was as could be expected. See also p. 77 of Denmark's Nationalbank, *Monetary Policy in Denmark*, 3rd edition, 2009.

REGISTERED GROSS PAYMENTS TO AND FROM ABROAD,
APRIL 1989-APRIL 2004

Table 2.2

Kr. billion		April 1989	April 1992	April 1995	April 1998	April 2001	April 2004
Current payments	From abroad	26	37	43	57	94	73
	To abroad	29	36	42	59	88	71
	Gross total	55	73	85	116	182	144
Capital payments	From abroad	26	86	113	191	213	438
	To abroad	27	90	105	194	232	459
	Gross total	53	176	217	385	445	896
All payments	From abroad	52	123	155	248	307	511
	To abroad	56	126	147	253	320	530
	Gross total	108	249	302	501	627	1,041
Memo:							
Current payments as a percentage of all payments		51	29	28	23	29	14

Note: Due to restructuring of the statistics, it is not possible to include years after 2004. Capital payments include derivatives from 2001 onwards. Registered capital payments underestimate the actual volume of capital payments as the statement does not include transactions between residents and non-residents that do not affect the external position of the banking sector (after 1999: of a bank), e.g. purchase of foreign securities by a Danish bank.

Source: Danmarks Nationalbank.

involve exchange of equity rather than cash settlement. In some cases direct investment was also seen to have an impact on the exchange rate already when a forthcoming acquisition was rumoured or announced, rather than at the actual time of the transaction, cf. NKT's above-mentioned announcement of its sale of GIGA to US-based Intel in 2000. The exchange rate could also be affected by the structure of the specific acquisition as regards borrowing and the need for foreign-exchange transactions.¹

Except for 1998, the period from 1990 onwards was characterised by current-account surpluses. Viewed in isolation, this must have contributed to supporting the krone, but the resultant net lending did not necessarily generate demand for kroner. For example, a Danish exporter might choose to maintain a claim in a foreign currency rather than exchange it into Danish kroner, e.g. if the exporter was a large, internationally oriented company or operated in a dollar-based sector such as shipping. The period after 1990 was also characterised by declining significance of gross payments linked to the current account of the balance of payments compared with gross payments linked to the financial account, cf. Table 2.2. In the late 1980s, "current" gross pay-

¹ Cf. Peter Jayaswal, Mette Kornvig and Katrine Skjærbæk, Private Equity Funds, Capital Flows and the Foreign-Exchange Market, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2006.

ments accounted for around 50 per cent of total gross payment flows across Denmark's borders. By 2004, this share had declined to 14 per cent. Consequently, capital flows were all-important to the exchange rate of the krone after the last capital restrictions had been lifted in 1988.

STRUCTURAL DEVELOPMENT IN THE FOREIGN-EXCHANGE MARKET FOR DANISH KRONER¹

In 1991 daily fixing of exchange rates at Danmarks Nationalbank was discontinued.² For decades, most large foreign-exchange dealers had participated in the daily fixing of exchange rates at Danmarks Nationalbank, where official exchange rates were determined by supply and demand of foreign exchange for kroner under an auction-like principle within a timeframe of, normally, 5 minutes. Up through the 1980s and early 1990s such fixing of official exchange rates had gradually become outdated. Foreign exchange was increasingly traded throughout the day in foreign-exchange markets worldwide at varying exchange rates that could be viewed on an ongoing basis via modern information systems and news media. The turnover of foreign exchange in the fixing sessions therefore declined, and this trend was amplified by the large mergers in the Danish banking sector in 1990, when six major banks merged into only two, cf. Chapter 4.

After the fixing of official exchange rates had ceased, Danmarks Nationalbank continued to publish information once a day on the exchange rate of the Danish krone vis-à-vis a number of other currencies on the basis of information from other central banks. The Danish Bankers Association indicated to Danmarks Nationalbank that the banks would initially still use the guideline exchange rates published by Danmarks Nationalbank as the basis for settlement of small payments with customers. The banks did not have an obligation to apply Danmarks Nationalbank's exchange rates. Nevertheless, even after 1991 many contracts continued to operate with Danmarks Nationalbank's exchange rates as the parties wanted an independent source.

¹ Developments in the foreign-exchange market for Danish kroner are described in more detail in Henrik Smed Krabbe and Lisbeth Stausholm Pedersen, The Danish Foreign-Exchange Market, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 1998; and Kim Abildgren, The Foreign-Exchange Market for Danish Kroner, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2006.

² Cf. p. 271 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990 (Monetary History of Denmark 1960-1990 – in Danish only)*, Danmarks Nationalbank, 1993; and Bent Andersen, The Fixing of Exchange Rates at Danmarks Nationalbank, Danmarks Nationalbank, *Monetary Review*, November 1991.

From 1989, Danmarks Nationalbank participated in the triennial international statistics of turnover in the foreign-exchange markets worldwide coordinated by the Bank for International Settlements, BIS.¹ According to the statistics from April 2007, average daily turnover in the Danish foreign-exchange market for kroner – i.e. foreign-exchange trading in Danish kroner involving a bank located in Denmark – was kr. 133 billion per banking day, while turnover in the global foreign-exchange market for kroner – i.e. foreign-exchange trading in Danish kroner involving a bank located in Denmark or abroad – was kr. 154 billion per banking day. This means that around 15 per cent of the turnover of kroner in the foreign-exchange market did not pass through banks located in Denmark. Part of the global turnover of kroner took place between the foreign units of Danish banks and of Danish business enterprises, but large Danish enterprises and institutional investors also traded foreign exchange against kroner through large international banks with which they already conducted other financial transactions, e.g. trade in foreign securities.

In absolute volumes, turnover in the Danish part of the foreign-exchange market for kroner rose from kr. 30 billion per banking day in April 1989 to kr. 133 billion per banking day in April 2007, cf. Chart 2.4. Much of the increase was, however, attributable to turnover in currency swaps with one leg in kroner, which should be seen as a money-market product rather than a foreign-exchange-market product. The purpose of such transactions was often to procure or lend liquidity in kroner for a short period against foreign exchange, typically dollars, as collateral. As regards "classical" turnover of foreign exchange, i.e. spot transactions² and outright forwards³, the development in turnover was much more moderate in spite of a substantial increase in payments between Denmark and abroad over this period. The relatively moderate growth in turnover of spot transactions and outright forwards calculated in billion kroner should be viewed against the backdrop of the subdued fluctuations of the krone vis-à-vis the D-mark and, from 1999, the euro; all other things being equal, this reduced the need to hedge foreign-exchange risk. The latter factor was also reflected in very modest turnover of krone-denominated currency derivatives, such as currency

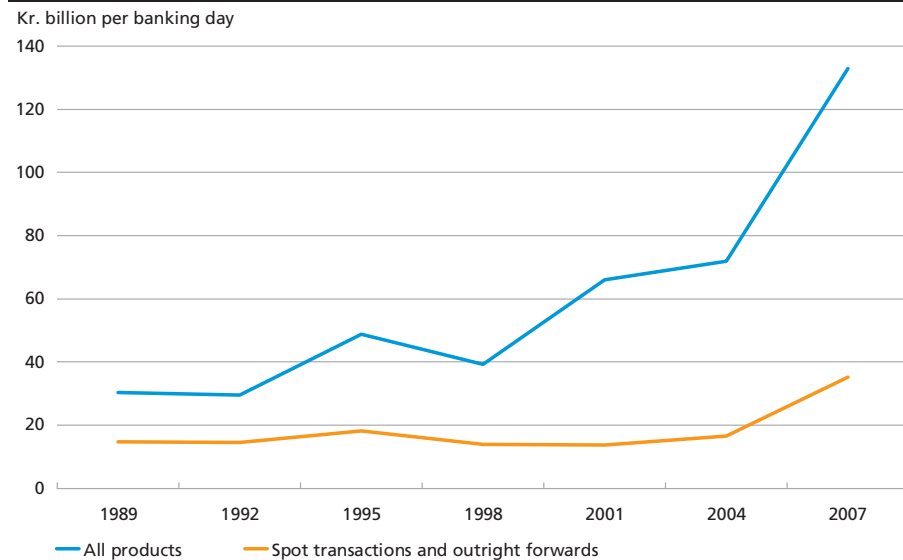
¹ Cf. Helge Fosgaard, Turnover on the Foreign-Exchange Market, Danmarks Nationalbank, *Monetary Review*, November 1989. The BIS was established in 1930 with a view to promoting cooperation between central banks and administering German World War I reparations, cf. Gianni Toniolo, *Central Bank Cooperation at the Bank for International Settlements 1930-1973*, Cambridge University Press, 2005. BIS shareholders are the central banks of a number of countries, among them Danmarks Nationalbank.

² Foreign-exchange trades for settlement within two days of the trade date.

³ Foreign-exchange trades for settlement later than two days after the trade date.

TURNOVER IN THE DANISH FOREIGN-EXCHANGE MARKET FOR DANISH
KRONER 1989-2007

Chart 2.4



Note: Average daily turnover in April of the years in question. Turnover in spot transactions and outright forwards in 1989 is partly based on an estimate.

Source: Danmarks Nationalbank.

options¹, and at times Danish institutional investors chose not to hedge positions in euro via forward foreign-exchange transactions².

Spreads between the bid and ask prices for kroner against D-mark and subsequently euro in trading between professional foreign-exchange dealers narrowed considerably in the years after 1990 as liquidity in the foreign-exchange market for kroner increased. In connection with the currency crises in the first half of the 1990s, considerable bid/ask spreads could, nevertheless, be seen for kroner against D-mark. In the years after 2000, the spread for spot transactions was kr. 0.03-0.05 per 100 euro, corresponding to 0.004-0.007 per cent, cf. Table 2.3.

Until the fixing of exchange rates at Danmarks Nationalbank was discontinued in 1991, intervention by Danmarks Nationalbank in the foreign-exchange market for kroner took place in connection with the daily fixing sessions at Danmarks Nationalbank, via trading with foreign-exchange market brokers and bilateral telephone trading. For many years after that, Danmarks Nationalbank always conducted intervention via foreign-exchange market brokers or telephone trading, but over time electronic trading systems gained ground in the Danish foreign-ex-

¹ I.e. agreements whereby one party obtains the right, but not the obligation, to buy or sell an amount in one currency for an amount in another currency at an agreed exchange rate at an agreed future point in time.

² Cf. e.g. p. 15 of Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2008.

ESTIMATED SPREADS BETWEEN BID AND ASK PRICES FOR KRONER AGAINST
D-MARKS (1992-98)/EURO (1999-2009) IN THE INTERBANK MARKET,
SELECTED PERIODS

Table 2.3

	Actual traded spreads, per cent
1992	Around 0.250
1994	0.013-0.026
1998-1999	0.004-0.013
2000-2009	0.004-0.007

Source: Danmarks Nationalbank.

change market. By 2004, 47 per cent of spot FX transactions between Danish banks against both kroner and other currencies were effected via electronic systems.¹ In 2005 Danmarks Nationalbank began to conduct intervention via electronic trading systems, thereby ensuring that intervention still took place via all the standard trading channels.

The method for settlement of transactions in the foreign-exchange market for kroner also changed over time. Traditionally, the two parties to the transaction independently submitted payment instructions to their respective correspondent banks, requesting them to transfer the amount in question to the counterparty's account with its correspondent bank. The first part of the 1990s saw rising awareness of the risks associated with settlement via correspondent banks, following the collapse of the Drexel Burnham Lambert group in 1990 and the suspension of payments by the Bank for Credit and Commerce International in 1991.² The basic problem in relation to settling via correspondent banks was that neither party to a foreign-exchange transaction could be completely sure that the counterparty would submit its payment instruction and effect payment ("Herstatt risk"³).

In 1996, the G10 central banks published a report recommending initiatives that could be taken by market participants as well as central banks and supervisory authorities with a view to reducing the settlement risk on foreign-exchange trading.⁴ For example, the international banking sector was encouraged to develop one or more risk-reducing

¹ Cf. Peter Askjær Drejer and Vibeke Buur Hove, Turnover in the Foreign-Exchange and Derivatives Markets in April 2004, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2004.

² Cf. Lone Natorp and Tina Skotte Sørensen, Settlement of Foreign-Exchange Transactions, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2006.

³ Refers to the suspension of payments by Bankhaus Herstatt in 1974. Due to their location in different time zones, the German money market closed earlier than the US money market, and a number of US banks that had sold D-marks for dollars to Herstatt had effected payments of D-marks to Herstatt before the German market closed, in the expectation that they would receive dollars from Herstatt later in the day. However, they did not receive the money, cf. p. 11 of Danmarks Nationalbank, *Payment Systems in Denmark*, 2005.

⁴ Cf. Lars G. Sørensen, Afviklingsrisici i valutahandel (Settlement Risk in Foreign-Exchange Transactions – in Danish only), Danmarks Nationalbank, *Monetary Review*, August 1996.

settlement facilities ensuring that the two legs of a foreign-exchange transaction were settled simultaneously.

In response to this call, an international settlement system for foreign-exchange transactions, Continuous Linked Settlement, CLS, was established in September 2002. CLS was established as a private bank owned by the world's largest commercial foreign-exchange dealers. When transactions were settled via CLS, it was ensured that both parties had paid in their respective amounts to CLS before the payments were exchanged (a "payment-versus-payment" procedure).

The Danish krone joined CLS in September 2003, and in March 2005 the volume of foreign-exchange transactions in Danish kroner via CLS was equivalent to around two thirds of the global turnover of Danish kroner in April 2004.¹ The high percentage of krone transactions that rapidly transferred to CLS reflected that a large share of the foreign-exchange market for Danish kroner was concentrated on a small number of banks which were all linked to CLS.

THE EFFECTIVE EXCHANGE RATE OF THE KRONE

The nominal effective exchange rate of the krone remained relatively stable in the period 1990-2005, although the exchange-rate policy was not aimed at managing the development in the overall index, cf. Chart 2.5. The euro area – and before 1999 the D-mark block – made up around 50 per cent of the weighting basis.² Consequently, changes in the nominal effective exchange rate of the krone reflected fluctuations in the exchange rate of the krone vis-à-vis Denmark's largest trading partners outside the euro area.

From the mid-1990s, there was a tendency for wages to rise more rapidly in Denmark than abroad, leading to appreciation of the real effective exchange rate of the krone. Viewed in isolation, this resulted in loss of competitiveness and market shares for Danish manufactured exports.³ Nevertheless, Denmark succeeded in maintaining a current-account surplus in all years after 1990 – except in 1998, cf. Chart 1 of Annex 1 of the introduction. The underlying reasons were high growth in Denmark's export markets, a strong increase in the value of North Sea oil and gas production and a substantial expansion of the merchant fleet.⁴

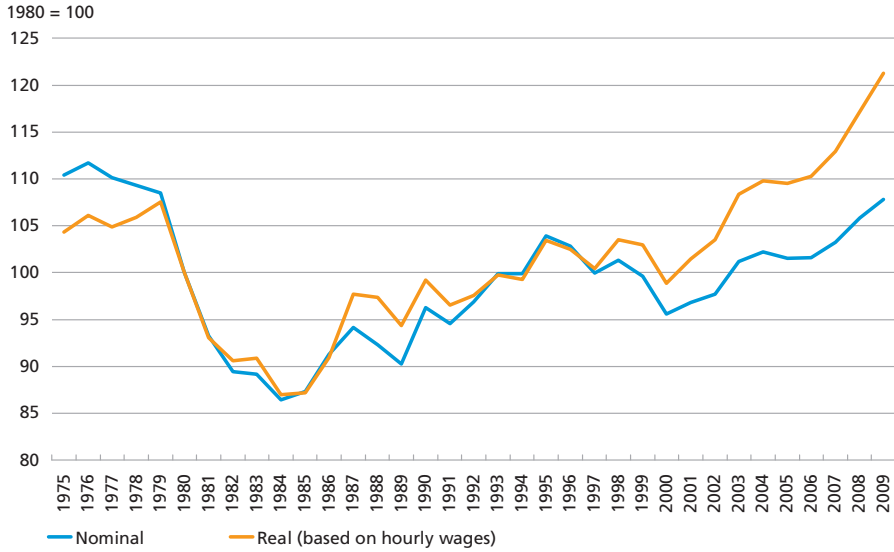
¹ Cf. CLS, *CLS Brief*, Issue 09, June 2005.

² Cf. Erik Haller Pedersen and Mikkel Plagborg-Møller, New Calculation of Danmarks Nationalbank's Effective Krone-Rate Index, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2010.

³ Cf. Kamilla Kristensen, Johanne Dinesen Riishøj and Jonas Sørensen, Manufactured Exports and Wage Competitiveness, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2010.

⁴ Cf. Erik Haller Pedersen and Johanne Dinesen Riishøj, Denmark's Wage Competitiveness, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2008.

EFFECTIVE EXCHANGE RATE OF THE KRONE Chart 2.5



Note: The effective exchange rate of the krone has been calculated as a weighted average of the bilateral exchange rates vis-à-vis the currencies of Denmark's most important trading partners. The weights in the krone-rate index reflect the competitive situation for trade in manufactured goods. An increase in the effective exchange rate indicates strengthening of the krone against the weighted average of the currencies included in the index.

Source: Danmarks Nationalbank.

CHAPTER 3

Monetary-Policy Instruments and the Money Market

THE NEED FOR NEW MONETARY-POLICY INSTRUMENTS IN THE EARLY 1990s

Up through the 1980s and early 1990s, monetary-policy instruments had gradually become more market-oriented. Focus had turned to managing short-term money-market interest rates via standing deposit and lending facilities, as well as open market operations, rather than more direct regulation of the banks' interest rates or the volume of credit granted and deposits received by the financial institutions.

Previously, Danmarks Nationalbank's purchase and sale of krone-denominated bonds in the market had been seen as an important monetary-policy instrument for influencing long-term bond yields. However, the liberalisation of capital flows in the course of the 1980s meant that Danmarks Nationalbank's operations were no longer effective in influencing long-term yields. Consequently, the summer of 1986 was the last time Danmarks Nationalbank sought to intervene in the bond market with a view to managing bond prices. The impact was short-lived, and from then on Danmarks Nationalbank's bond portfolio was purely seen as a portfolio of investment securities.¹

In the late 1980s it became a requirement for banks to pledge collateral for day-to-day overdrafts on their current accounts at Danmarks Nationalbank. This reflected incidents such as Danmarks Nationalbank's losses in connection with the C&G Banken crisis in 1987, cf. Chapter 5.

In the early 1990s, the last elements of actual quantitative regulation were removed from the range of monetary-policy instruments. The deposit-monitoring system, which since mid-1985 had imposed a requirement on the banks to deposit certain amounts with Danmarks National-

¹ Cf. p. 63 of Danmarks Nationalbank, *Report and Accounts*, 1986; p. 275 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990 (Monetary History of Denmark 1960-1990 – in Danish only)*, Danmarks Nationalbank, 1993; p. 52 of Danmarks Nationalbank, *Monetary Policy in Denmark*, 2nd edition, 2003; and the chart on p. 6 of Jesper Jespersen, *Monetary Policy in 1986*, Danmarks Nationalbank, *Monetary Review*, May 1987. By end-2009, Danmarks Nationalbank's portfolio of domestic bonds had been reduced to less than 1 per cent of the total Danish bond market, compared with 13 per cent at end-1970.

bank if deposit growth exceeded an agreed basic rate of increase, was officially abolished in March 1991. In reality the system had been suspended since 1988.¹

In the early 1990s, Danmarks Nationalbank published target figures for growth in domestic money creation² on the basis of the expected economic growth and inflation. However, it was purely a matter of following the development in a broad monetary variable as part of the cooperation between EC central banks.³ The target for growth in domestic money creation had no real impact on Danmarks Nationalbank's interest-rate policy, which was governed by exchange-rate considerations. It was also a general trend in other countries that monetary aggregates played a less prominent role in monetary policy in the 1990s and the first half of the 2000s, cf. Box 3.1.

In the early 1990s the need arose to introduce a comprehensive, fundamental reform of the monetary-policy instruments. The background was a wish:

- to manage money-market interest rates with a higher degree of precision,
- to improve the functionality of the money market, and
- to achieve a clearer and more transparent separation of monetary policy and government debt management policy.

Managing money-market interest rates

Following several years' fixed-exchange-rate policy and stability-oriented fiscal policy, inflation in Denmark had fallen to the same level as in Germany by 1990. The spread between the 3-month interest rates in Denmark and Germany was close to 1 percentage point at end-1990 and narrowed further during 1991. After the remaining restrictions on capital movements between Denmark and abroad had been lifted during

¹ Credit regulation and deposit monitoring in the 1980s are described in more detail on pp. 281-287 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993.

² Domestic money creation was defined as the sum of the banks' lending in kroner and krone-bond portfolios less tax-privileged deposits, excluding deposits to premium savings accounts, cf. p. 35 of Danmarks Nationalbank, *Report and Accounts*, 1990.

³ The target for growth in domestic money creation was set as an element of monetary-policy oversight by the EC Committee of Central Bank Governors. This was part of the coordination of economic policies by EC member states initiated at the beginning of Stage 1 of Economic and Monetary Union in 1990, cf. p. 332 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993. Denmark had worked actively to introduce such coordination to create a basis for *ex ante* discussion of monetary policy in other member states, not least Germany, at the international meetings. As a result, the EC Committee of Central Bank Governors from 1990 published two regular annual reports on monetary policies and economic developments in the member states, known as the *ex ante* and *ex post* reports, respectively. Preparation of reports of this type was also a regular element of the work of the European Monetary Institute and has since 1998 been continued by the European Central Bank, cf. Chapters 7 and 8.

MONETARY POLICY AND MONETARY AGGREGATES

Box 3.1

In the 1970s and early 1980s, broad monetary aggregates, mainly comprising the bank deposits of households and the corporate sector, were used as an intermediate target for monetary policy in some countries. Quantitative regulation of the banks' deposits and lending was also included in the range of monetary-policy instruments. The idea was that inflation could be kept at bay by managing the money stock.

In step with the liberalisation of the financial system and international capital flows, the link between inflation and the money stock became less stable. In addition, general financial innovation made it more difficult to assess the liquidity of households and the corporate sector via traditional deposit-based monetary aggregates, e.g. due to credit facilities. This made monetary aggregates less suitable as intermediate targets, and during the 1980s the central banks began to use short-term interest rates as a monetary-policy instrument rather than quantitative regulation of the money stock and credit.¹

From the early 1980s, monetary aggregates thus no longer played a key role in the formulation of US monetary policy, although it would take almost 20 years before target zones for monetary growth were abolished.² The German money-stock strategy was not officially discontinued until the end of 1998, but in practice there were large deviations between actual monetary growth and the targets set. In other words, the Bundesbank took inflation, rather than monetary growth, into account with determining its interest-rate policy.³

Although central banks no longer sought to manage monetary growth, both central banks and external observers continued to monitor and analyse developments in the money stock – and its counterparts such as credit developments – in order to use any information contained in this data about current and future inflation trends and real economic developments.

Following the eruption of the financial crisis in 2007 focus once again turned to the development in the volume of bank lending. Above all, the debate centred on whether the crisis would lead to a "credit crunch", whereby creditworthy borrowers were unable to obtain financing for sound projects.⁴ Narrow monetary concepts, taken to mean bank liquidity, also came into focus.

¹ Cf. pp. 128-129 of Danmarks Nationalbank, *Monetary Policy in Denmark*, 2nd edition, 2003.

² Cf. Ben S. Bernanke, *Monetary aggregates and monetary policy at the Federal Reserve: A historical perspective*, speech at the Fourth ECB Central Banking Conference in Frankfurt, November 2006.

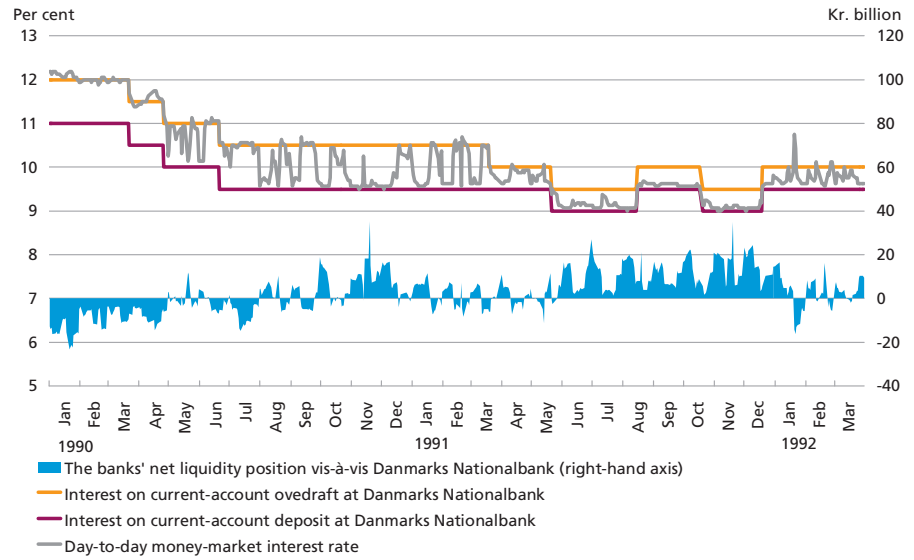
³ Cf. Manfred J. M. Neumann, Pre-commitment and guidance lessons from the Bundesbank's history, published in ECB, *Monetary policy. A journey from theory to practice*, 2007.

⁴ In a Danish context, cf. pp. 18-23 of Danmarks Nationalbank, Recent Economic and Monetary Trends, *Monetary Review*, 3rd Quarter 2009.

the 1980s¹, cross-border capital flows had become more sensitive to interest rates. Gradually a need therefore arose to be able to manage money-market interest rates with a greater degree of precision than the existing range of monetary-policy instruments allowed.

¹ In connection with the lifting of the final foreign-exchange regulations in October 1988, a ceiling for the individual foreign-exchange dealers' net foreign-exchange positions was maintained, namely +/- 10 per cent of equity. The aim was to reduce the foreign-exchange dealers' opportunities to speculate against the krone. This rule was abolished with effect from 1 January 1992, since experience showed that no such provision was required, cf. pp. 49-50 of Danmarks Nationalbank, *Report and Accounts*, 1991.

NET POSITION AND DAY-TO-DAY INTEREST RATE IN THE MONEY MARKET
 JANUARY 1990 – MARCH 1992 Chart 3.1



Note: Daily observations. The day-to-day interest rate is an overnight rate.
 Source: Danmarks Nationalbank.

The monetary-policy instruments used by Danmarks Nationalbank in the early 1990s¹ meant that the level of the day-to-day interest rate in the money market was strongly dependent on the net liquidity position² of the banks vis-à-vis Danmarks Nationalbank. In those years, the net position fluctuated around zero. The day-to-day interest rate was close to the rate of interest on the banks' current-account deposits at Danmarks Nationalbank when the net position was positive, while it was close to the rate of interest for collateralised current-account overdrafts when the net position was negative, cf. Chart 3.1. In 1990, the spread between the rates of interest on overdrafts and on current-account deposits was 1.0 percentage point, and shifts of this magnitude in short-term interest rates were sufficient to have an impact on capital flows and thus the exchange rate of the krone. In March 1991, the spread was reduced to 0.5 percentage point. However, there were limits to how much Danmarks Nationalbank could narrow the spread between the two interest rates and still maintain a money market where the banks exchanged liquidity among themselves on market terms. If the spread became too narrow, banks with excess liquidity or shortage of liquidity had no major incentive to use the money market rather than relying on

¹ Cf. pp. 275-276 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993.
² The net liquidity position is the aggregate net claims of the monetary-policy counterparties vis-à-vis Danmarks Nationalbank for monetary-policy purposes.

Danmarks Nationalbank's facilities. An important underlying factor was that many transactions went through money-market brokers, who charged a fee for their services.¹

Ad-hoc attempts were made to remedy this deficiency by employing other instruments. During 1990, Danmarks Nationalbank thus intervened by purchasing foreign exchange for kroner in the forward market rather than the spot market in order to postpone the liquidity effect, which would have caused the sign of the banks' net position to become positive, thereby reducing the day-to-day interest rate by 1 percentage point. A decline of this magnitude in short-term interest rates was not deemed to be sustainable in relation to the exchange rate at the time of intervention.² In late 1991 and early 1992, Danmarks Nationalbank also made transactions on the basis of its own portfolio of Treasury bills (T-bills) as part of its management of the longer-term money-market interest rates.³ Furthermore, in late 1991, the exchange rate of the krone and management of 3-month interest rates in the money market were taken into account when Danmarks Nationalbank sold T-bills for the central government's account.⁴

Basically it was, however, a drawback in relation to management of the exchange rate that the monetary-policy instruments were not more specifically aimed at precise management of money-market interest rates.

Functionality of the money market

In the late 1980s and early 1990s the functionality of the money market left something to be desired.⁵ The banks were less willing than previously to lend each other liquidity on an uncollateralised basis for more than just a few days or one week. This had increased the spread between lending and deposit rates, and at times spreads in the various subsegments of the money market were also considerable. One of the underlying factors was the growing focus on credit risk against the backdrop of bank crises and closures, both in Denmark and abroad, in

¹ Cf. p. 7 of Peter Erling Nielsen, *Fungerer pengemarkedet?* (Does the Money Market Work? – in Danish only), *Finans/Invest*, No. 6, 1990.

² Cf. p. 29 of Danmarks Nationalbank, *Report and Accounts*, 1990.

³ Cf. p. 36 of Danmarks Nationalbank, *Report and Accounts*, 1991 and p. 33 of Danmarks Nationalbank, *Report and Accounts*, 1992. In the early 1990s, Danmarks Nationalbank was able to purchase T-bills directly from the Danish government, cf. p. 80 of the Danish Ministry of Finance, *Statens låntagning og gæld* (Danish Government Borrowing and Debt – in Danish only), 1990. This would not have been possible from 1994, when Stage 2 of Economic and Monetary Union commenced, as this would be contrary to the Maastricht Treaty's prohibition of monetary financing, cf. Chapters 7 and 8.

⁴ Cf. p. 36-37 of Danmarks Nationalbank, *Report and Accounts*, 1991 and p. 3 of Danmarks Nationalbank, *Monetary Review*, February 1992.

⁵ Cf. Peter Erling Nielsen, *Fungerer pengemarkedet?*, *Finans/Invest*, No. 6, 1990; p. 50 of Danmarks Nationalbank, *Report and Accounts*, 1990; pp. 50-51 of Danmarks Nationalbank, *Report and Accounts*, 1992; and pp. 6-7 of Danmarks Nationalbank, *Monetary Review*, February 1994.

the 1980s and the first part of the 1990s, cf. Chapter 5. As a result, many banks had limited their lines for uncollateralised credit to each other with a view to reducing the risk of loan losses in the money market. In addition, the large bank mergers in 1990 had reduced the number of participants in the money market, cf. Chapter 4.

There was actually a large market for collateralised money-market transactions by way of currency swaps¹. However, in this market the individual banks had access on very different terms, depending on their activity in the foreign-exchange market and thus their access to foreign exchange. Consequently, it was not desirable that currency swaps were the only instrument in the collateralised money-market.

In March 1990, the Danish government began to issue T-bills.² Besides serving as an instrument for short-term government borrowing, T-bills were expected to be suitable as a basis for collateralised lending in the money market at slightly longer maturities. This would require market participation by a large number of banks. However, in the government's T-bill auctions bids were typically received from around 15 banks only, and the five largest bidders purchased around 70 per cent.³ The primary market for T-bills was thus relatively concentrated. If a wider range of banks were to participate in the market for T-bills, this would have to be via the money market, where turnover of T-bills was impeded by provisions in the Stock Exchange Act that prevented trade in listed securities via money-market brokers in Denmark.

During 1990 a parallel market emerged in which T-bills were traded via money-market brokers abroad⁴, but by amendment to the Stock Exchange Act in April 1991 it also became possible to trade T-bills via money-market brokers in Denmark. In May 1991 local money-market brokers were therefore able to mediate trading in T-bills as well as repos in T-bills⁵. In this context, Danmarks Nationalbank indicated that it would ensure a close link between the prices for T-bills traded via money-market brokers and at the Copenhagen Stock Exchange by par-

¹ Lending of kroner against foreign currency as collateral.

² Cf. pp. 30-32 of Danmarks Nationalbank, *Report and Accounts*, 1990. T-bills are listed zero-coupon securities issued by the Danish government. On their introduction in 1990, T-bills with original maturities of 3 and 6 months were issued. 9-month bills were issued from 1991, and finally 12-month bills from 2001. The T-bill programme was discontinued at end-2008, but reopened in the spring of 2010, cf. Danmarks Nationalbank, *Auctions of government bonds in October 2009 and opening of a Treasury bill program during spring 2010*, 30 September 2009.

³ Cf. pp. 78-79 of Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1993, Chapter 6: Skatkammerbeviser (Treasury Bills – in Danish only).

⁴ Cf. pp. 31-32 of Danmarks Nationalbank, *Report and Accounts*, 1990.

⁵ I.e. lending of liquidity against T-bills as collateral. Repo is short for "repurchase agreement" as the seller of the T-bill (the recipient of liquidity) upon conclusion of the agreement undertakes an obligation to repurchase the securities at a later time at a price determined by the repo rate agreed when the transaction is concluded.

ticipating in both markets for its own account.¹ Danmarks Nationalbank had participated in the T-bill market since its introduction in 1990, so to some extent it was just continuing its former practice, although Danmarks Nationalbank had not previously participated in the market on a continuous basis.

Even after these changes, money-market turnover in repos in T-bills remained relatively modest, however. The existing range of monetary-policy instruments, which allowed banks to procure liquidity at their own initiative by overdrawing their current accounts at Danmarks Nationalbank, did not support activity in the money market. Danmarks Nationalbank had an interest in supporting the development of a collateralised money market so that there was a clear transmission from Danmarks Nationalbank's interest rates to interest rates in the money market and on to other short-term interest rates in the economy. Both banks and observers of the money market² pointed out that Danmarks Nationalbank could stimulate development of the collateralised money market by giving repos in T-bills a key role in its range of monetary-policy instruments.

However, increased turnover of repos in T-bills would not in itself be likely to solve the issue of money-market efficiency. Firstly, the outstanding volume of T-bills was relatively modest, and secondly, settlement time – i.e. the period from the trade date to the actual exchange of liquidity – for such transactions was two days. Since T-bills were registered at the Danish Securities Centre (now VP Securities), it was for purely technical reasons not possible to trade repos in T-bills for settlement on the same day. This made it difficult for banks to use repos in T-bills for fine-tuning their liquidity from day to day.

Danmarks Nationalbank had previously (in the mid-1980s) included certificates of deposit in its range of monetary-policy instruments.³ These certificates had had a maturity of 3.5 months on issue, and the banks had had the opportunity to pledge them as collateral to Danmarks Nationalbank for loans on a day-to-day basis. In addition, the certificates could be used for interbank trading, thereby providing a basis for short-term collateralised money-market lending with an immediate liquidity impact. The system of certificates of deposit was abolished again in 1987, since it had been designed for a situation where the banks had a permanently positive net position vis-à-vis

¹ Cf. p. 4 of Danmarks Nationalbank, *Monetary Review*, May 1991; and p. 76 of Danmarks Nationalbank, *Statens låntagning og gæld*, 1993, Chapter 6: Skatkammerbeviser.

² Cf. p. 11 of Peter Erling Nielsen, *Fungerer pengemarkedet?*, *FinansInvest*, No. 6, 1990 and pp. 204-205 of Peter Erling Nielsen, *Det danske pengemarked – udvikling og reform* (The Danish Money Market – Development and Reform – in Danish only), *Nationaløkonomisk tidsskrift*, Vol. 130(1), 1992.

³ Cf. pp. 272-274 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993.

Danmarks Nationalbank, which was no longer the case. In the late 1980s, the banks had a wish for Danmarks Nationalbank once again to start issuing certificates of deposit which could serve as a basis for a collateralised money market for the slightly longer maturities. As the government was already contemplating issuing T-bills with maturities of 3 and 6 months, it was, however, not expedient that Danmarks Nationalbank based its range of instruments on certificates of deposit in the same maturity segments.¹

Separation of government debt management policy and monetary policy

The government's interest in establishing a T-bill programme was based on a wish for low financing costs through short-term borrowing in a situation with a steep interest-rate curve. Danmarks Nationalbank was more sceptical about such restructuring of the central government's borrowing strategy. For a small, open economy such as the Danish one, with free capital flows and a fixed-exchange-rate policy, it was essential that Danmarks Nationalbank could manage the banks' liquidity and interest rates in the money market with the exchange rate in mind. If the central government became a large player in the money market, there was a risk of a conflict in relation to fixing short-term interest rates, since the government's wish for low short-term interest rates to keep borrowing costs down would not always match the level of short-term interest rates warranted by exchange-rate developments. In addition, a short duration of government debt would, all other things being equal, lead to greater fluctuations in future government interest costs. Finally, Danmarks Nationalbank found it essential that any lack of government budget discipline would be reflected in a higher level of domestic interest rates, so that the lending markets would give the government a financial incentive to pursue a stability-oriented fiscal policy. As the level of short-term interest rates was subject to exchange-rate considerations, this element of market discipline could best be ensured via long-term government borrowing. From the outset, Danmarks Nationalbank therefore attached importance to having a decisive say in relation to issuance of and interest-rate terms for the T-bills introduced by the government in March 1990.

In the early 1990s, Danmarks Nationalbank was involved in the T-bill market in three ways:

¹ Cf. p. 277 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993.

- Danmarks Nationalbank acted as agent to the central government in relation to issuance of T-bills for the government's account via quarterly auctions held at Danmarks Nationalbank and current sales to the market (tap sales). The interest rate on sale was determined in consideration of not only government borrowing costs, but also the need to manage the level of the longer-term money-market interest rates with the exchange rate in mind.
- Danmarks Nationalbank played a role as market maker in T-bills via current purchase and sale of T-bills for own account in order to ensure a close daily price link between trading in T-bills via money-market brokers and at the Copenhagen Stock Exchange.
- From time to time, Danmarks Nationalbank conducted transactions on the basis of its own portfolio of T-bills as part of its management of the longer-term money-market interest rates.

The many different roles played by Danmarks Nationalbank in the market for T-bills could lead to lack of clarity in terms of the separation of monetary policy and government debt management policy as well the division of tasks between Danmarks Nationalbank and the private financial sector. The reason for the latter was that it should be possible for commercial banks to undertake the role of market maker. It was desirable that the structure of the new monetary-policy instruments ensured a clearer separation of the various functions.

STRUCTURE OF THE NEW MONETARY-POLICY INSTRUMENTS, APRIL 1992

The new range of monetary-policy instruments introduced by Danmarks Nationalbank in April 1992 was based on the following principles¹:

- In Danmarks Nationalbank's regular weekly open market operations, the banks² had access to borrow unlimited amounts of liquidity via

¹ Cf. Danmarks Nationalbank, New Monetary and Liquidity-Policy Instruments, *Monetary Review*, May 1992 and *The Nationalbank's press release of March 11, 1992 on changes in the monetary and liquidity-policy instruments* (included as Annex 1 to Danmarks Nationalbank, *Report and Accounts*, 1992).

² I.e. banks in Denmark or branches in Denmark of foreign banks. Until the credit-policy agreements were terminated in October 1995, it was a condition for gaining access to the monetary-policy instruments that a bank had signed these agreements. The credit-policy agreements from 1973 specified the basis for the lending ceiling at that time and provided for the introduction of reserve requirements and for the regulation of credit granting for specific purposes. The agreements were terminated because by the mid-1990s monetary policy had for some years been conducted on market terms, cf. *The Nationalbank's letter of September 28, 1995 to the Danish Bankers Association, the Danish Association of Cooperative Banks and the Union of Danish Cooperative Banks concerning rescinding the credit-policy agreements of 1973* (printed in Danmarks Nationalbank, *Monetary Review*, November 1995). The background to the credit-policy agreements is discussed on pp. 137-141 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993.

repos against T-bills as collateral¹ or to place liquidity by purchasing certificates of deposit. Normally both loans and certificates of deposit would have a maturity of 14 days, and the rates of interest on the two types of transactions (the lending rate and the rate of interest on certificates of deposit) were identical. This symmetry ensured that the level of money-market interest rates did not shift merely because the sign of the banks' net position vis-à-vis Danmarks Nationalbank changed.

- Certificates of deposit were negotiable and could be traded among banks with an immediate liquidity impact. The normal settlement period in the collateralised money market was two days. The certificates of deposit were intended as an instrument to be used for immediate exchange of liquidity over the money market on a collateralised basis.
- Banks were able to place excess liquidity as current-account deposits. Within certain limits – corresponding to the level of a liquidity buffer for transaction purposes – these deposits would accrue interest at the current-account rate, which was a little lower than the rate of interest on certificates of deposit. Deposits in excess of the current-account limits would not accrue interest. These instruments were designed to give banks an incentive to actively exchange liquidity among themselves via the money market rather than passively placing excess liquidity in their current accounts. The current-account limits of the individual banks were determined in relation to their capital base.
- The banks' access to day-to-day overdrafts on their current accounts was abolished. If the banking sector overall was short of liquidity on days without regular open market operations, Danmarks Nationalbank would provide liquidity via extraordinary buy-back of certificates of deposit at a rate of interest corresponding to the rate of interest on certificates of deposit plus a premium. Operations would be conducted via money-market brokers and all banks would have equal access. The premium was to give the banks an incentive to deposit sufficient liquidity in their current accounts in the regular market operations to match the expected fluctuations in payments over the coming week. If the banking sector overall had large amounts of excess liquidity on days without regular open market

¹ When introduced in April 1992, Danmarks Nationalbank's repurchase agreements had liquidity impact two days after their conclusion, cf. Danmarks Nationalbank, *Regler for pengeinstitutternes mellemværender med Nationalbanken af 11. marts 1992 (Rules of 11 March 1992 Concerning the Banks' Accounts with Danmarks Nationalbank – in Danish only)*. In June 1993, the settlement period was reduced to one day, cf. *Rules of June 30, 1993 for the Banks' Current-Account Deposits and the Use of Certificates of Deposit and Repurchase Agreements* (printed in Danmarks Nationalbank, *Monetary Review*, August 1993).

operations, Danmarks Nationalbank would sell certificates of deposit in extraordinary market operations at the rate of interest on certificates of deposit.

When the new monetary-policy instruments were designed, various options were actively selected or deselected.¹

Firstly, Danmarks Nationalbank chose not to operate with an "interest-rate margin" between its lending and deposit rates in the regular market operations, as the revision of the instruments was aimed at preventing the large shifts in money-market interest rates triggered by the former instruments.

Secondly, the range of instruments did not include a marginal lending facility. Consequently, very short-term money-market interest rates could rise freely if liquidity conditions tightened, e.g. in periods when the krone was subject to turmoil and foreign exchange flowed out of Denmark. This would signal a tight monetary-policy stance, which would also exert upward pressure on the longer-term money-market interest rates. This, in turn, would dampen the outflow of foreign exchange, thereby supporting the fixed-exchange-rate policy.

Thirdly, the range of instruments did not include an average reserve maintenance facility that could contribute to smoothing fluctuations in the overnight interest rate in the money market, as was the case in other countries. Although this was not taken into account when designing the new monetary-policy instruments in April 1992, it subsequently turned out to be useful that the instruments did not actually impose a requirement on the banks to hold large liquidity reserves at Danmarks Nationalbank, which could then have been mobilised to speculate against the krone during the currency crises in the 1990s.

The structure of the new monetary-policy instruments gave rise to a certain "technical" volatility in the day-to-day interest rate in the money market, which could not be attributed to variation in the supply and demand for liquidity. The day-to-day interest rate in the money market would normally be close to the current-account rate on days when Danmarks Nationalbank did not conduct market operations. On days when Danmarks Nationalbank was open for sale of certificates of deposit, it would, however, be somewhat higher, so that over a 14-day period "arbitrage equilibrium" would be achieved between lending in the day-to-day money market and purchase of Danmarks Nationalbank's

¹ For an overview of the monetary-policy instruments of a number of industrialised countries in the late 1980s and mid-1990s, see John T. Kneeshaw and Paul van den Bergh, Changes in Central Bank Money Market Operating Procedures in the 1980s, *BIS Economic Papers*, No. 23, January 1989 and Claudio E. V. Borio, The Implementation of Monetary Policy in Industrial Countries: A Survey, *BIS Economic Papers*, No. 47, July 1997.

**RESERVE REQUIREMENT SYSTEMS AND VOLATILITY IN OVERNIGHT
INTEREST RATES**

Box 3.2

A system of interest-bearing reserve requirements, under which banks must hold a certain average minimum deposit at the central bank within each reserve requirement period, can contribute to stabilising the overnight interest rate in the money market. Under such a system, each bank must observe the reserve requirement on an average basis within the reserve requirement period. This gives the banks an incentive to lend liquidity in the money market on days when the overnight interest rate is higher than the interest paid on required reserves. On the other hand, the banks also have an incentive to hold ample reserves at the central bank on days when the overnight interest rate is lower than the interest paid on required reserves.

If the required reserves do not bear interest, or if the rate of interest is substantially below the market rate, the reserve requirement system will still to some extent stabilise the overnight interest rate. The reason is that such a system will still provide an incentive to lend liquidity via the money market rather than holding reserves on days when the overnight interest rate is particularly high. At the same time, the system boosts the central bank's earnings. However, the system also acts as an indirect tax on the banking system, which may have a distortion effect in relation to other financial institutions and instruments or to banks in countries without reserve requirements.¹

¹ Cf. p. 22 of Hugo Frey Jensen, *The Monetary-Policy Instruments in Stage III of Economic and Monetary Union*, Danmarks Nationalbank, *Monetary Review*, February 1996.

certificates of deposit. An alternative instrument design based on a reserve requirement system could have contributed to stabilising the day-to-day interest rate, cf. Box 3.2.

In June 1993, Danmarks Nationalbank moved its regular weekly day for sale of certificates of deposit from Thursday to Friday in order to reduce technical volatility in day-to-day interest rates.¹ It was not possible to completely remove technical volatility within the framework of the instruments chosen, but the impression was that participants in the Danish money market learnt to live with this predictable volatility component in day-to-day interest rates. It was also important that there were no signs of volatility in day-to-day interest rates having a rub-off

¹ Cf. *Letter of December 28, 1992 to the Danish Bankers Association from Danmarks Nationalbank concerning "The Liquidity System and the Money Market"* (printed in Danmarks Nationalbank, *Monetary Review*, February 1993) and *Rules of June 30, 1993 for the Banks' Current-Account Deposits and the Use of Certificates of Deposit and Repurchase Agreements* (printed in Danmarks Nationalbank, *Monetary Review*, August 1993). If sale of certificates of deposit took place on Thursdays, the day-to-day interest rate in the money market Mondays to Wednesdays and Fridays (and thus also Saturdays and Sundays) was usually close to the current-account rate. The whole difference between the rate of interest on certificates of deposit and the current-account rate was thus to be equalised by a particularly high day-to-day interest rate on Thursdays. If sale of certificates of deposit took place on Fridays, the day-to-day interest rate in the money market Mondays to Thursdays would be close to the current-account rate. The difference between the rate of interest on certificates of deposit and the current-account rate could thus be equalised by a high day-to-day interest rate on Fridays, which would also apply on Saturdays and Sundays. This meant that the difference was equalised over three days rather than one, so that fluctuations in the day-to-day interest rate were reduced.

effect on money-market interest rates for the slightly longer maturities, which was essential in terms of managing the exchange rate of the krone.¹ In periods with substantial differences between the rate of interest on certificates of deposit and the current-account rate, technical fluctuations in the day-to-day interest rate could give rise to questions and comments, especially from foreign market participants, but even in countries with reserve requirement systems large systematic fluctuations could be seen in the money-market interest rate towards the end of the reserve maintenance period.

Fourthly, there would normally not be any volume restrictions on the banks' borrowing options by way of repos with Danmarks Nationalbank or their placement options in terms of purchase of Danmarks Nationalbank's certificates of deposit. The banks themselves were able to determine the volume at the given rate of interest (an "open window"). The design of the system reflected the perception that normally it was not possible – or necessary – to manage both price and volume at the same time. Management of the rate of interest was essential to the exchange-rate policy, and consequently there was no need to provide liquidity via auction-like facilities as was the practice in other countries – at least not in periods without currency unrest.

For several years in the 1980s and until the early 1990s, the discount rate had been kept unchanged, and it was not linked to any monetary-policy instruments. In December 1989, Danmarks Nationalbank indicated that the discount rate would be raised to a market level so as to function as a monetary-policy signal rate once again. The adaptation process was gradual, as the existing low discount rate was a reference interest rate in a number of statutory provisions and private-sector contracts, which might have to be adjusted. By early 1991 the discount rate had been fully normalised.² The discount rate was still not directly linked to any of the new monetary-policy instruments from April 1992, but it became an indicator of the overall level of monetary-policy interest rates.³

From the outset, the new instruments were intended to be a set of tools that Danmarks Nationalbank could use to manage money-market interest rates when foreign-exchange markets were calm. In connection with the launch of the instruments, it was, however, emphasised that normal use of the instruments could be suspended if necessary, e.g. in

¹ Cf. Allan Bødskov Andersen, Volatility in the Overnight Money-Market Rate, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2004.

² Cf. pp. 278-279 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993; and pp. 32-33 of Danmarks Nationalbank, *Report and Accounts*, 1990.

³ Cf. p. 34 of Danmarks Nationalbank, *Report and Accounts*, 1992.

the event of currency unrest, as was the case a few times during the turmoil in 1992/93, cf. Chapter 1.

After the introduction of the new instruments, Danmarks Nationalbank ceased to quote daily bid/ask prices in the T-bill market. Thus Danmarks Nationalbank no longer acted as market maker in T-bills.¹ This helped to clarify the distribution of tasks between Danmarks Nationalbank and the commercial banks. Moreover, the new instruments allowed Danmarks Nationalbank to manage money-market interest rates with a greater degree of precision, so that the monetary-policy aspect of the government's sale of T-bills became less prominent. When determining the rate of interest on the government's sale of T-bills – which from January 1993 took place via monthly auctions at Danmarks Nationalbank, while Danmarks Nationalbank's regular tap sales on behalf of the government were discontinued – the point of departure could now be the existing interest-rate structure in the money market ("price taking"), and Danmarks Nationalbank could concentrate on the government's need for sales volumes in the individual maturity segments. This enabled a more operational distinction between Danmarks Nationalbank's roles as agent to the central government and as monetary-policy authority.

THE INSTRUMENTS AND THE MONEY MARKET IN THE FIRST HALF OF THE 1990S

Shortly after the introduction of the new instruments, observers of the money market² expressed concern as to whether the outstanding volume of T-bills was sufficiently large to provide an efficient collateral base for both Danmarks Nationalbank's monetary-policy lending and the private repo market. This soon proved to be a relevant issue. A tendency arose for banks to reserve their portfolios of T-bills for repos with Danmarks Nationalbank so that money-market turnover in T-bills and repos in T-bills declined. In October 1992, the collateral base for Danmarks Nationalbank's repurchase agreements was extended to include other government securities to a limited extent (a maximum of 30 per cent of the individual bank's capital base)³, and in June 1993 all Danish krone-denominated government securities were included in the collateral base without limitations on volumes⁴. At the same time, the

¹ Cf. p. 24 of Danmarks Nationalbank, *Statens låntagning og gæld*, 1992.

² Cf. p. 16 of Peter Erling Nielsen, *Nationalbanken ændrer sin likviditetsstyring* (Danmarks Nationalbank Changes its Liquidity Management – in Danish only), *Finans/Invest*, No. 4, 1992.

³ Cf. p. 10 of Danmarks Nationalbank, *Monetary Review*, November 1992.

⁴ Cf. *Rules of June 30, 1993 for the Banks' Current-Account Deposits and the Use of Certificates of Deposit and Repurchase Agreements* (printed in Danmarks Nationalbank, *Monetary Review*, August 1993).

BREAKDOWN OF MONEY-MARKET TURNOVER BY PRODUCTS 1992-2009 Chart 3.2



Note: Transactions in which liquidity in kroner is lent. For some years, the breakdowns are partial estimates.
 Source: Danmarks Nationalbank.

ceiling on the banks' access to make interest-bearing current-account deposits was virtually raised to double height in order to facilitate off-setting of liquidity between banks.¹

In the early 1990s, turnover in the money market primarily comprised uncollateralised lending at very short maturities and collateralised lending by way of currency swaps, cf. Chart 3.2. As mentioned, participants in the latter segment were primarily the large banks. In the years after the extension of the collateral base, repos accounted for an increasing share of turnover. The number of money-market participants also grew.² In early 1994, 10 banks established a market maker agreement³ for repos in government securities. This agreement, which replaced an agreement from 1993 that only comprised T-bills, also contributed to expanding the market. From January 1993 Danmarks Nationalbank had also begun to issue detailed forecasts of developments in central-government payments and Danmarks Nationalbank's planned

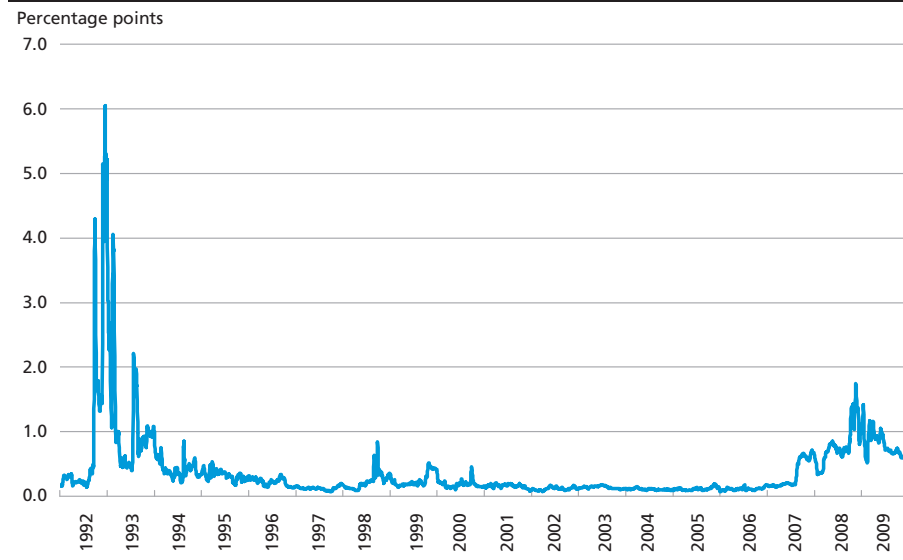
¹ Cf. p. 4 of Danmarks Nationalbank, Recent Trends in External Finance and Domestic Credit, *Monetary Review*, August 1993

² Cf. p. 6 of Danmarks Nationalbank, *Monetary Review*, February 1994.

³ Under a market maker agreement, the banks that are parties to the agreement quote binding bid and ask prices (or lending and deposit rates) vis-à-vis each other for agreed minimum amounts and within agreed maximum spreads.

SPREAD BETWEEN UNCOLLATERALISED AND COLLATERALISED 3-MONTH MONEY-MARKET INTEREST RATES 1992-2009

Chart 3.3



Note: 5-day moving average of daily observations. The collateralised money-market interest rate concerns repos, while the uncollateralised rate is CIBOR.

Source: Danmarks Nationalbank.

market operations on a daily basis two months ahead with a view to improving the banks' opportunities for liquidity planning.¹

Normalisation of the money markets after the currency crises in 1992/93 meant that the spreads between interest rates in the various submarkets once again narrowed.² In periods of uncertainty in the financial markets, a temporary widening of the spread between interest rates for collateralised and uncollateralised money-market claims could still be observed. This was the case during the financial crisis in the autumn of 1998³, up to the change of the year 1999/2000 due to uncertainty about the ability of IT systems to handle the millennium roll-over, and in connection with the referendum on Danish participation in the euro in the autumn of 2000, cf. Chart 3.3. However, in periods without currency unrest or focus on credit or liquidity risk in the financial markets, the spread between collateralised and uncollateralised interest rates was normally narrow and more or less stable.

¹ Cf. Letter of December 28, 1992 to the Danish Bankers Association from Danmarks Nationalbank concerning "The Liquidity System and the Money Market" (printed in Danmarks Nationalbank, *Monetary Review*, February 1993).

² For a more detailed analysis of developments in the money market in the first half of the 1990s and interaction with Danmarks Nationalbank's monetary-policy instruments, see Palle Duvier Mehlybye and Jacob Topp, Money Market Development, Danmarks Nationalbank, *Monetary Review*, August 1996.

³ The crisis is described in more detail in Leif Lybecker Eskesen, Is Last Autumn's Financial Crisis Over?, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 1999.

The transition to the new monetary-policy instruments in 1992 led to a structural change in turnover in the very short-term money market. Previously, banks had been able to cover their marginal daily liquidity requirements by overdrawing their current accounts at Danmarks Nationalbank, and there were no limits on remuneration of current-account deposits. After the introduction of the new instruments, which meant that Danmarks Nationalbank was not active in the market every day, did not make a marginal lending facility available and also imposed limits on interest-bearing current-account deposits, both the collateralised and the uncollateralised day-to-day money market became even more important for the banks' liquidity management. The bulk of turnover stemming from predictable liquidity fluctuations was now in the tomorrow-next (T/N) segment, i.e. lending of liquidity from the day after the agreement date to the next day.¹ The overnight (O/N) segment – i.e. lending of liquidity from the agreement date to the next day – became more of a marginal lending market for handling completely unpredicted liquidity needs.

In May 1997 the limits on the banks' access to making interest-bearing deposits on current account were lifted completely so that all current-account deposits accrued interest at the current-account rate. Developments in the money market since the early 1990s meant that the current-account limits were no longer seen as necessary for ensuring a money market with active exchange of liquidity between banks.²

ADAPTATION OF THE MONETARY-POLICY INSTRUMENTS IN 1999 AND THE FOLLOWING YEARS

In June 1999, Danmarks Nationalbank made a number of major changes to its monetary-policy instruments:

¹ In May 1997, Danmarks Nationalbank, on behalf of the Danish Bankers Association, began to calculate a reference interest rate for uncollateralised money-market lending in the T/N segment. The T/N rate is fixed on the basis of reporting to Danmarks Nationalbank by a group of large players in the Danish money market on the volume of their uncollateralised interbank lending in the T/N segment and their average rates of interest. On the basis of this data, Danmarks Nationalbank calculates a turnover-weighted T/N reference interest rate. The T/N rate forms the basis for T/N interest-rate swaps, which were also introduced in May 1997. When concluding a T/N interest-rate swap, the parties in principle agree to exchange payment of a fixed rate of interest (the swap interest rate for the maturity in question) against payment of a variable day-to-day interest rate (the T/N rate). Interest payments are calculated on the basis of a fictitious principal. The T/N rate and T/N interest-rate swaps are explained in more detail in Birgitte Damm Fischer and Anne Reinhold Pedersen, *New Money-Market Statistics*, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 1997. "CITA swap" is often used as a synonym for T/N interest-rate swaps. CITA is short for Copenhagen Interest T/n Average.

² Cf. p. 40 of Danmarks Nationalbank, *Report and Accounts, 1997* and Danmarks Nationalbank's *press release of April 23, 1997 on the abolition of limits on current-account deposits and publication of an inter-bank interest rate* (printed on p. 47 of Danmarks Nationalbank, *Monetary Review*, May 1997).

- Mortgage banks¹ were given access to the monetary-policy instruments on an equal footing with banks.
- The collateral base for Danmarks Nationalbank's monetary-policy lending was widened from comprising krone-denominated government securities only to also comprising krone-denominated mortgage bonds and certain other bonds.²
- An overall limit of around kr. 20 billion was introduced on the banks' and mortgage banks' current-account deposits at the close of the day. The overall current-account limit was broken down by the individual institutions, taking into account their sizes and their activities in the money market. The current-account limits of the individual institutions were only binding if the total current-account deposits exceeded the limit of kr. 20 billion. Thus, an institution could exceed its individual limit, provided that the overall limit was not exceeded. Deposits exceeding the individual limits accrued interest at the current-account rate if the overall current-account limit was not exceeded. If the overall limit was exceeded at the close of the day, deposits exceeding the individual limits would be converted into certificates of deposit.

Expansion of the group of counterparties to include mortgage banks and the collateral base to include mortgage bonds reflected international practice in this area.³ The primary reason for introducing a new system of current-account limits was that a number of banks deposited considerable amounts in their current accounts in connection with the turmoil in the financial markets in the autumn of 1998, cf. Chapter 2.⁴ In addition, the considerable extension of the volume of assets eligible as collateral vis-à-vis Danmarks Nationalbank meant that in practice the collateral base no longer limited the banks' opportunities to obtain monetary-policy loans, cf. Chart 3.4. The system of current-account limits was intended to prevent the banks and mortgage banks from accumulating excessive liquidity reserves by way of current-account deposits that could be used for speculation in changes in interest and exchange rates.

¹ Including Danish branches of foreign credit institutions offering mortgage credit.

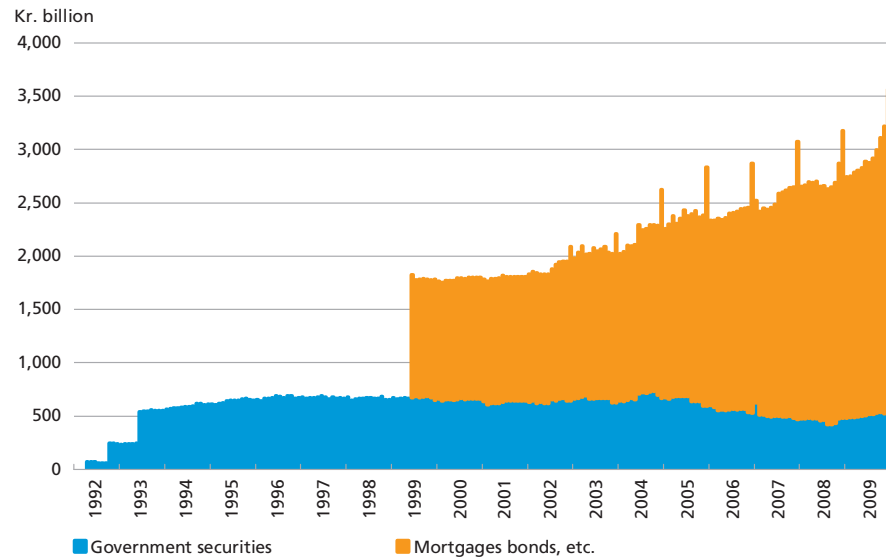
² To facilitate administrative handling of the large number of different bonds (ISINs) that were eligible as collateral after the extension of the collateral base, the legal format of Danmarks Nationalbank's monetary-policy lending was changed from repos to loans against traditional pledging of a pool of collateral. At the same time it was possible to switch to lending with same-day value, which was also the practice for sale of certificates of deposit, and the regular weekly day for concluding lending transactions was moved from Thursday to Friday.

³ Cf. Danmarks Nationalbank, Adjustment of the Monetary-Policy Instruments, *Monetary Review*, 2nd Quarter 1999.

⁴ Cf. p. 32 of Danmarks Nationalbank, Use of Monetary-Policy Instruments, *Monetary Review*, 1st Quarter 2003.

OUTSTANDING VOLUME OF ASSETS ELIGIBLE AS COLLATERAL FOR
MONETARY-POLICY LOANS FROM DANMARKS NATIONALBANK,
APRIL 1992-DECEMBER 2009

Chart 3.4



Note: Nominal value.

Source: Danmarks Nationalbank.

The system introduced in 1999 ensured an absolute ceiling on total current-account deposits. In contrast, the previous limits introduced in 1992 – and abolished in 1997 – did not ensure efficient limitation of the accumulation of liquidity during periods of currency unrest with downward pressure on the krone. True, there had been a ceiling on the remuneration of current-account deposits, but no absolute ceiling had applied to the volume of liquidity that could be accumulated. However, under the new system it was still possible to build up portfolios of certificates of deposit, which would be transformed into current-account liquidity when they matured.

The total current-account limit under the new system had been laid down with a view to ensuring that it would not constitute a problem in relation to daily settlement of payments. Practically no incidents occurred where it was necessary to convert current-account deposits into certificates of deposit.¹ It should, however, be borne in mind that on

¹ There was one exception, however. Prior to an increase of interest rates in March 2006, a number of banks and mortgage banks deposited large sums in their current accounts at Danmarks Nationalbank. Anticipating an increase in interest rates, these institutions speculated in depositing their excess liquidity in their current accounts and deferring their purchases of certificates of deposit until interest rates had risen. Since the total current-account limit was exceeded, just over kr. 9 billion of the total current-account deposit was converted into certificates of deposit. The conversion had no adverse effect on the daily settlement of payments, cf. p. 35 of Danmarks Nationalbank, *Report and Accounts*, 2006.

days when there was an evident risk of exceeding the overall limit, Danmarks Nationalbank opened up for sale of certificates of deposit before the close of the day.¹

Following the 1999 amendments, only few and small adjustments were made to the monetary-policy instruments in the years until 2005.² In January 2001 around 1/5 of the individual current-account limits were adjusted in response to developments in the financial sector, including Danske Bank's acquisition of BG Bank. The overall current-account limit remained around kr. 20 billion. The same overall level was maintained in January 2003, when a general adjustment of the individual limits took place. Finally the range of bonds eligible for monetary-policy loans was extended to include euro-denominated Danish government and mortgage bonds in June 2004.

USE OF THE MONETARY-POLICY INSTRUMENTS AND DEVELOPMENTS IN THE MONEY MARKET AFTER 1999

At end-2009, Danmarks Nationalbank had 113 banks and mortgage banks as monetary-policy counterparties. For comparison, the total number of banks and mortgage banks in Denmark was 140³ at end-2009. At end-1997, 150 banks were counterparties, while the total number of banks and mortgage banks was 199⁴. The reduction in the number of counterparties was to some extent attributable to mergers and acquisitions within the sector. In addition, a number of institutions chose to terminate their access to the monetary-policy instruments in connection with the introduction of Danmarks Nationalbank's new payment system, Kronos, in November 2001, cf. Supplement A. Connection to Kronos was a precondition for access to accounts at Danmarks Nationalbank, which increased the IT system costs of being a monetary-policy counterparty.

The lower number of counterparties was not a problem in relation to monetary policy. Traditionally, Danmarks Nationalbank had been open to a wide group of counterparties, reflecting a principle of equal treat-

¹ Cf. p. 29 of Danmarks Nationalbank, Use of Monetary-Policy Instruments, *Monetary Review*, 1st Quarter 2003. The current-account limit was also temporarily suspended during the money-market turmoil in connection with the financial crisis in late September 2008, cf. p. 12 of Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2008.

² The major amendments after 2005 concern the transition to 7-day maturity for monetary-policy loans and certificates of deposit in May 2007 and the introduction of a margin between the lending rate and the rate of interest on certificates of deposit in June 2009, cf. p. 11 of Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2007; and pp. 11-12 of Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2009.

³ Cf. Danish Financial Supervisory Authority, *Key figures 2005-2009 for financial undertakings under supervision*, May 2010.

⁴ Cf. Danish Financial Supervisory Authority, *Hovedtal fra Finanstilsynet 1997 (Key Figures from the Danish Financial Supervisory Authority 1997 – in Danish only)*, November 1998.

ment. Nevertheless, it was evident that a fairly small group of large institutions were essential for clear transmission of Danmarks Nationalbank's interest rates to money-market interest rates and retail interest rates. Monetary-policy loans were generally distributed on a relatively small number of institutions. The number varied with the net position of the institutions vis-à-vis Danmarks Nationalbank, but typically only 10-20 institutions had loans at Danmarks Nationalbank at any given time. The number of institutions holding certificates of deposit was generally somewhat higher, since the outstanding certificates of deposit were typically distributed among 50-60 counterparties.¹

The banks and mortgage banks that did not transact business with Danmarks Nationalbank handled their liquidity via accounts at correspondent banks. Particularly the small banks used the medium-sized and large banks as their "household banks". A breakdown of the value of the monetary-policy counterparties' mutual uncollateralised day-to-day money-market lending per banking day in the 4th quarter of 2003 and the 1st Quarter of 2004 is shown in Table 3.1. Institutions with current-account limits of kr. 700 million or more granted loans totalling kr. 6.1 billion per banking day, of which kr. 4.3 billion (corresponding to 71 per cent) went to other large institutions, while kr. 59 million (corresponding to 1 per cent) went to the smallest institutions with current-account limits of less than kr. 50 million. Table 3.1 also illustrates that the medium-sized banks to a considerable degree exchanged liquidity with each other. For example, 8 per cent of lending by institutions with current-account limits of kr. 100-299 million went to other institutions of a similar size.²

In her speech at the Annual Meeting of the Association of Danish Mortgage Banks in April 1999, Governor Bodil Nyboe Andersen, Danmarks Nationalbank, expressed expectations that the inclusion of mortgage banks in the group of counterparties from June 1999 would contribute to the functionality of the money market:

"Danmarks Nationalbank expects that the mortgage-credit institutes will not only use this access to accommodate their own liquidity requirements, but will also actively contribute to broadening and revitalising an already well-functioning money market."³

¹ Cf. p. 25 of Danmarks Nationalbank, Use of Monetary-Policy Instruments, *Monetary Review*, 1st Quarter 2003.

² Cf. pp. 94-95 of Kim Abildgren and Henrik Arnt, The Activity in the Danish Money Market, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2004.

³ Quotation from *Speech by Governor Bodil Nyboe Andersen at the Annual Meeting of the Association of Danish Mortgage Banks on 22 April 1999* (printed in Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 1999).

BREAKDOWN OF VALUE OF TURNOVER AMONG MONETARY-POLICY COUNTERPARTIES IN UNCOLLATERALISED DAY-TO-DAY LOANS IN THE 4TH QUARTER OF 2003 AND THE 1ST QUARTER OF 2004, AVERAGES PER BANKING DAY (KR. MILLION)

Table 3.1

From institutions with a current-account limit (kr. million) of:	To institutions with a current-account limit (kr. million) of:					
	700 or higher	300-699	101-299	50-100	1-49	Total
700 or higher	4,340	1,125	360	201	59	6,085
300 - 699	1,243	228	71	28	-	1,569
101 - 299	421	661	103	38	-	1,222
50 - 100	236	66	86	41	-	429
1 - 49	0	-	-	-	-	0
Total	6,240	2,080	619	308	59	9,305

Source: Kim Abildgren and Henrik Arnt, The Activity in the Danish Money Market, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2004.

These expectations were not met. Despite encouragement¹, the mortgage banks were never very active in the money market.

Certificates of deposit never achieved the role as a basis for collateralised exchange of liquidity in the money market that had been intended when they were introduced in 1992. In the second half of the 1990s, turnover in the collateralised segment of the money market was dominated by repos in government securities, and after 2000 currency swaps gained ground, cf. Chart 3.2 p. 97. On account of the increasingly international orientation of the sector, the latter market included a larger group of banks than had been the case in the early 1990s.² In contrast, turnover in certificates of deposit constituted only a fraction of total turnover in the collateralised money market.³ Secondary trading in T-bills was also relatively limited in the early years of the millennium⁴. The latter reflected factors such as the introduction of other short-term bonds in the market as part of the financing of the mortgage banks' adjustable-rate loans.

Although certificates of deposit were not traded heavily in the money market, they were attractive in the period following the millennium rollover, cf. Chart 3.5. Certificates of deposit were part of the financial sector's liquidity reserves in the event of operational problems, e.g. in connection with settlement of the large payments linked to the due dates for mortgage loans, especially the traditionally extensive refinan-

¹ Cf. *Speech by Bodil Nyboe Andersen at the Annual Meeting of the Association of Danish Mortgage Banks 30 April 2003* (printed in Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2003).

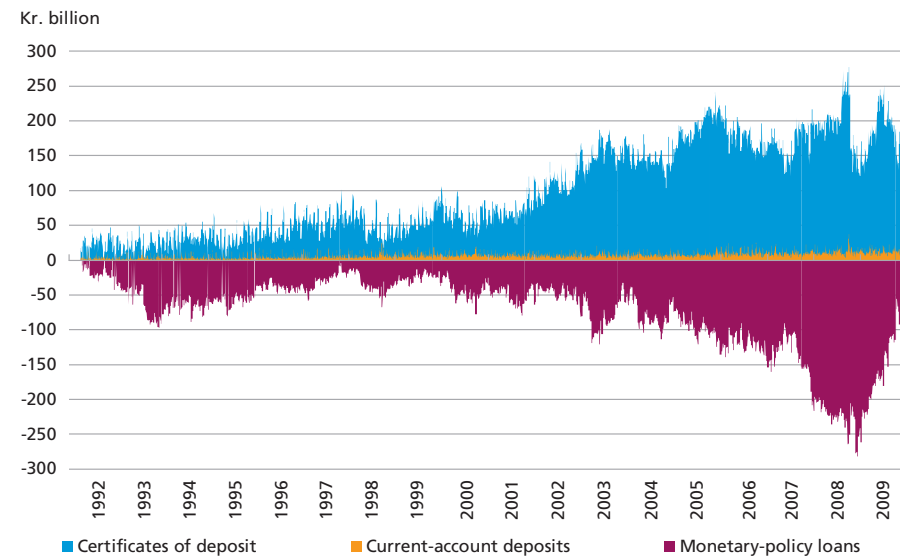
² Cf. p. 49 of Palle Duvier Mehlbye and Jacob Topp, *Money Market Developments*, Danmarks Nationalbank, *Monetary Review*, August 1996.

³ Cf. p. 78 of Danmarks Nationalbank, *Monetary Policy in Denmark*, 2nd edition, 2003.

⁴ Cf. pp. 91-92 of Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 2003, Chapter 8: The Treasury Bill Programme.

UTILISATION OF THE MONETARY-POLICY INSTRUMENTS,
APRIL 1992 – DECEMBER 2009

Chart 3.5



Note: Daily observations.

Source: Danmarks Nationalbank.

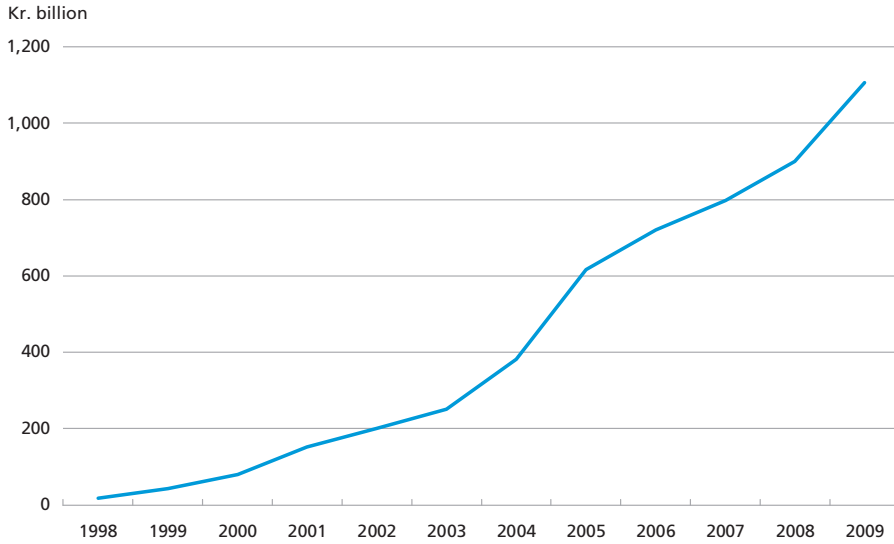
cing of adjustable-rate loans at the beginning of the year, cf. Chart 3.6.¹ By holding certificates of deposit, the banks and mortgage banks could – if necessary – quickly raise liquidity in the money market by selling or pledging the certificates of deposit or by selling them back to Danmarks Nationalbank in open market operations.

The increasing demand for certificates of deposit as liquidity reserves was reflected in a larger volume of both monetary-policy loans and certificates of deposit. Until mid-2009, the lending rate and the rate of interest on certificates of deposit were identical so there was no financial incentive for counterparties to exchange liquidity among themselves in the money market rather than using Danmarks Nationalbank's instruments. In addition, certain counterparties had gross holdings of both monetary-policy loans and certificates of deposit.

¹ Cf. pp. 35-37 of Danmarks Nationalbank, *Report and Accounts*, 2005. At the turn of the year 1997/98, the mortgage banks introduced auctions for refinancing of adjustable-rate loans instead of traditional tap issue, cf. p. 52 of Danmarks Nationalbank, *Report and Accounts*, 1997. Subsequently, this became the normal issuing practice for most mortgage banks when refinancing adjustable-rate loans. In October 2009, the Association of Danish Mortgage Banks and the Danish Mortgage Banks' Federation agreed with Danmarks Nationalbank that mortgage banks should implement measures to ensure a more even distribution of these refinancing activities over the year than had been the case until then, cf. p. 16 of Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2009.

THE MORTGAGE BANKS' ADJUSTABLE-RATE MORTGAGE LOANS WITH MATURITIES OF UP TO 1 YEAR, 1998-2009

Chart 3.6



Note: Outstanding volumes at year-end.

Source: Danmarks Nationalbank.

In the period after 1990, trading in the Danish money market was characterised by four structural tendencies:

- Firstly, broker-based turnover declined markedly. In the early 1990s, two local money-market brokers jointly accounted for a substantial share of turnover of Danish money-market products. With effect from January 2000, these two local brokers merged, and several players in the Danish money market had also begun to use foreign brokers based in e.g. London or Frankfurt.¹ However, total turnover of Danish money-market products via Danish and foreign brokers was presumably very modest in the years after 2000. The decline in the number of large players in the money market had made it easier for participants to trade directly among themselves without large search costs, enabling them so save the brokerage.
- Secondly, the sustained fixed-exchange-rate policy and still smaller fluctuations in the exchange rate of the krone led to increasing use of the euro market for hedging interest-rate risk on short-term positions in kroner via euro-denominated OTC derivatives² such as FRAs³ and interest-rate swaps. Use of the euro market was presumably also

¹ Cf. p. 22 of Anders Mølgaard Pedersen and Michael Sand, The Danish Money Market, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2002.

² Derivatives traded outside the stock exchanges.

³ Forward Rate Agreements, i.e. agreements to pay an agreed rate of interest on a fictitious principal over a given future period.

one of the reasons why listed Danish money-market products never really gained a foothold. In 1993, trading in short-term interest-rate futures¹ had been introduced on the Copenhagen Stock Exchange, but trading was discontinued in 2001 due to low turnover.²

- Thirdly, the emergence of electronic information systems made it easier for the market participants themselves to collect price information rather than having to contact money-market brokers by telephone. The remaining local money-market broker nevertheless retained a key role as electronic provider of price information in the Danish money market, so Danmarks Nationalbank used this broker in connection with extraordinary market operations. However, there were no signs of electronic trading in the Danish money market; trading was still telephone-based (either direct or via a broker).
- Fourthly, the number of market makers in the money market declined from 15 in 1996 to around 10 in 2009. This was to some extent attributable to mergers and acquisitions within the sector. A few players had also withdrawn from the agreements.

The possibility of further mergers in the sector led the Danish Bankers Association to extend the group of CIBOR³ reporters to include several foreign banks. The catalyst was the decision by the British Bankers' Association in June 2003 to begin to state reference rates for uncollateralised loans in Danish kroner in the London money market (DKK LIBOR) on the basis of reporting by 8 banks.⁴ To ensure the future credibility and recognition of CIBOR, the group of banks reporting for CIBOR was increased to include four foreign banks in April 2005, bringing the total to 12 banks, and the number of maturities for which CIBOR was fixed was

¹ A standardised listed contract to pay an agreed rate on interest on a fictitious principal over a given future period, cf. Jørgen Damgaard, Cibur-futures: Et nyt centralt pengemarkedsinstrument? (CIBOR Futures: a New Key Money-Market Instrument? – in Danish only), *FinansInvest*, No. 6, 1994.

² Cf. p. 28 of Anders Mølgaard Pedersen and Michael Sand, The Danish Money Market, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2002.

³ CIBOR (Copenhagen InterBank Offered Rate) is a reference interest rate indicating the rate at which a bank is willing to lend liquidity in kroner on an uncollateralised basis to another creditworthy bank. CIBOR is calculated by Danmarks Nationalbank on the basis of daily reporting of interest rates by a number of large banks. Calculation of CIBOR began in 1988, and from the outset it was used as a reference interest rate in connection with the newly established market for FRAs, and soon afterwards also for a number of other money-market derivatives, cf. p. 276-277 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993; Jan Terkelsen, Forward Rate Agreement og Copenhagen Interbank Offered Rate (Forward Rate Agreement and Copenhagen Interbank Offered Rate – in Danish only), *FinansInvest*, No. 7, 1988; Torben Visholm, Off-balance instrumenter – en oversigt over Cibur relaterede produkter (Off-Balance-Sheet Instruments – an Overview of CIBOR-Related Products – in Danish only), *FinansInvest*, No. 6, 1989; Poul Kjær, Det danske FRA (Forward Rate Agreement) marked (The Danish FRA (Forward Rate Agreement) Market – in Danish only), *FinansInvest*, No. 7, 1989; and Morten Kjærgaard and Katrine Skjærbæk, Cibur, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2008.

⁴ Cf. p. 17 of Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2003.

also increased.¹ In early 2008, one foreign bank also joined the group of T/N reporters.²

It was the impression that the money market generally functioned well in the late 1990s and the years immediately after the millennium rollover.³ The improved quotation of prices with narrower and more stable spreads between lending and deposit rates was generally maintained. Moreover, there were no signs of special problems in relation to interbank prices for the individual money-market products.

In periods of turmoil in the financial markets the functionality of the money-market was, however, impaired.

THE INSTRUMENTS AND THE TRANSMISSION OF INTEREST RATES

The new monetary-policy instruments introduced in April 1992 proved to be well-suited for managing short-term money-market interest rates, which generally mirrored Danmarks Nationalbank's interest rates closely in periods without turmoil in the financial markets.

In periods of turmoil and pressure against the krone, upward pressure was often observed for the slightly longer collateralised money-market interest rates relative to Danmarks Nationalbank's interest rates, cf. Chart 3.7. This indicated familiarity with Danmarks Nationalbank's monetary-policy responses: in the event of sustained downward pressure on the krone, which could not be countered via intervention in the foreign-exchange markets, Danmarks Nationalbank would raise its monetary-policy interest rates relative to those of the euro area (Germany before 1999).⁴ The circumstance that upward pressure was soon exerted on the money-market interest rates in situations with downward pressure against the krone in itself helped to dampen the incentive to speculate against the krone. This stabilising element of the instrument design was attributable to the absence of a marginal lending facility through which the institutions could instantly raise extra liquidity at their own initiative.

¹ Cf. the Danish Bankers Association's press release on the four new international participants in CIBOR fixing, dated 7 January 2005 (in Danish only). By February 2010, the number of banks reporting for CIBOR had fallen to eight.

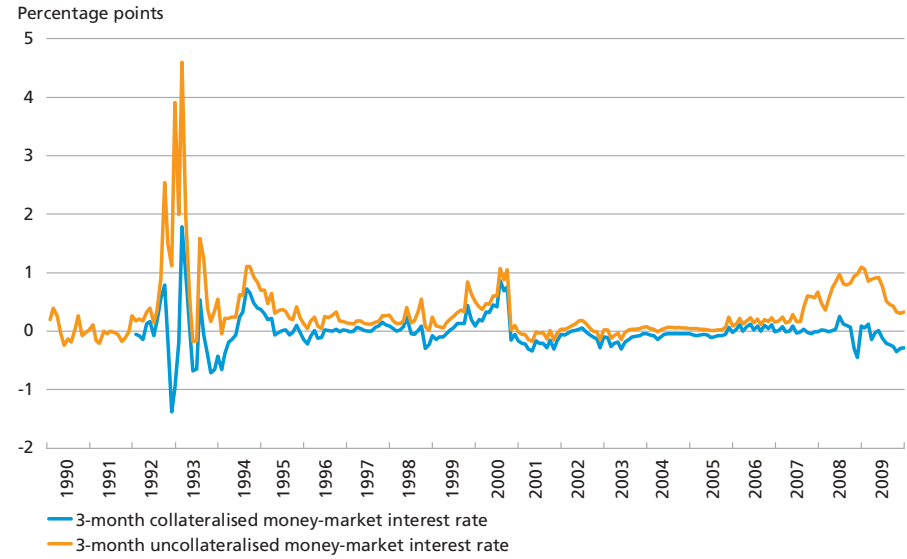
² Cf. the Danish Bankers Association's press release "Change in the Danish Tomorrow Next interest rate" of 13 December 2007. When the T/N interest rate was introduced in May 1997, the group of reporting banks numbered 14. By February 2010, the number had fallen to 11.

³ Cf. p. 32 of Anders Mølgaard Pedersen and Michael Sand, The Danish Money Market, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2002.

⁴ It was actually possible to see this response pattern very clearly in the monthly data. For the period 1996-2005 a good empirical description of the level of Danmarks Nationalbank's rate of interest on certificates of deposit could thus be obtained by studying the monetary-policy interest rates of the euro area (Germany before 1999), changes in the exchange rate of the krone vis-à-vis the euro (the D-mark before 1999) and Danmarks Nationalbank's intervention in the foreign-exchange market for kroner, cf. Niels C. Beier and Peter E. Storgaard, Identifying monetary policy in a small open economy under fixed exchange rates, Danmarks Nationalbank, *Working Paper*, No. 38, 2006.

SPREADS BETWEEN 3-MONTH MONEY-MARKET INTEREST RATES AND DANMARKS NATIONALBANK'S LENDING RATE 1990-2009

Chart 3.7



Note: Monthly averages. The collateralised money-market interest rate concerns repos (bid rates) and is not available before January 1992. The uncollateralised money-market interest rate is CIBOR. Before April 1992, Danmarks Nationalbank's lending rate is the rate charged on current-account overdrafts.

Source: Danmarks Nationalbank.

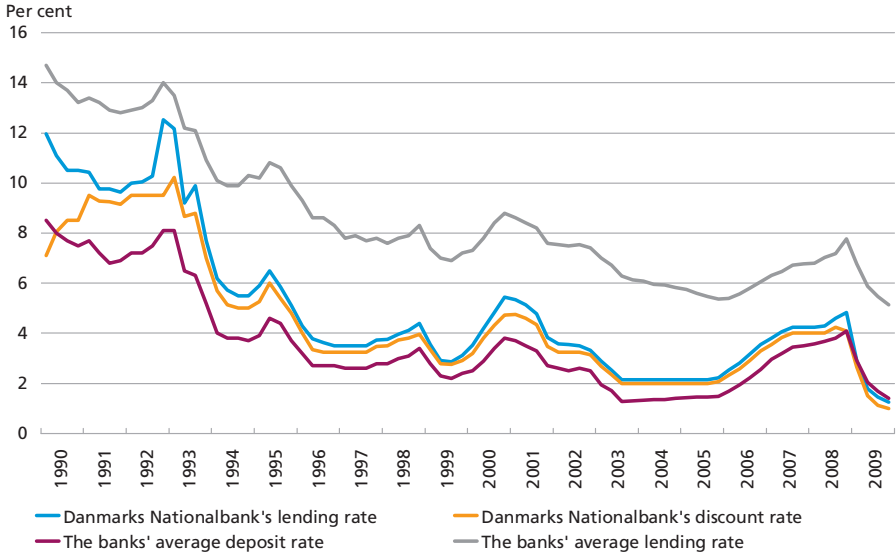
The spread between uncollateralised and collateralised interest rates tended to widen when the financial markets were characterised by turmoil and the banking system was under pressure, e.g. in 1992-93. This reflected premiums for increased credit and liquidity risk on uncollateralised interest rates.

Throughout most of the period from 1990 there was also a pronounced and rapid transmission from Danmarks Nationalbank's monetary-policy interest rates to the banks' interest rates vis-à-vis the corporate sector and the households, cf. Chart 3.8. The banks normally changed their interest rates during the same month as the monetary-policy interest rates were adjusted, alternatively in the following month.¹ It should, however, be emphasised that the banks' lending rates – especially for large corporate customers – are to a large extent linked to money-market interest rates (including CIBOR) and therefore do not directly mirror Danmarks Nationalbank's interest rates. Furthermore, there was a tendency for the banks' interest margins to widen when bank earnings were squeezed, e.g. in the early 1990s.

¹ Cf. Maria Carlsen and Charlotte Franck Fæste, The Pass-Through from Danmarks Nationalbank's Interest Rates to the Banks' Retail Interest Rates, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2007.

DANMARKS NATIONALBANK'S INTEREST RATES AND THE BANKS' RETAIL INTEREST RATES 1990-2009

Chart 3.8



Note: Quarterly averages. The banks' interest rates are weighted averages of the rates of interest for outstanding transactions with general government, non-financial corporations and households, i.e. excluding the MFI sector and other financial corporations. Adjusted for data breaks in the series. Before April 1992, Danmarks Nationalbank's lending rate is the rate charged on current-account overdrafts.

Source: Maria Carlsen and Charlotte Franck Fæste, The Pass-Through from Danmarks Nationalbank's Interest Rates to the Banks' Retail Interest Rates, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2007. Updated with new and revised data from the sources listed in the article.

CHAPTER 4

Development in the Financial Sector – Structure and Regulation

CONSOLIDATION OF THE BANKING SECTOR

The Danish banking sector experienced significant structural shifts in the years after 1980.¹ Many banks closed down and there were several waves of mergers and acquisitions as part of the sector's general focus on rationalisation and economies of scale, cf. Appendix 4.A. Between 1980 and 2009, the number of banks was more than halved – from approximately 300 to just over 130, cf. Chart 4.1.

The mergers led to closure of branches to avoid overlapping branch networks. The number of branches was almost halved from 1980 to 2009. This trend in combination with technological advances – e.g. the growing prevalence of ATMs and increased customer access to telephone and online banking services – enabled a reduction in the number of employees.²

However, large fluctuations in employee numbers were the order of the day. During the boom period of the first half of the 1980s, the number of employees surged by more than 20 per cent. Following the cyclical reversal in 1987 and the banking crises until the mid-1990s, the focus was redirected to adjustment of costs and employee resource consumption. The number of employees dropped from just under 55,000 in 1987 to about 40,000 in the second half of the 1990s. In the period 2005-09, the number of employees increased again, to more than 45,000.

The structure of the banking sector changed significantly in 1990 when six of the largest banks merged into two big banks.³ Den Danske Bank, Handelsbanken and Provinsbanken merged and continued under the name of Den Danske Bank, while Sparekassen SDS, Privatbanken and Andelsbanken merged under the name of Unibank.

These mergers in 1990 led to a significant concentration of the banking sector, cf. Chart 4.2. Between them, the two new banks thus

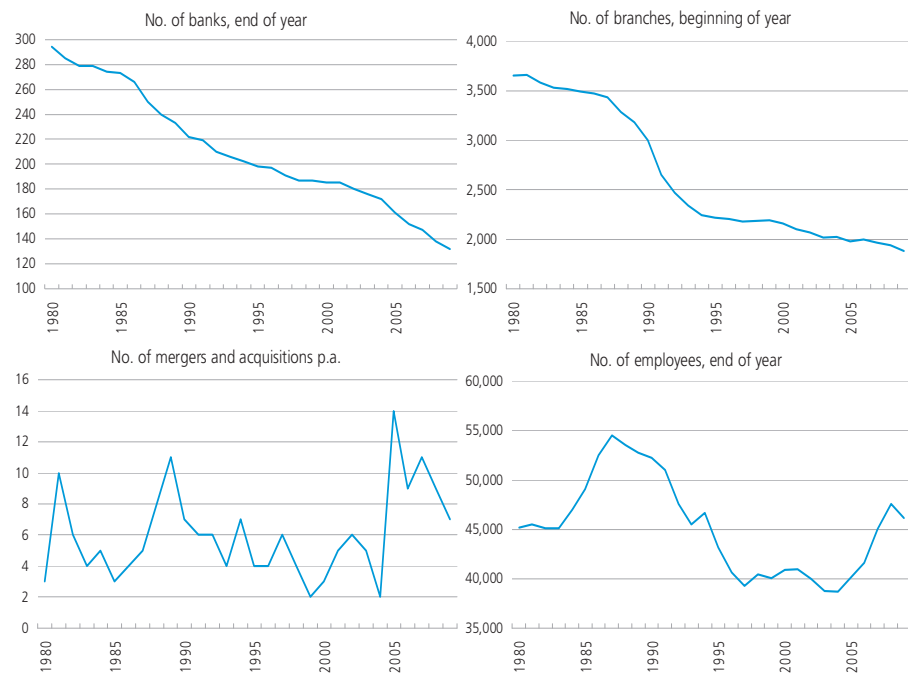
¹ Cf. e.g. Cato Baldvinsson, Torben Bender, Kim Busck-Nielsen and Flemming Nytoft Rasmussen, *Dansk Bankvæsen (Danish Banks – in Danish only)*, 5th edition, Forlaget Thomsen, 2005.

² Cf. p. 23 of Allan Damm Christensen, *The Banks' Financial Statements*, Danmarks Nationalbank, *Monetary Review*, May 1996.

³ Cf. pp. 360-361 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990 (Monetary History of Denmark 1960-1990 – in Danish only)*, Danmarks Nationalbank, 1993.

KEY FIGURES FOR BANKING SECTOR DEVELOPMENTS 1980-2009

Chart 4.1

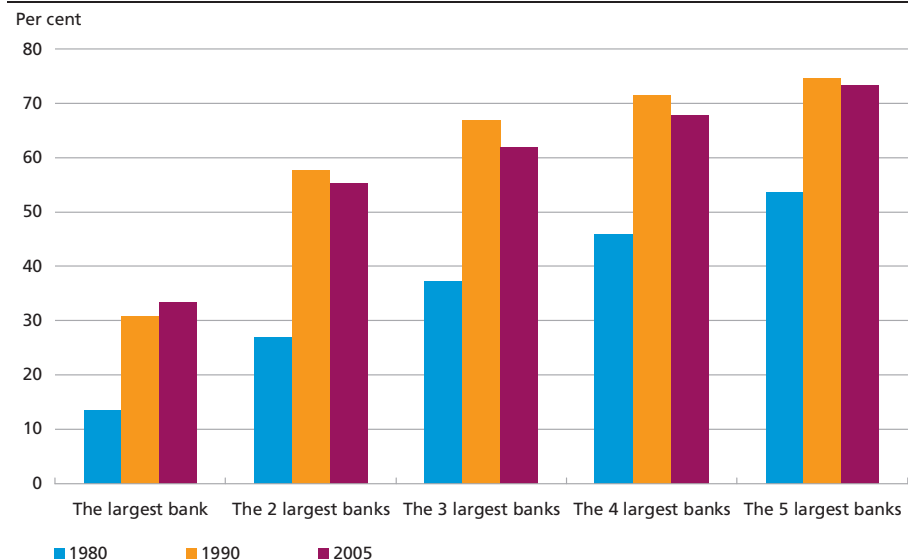


Note: The number of branches has been calculated as branches of Danish banks in Denmark.

Source: The Danish Bankers Association and the Danish Financial Supervisory Authority.

MARKET SHARES OF THE FIVE LARGEST BANKS 1980-2005

Chart 4.2



Note.: Market shares calculated on the basis of lending by banks in Denmark to non-credit institutions. Foreign branches in Denmark are not included in the market share overview. Market shares are calculated on the basis of the individual banks' financial statements (i.e. non-consolidated financial statements), and lending by the foreign branches of the institutions is not included.

Source: Danish Financial Supervisory Authority and financial statements of the institutions.

accounted for 55-60 per cent of the sector's total lending. Three other large banks accounted for another 15 per cent, so that the five largest banks accounted for 70-75 per cent of total lending. As a result, the level of concentration in the Danish banking sector was among the highest in the EU, corresponding to the situation in other smaller countries such as Sweden and the Netherlands.¹

FINANCIAL GROUPS AND EROSION OF SECTORAL BARRIERS

Until the mid-1980s, financial institutions in Denmark were sector-specific with a sharp division between banks, mortgage banks and insurance companies.² The mid-1980s saw the emergence of the first financial groups, i.e. financial enterprises operating in several financial sub-markets at the same time, such as banking, mortgage credit, insurance, etc.

Groups were formed because the financial institutions were increasingly competing for the same customers.³ Another reason was the quest for synergies e.g. in the distribution of financial products. The development was also spurred on by the liberalisation of legislation at the end of the 1980s and the first half of the 1990s, cf. below.

The first financial groups were formed by insurance companies. Hafnia Invest A/S was founded in 1984, followed by Baltica Holding A/S and TopDanmark A/S. These were groups consisting of a holding company owning companies engaged in insurance as well as banking. The groups were not altogether successful and were later acquired or restructured, with the main emphasis on the original core business of insurance.⁴ Hafnia was acquired by Codan in 1993, Baltica was acquired by Tryg in 1995 and Topdanmark gradually wound up any activities that were not directly related to insurance.⁵

While the first group formations were initiated by insurance companies with the main emphasis on insurance, the 1990s saw the emer-

¹ Cf. pp. 49-50 of Danmarks Nationalbank, *Report and Accounts*, 1990; Jakob Windfeld Lund, Foreign Banks in Denmark, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2006; and European Central Bank, *Mergers and acquisitions involving the EU banking industry – facts and implications*, December 2000.

² Cf. Birgitte Bundgaard Madsen, Financial Groups and Conglomerates, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2006; Richard Mikkelsen, Branche­glidning på kapitalmarkedet (Erosion of Sectoral Barriers in the Capital Market – in Danish only), *Nationaløkonomisk Tidsskrift*, Vol. 123, 1985; Hans Ejvind Hansen, Branche­glidning i den finansielle sektor – hvad nu? (Erosion of Sectoral Barriers in the Financial Sector – What Now? – in Danish only), *Nationaløkonomisk Tidsskrift*, Vol. 125, 1987; and Branche­glidning i den finansielle sektor. (Erosion of Sectoral Barriers in the Financial Sector – in Danish only). Report No. 1108, Ministry of Industry, 1987. Appendix 4.B provides an overview of selected reports, etc. on the financial sector since 1980.

³ Cf. Lars Østergaard, Den finansielle sektor – efter år 2000 (The Financial Sector – After the Year 2000 – in Danish only), *FinansInvest*, No. 1, 2000.

⁴ Cf. pp. 10 and 79-80 of Den finansielle sektor efter år 2000 (The Financial Sector after the Year 2000 – in Danish only). Report No. 1376. Ministry of Economic Affairs, 1999. Progress Report nr. 3: *Udviklingen i den finansielle sektor (Developments in the Financial Sector – in Danish only)*.

⁵ Cf. pp. 55 and 79-80 of Den finansielle sektor efter år 2000. Betænkning nr. 1376. Ministry of Economic Affairs, 1999. Delrapport nr. 3: *Udviklingen i den finansielle sektor*.

gence of financial groups with the main emphasis on banking and mortgage credit.¹ The trend of amalgamation and erosion of sectoral barriers in the financial sector in the years after 1990 was also reflected in a large number of changing cooperation agreements across sectoral divides.

Nykredit is one example of a mortgage bank with changing strategies and partners.² In 1990, Unibank, Nykredit and Tryg Forsikring entered into quite an extensive cooperation agreement. In the wake of the agreement, a group was established in 1991, consisting of Tryg Forsikring and Nykredit in a holding structure. The original idea was for Unibank to form part of this group, but this structure was later dissolved. Nykredit acquired IRF³ by merger in 1992, and in 1995 Nykredit initiated a cooperation with Bikuben Girobank and Topdanmark. However, Nykredit opted out again in 1997 and chose to provide banking services through a bank under the Nykredit brand. In 1999, Nykredit agreed on a merger with Østifterne Forsikring, and in 2002 a strategic cooperation agreement with Jyske Bank was announced. The agreement with Jyske Bank involved a joint IT operating company and provision of Nykredit mortgage loans to Jyske Bank retail customers. Jyske Bank was already providing Totalkredit⁴ mortgage loans, and in 2003 Totalkredit was acquired by Nykredit. Nykredit's acquisition of Totalkredit involved a strategic cooperation agreement under which the 106 local and regional banks that had previously owned Totalkredit were to provide mortgage loans from both Totalkredit and Nykredit. In 2008, Nykredit also acquired Forstædernes Bank, while Østifterne Forsikring was divested in 2010.

In 1993, the mortgage-credit sector saw the arrival of two new bank-owned companies, Danske Kredit and Unikredit⁵, and in 1994 the two largest mortgage banks forged links with the banking sector through cooperation agreements and capital contributions, enabling them to extend loans and sell their bonds through a banking branch network in close contact with potential customers. Den Danske Bank also took over a considerable proportion of the market for life and general insurance

¹ Cf. pp. 10 and 80-83 of Den finansielle sektor efter år 2000. Betænkning nr. 1376. Ministry of Economic Affairs, 1999. Delrapport nr. 3: *Udviklingen i den finansielle sektor*.

² Cf. p. 51 of Danmarks Nationalbank, *Report and Accounts*, 1990; pp. 60 and 80-85 of Den finansielle sektor efter år 2000. Betænkning nr. 1376. Ministry of Economic Affairs, 1999. Delrapport nr. 3: *Udviklingen i den finansielle sektor*; p. 74 of Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2000; p. 16 of Danmarks Nationalbank, *Financial stability 2002*; p. 23 of Danmarks Nationalbank, *Financial stability*, 2004; and p. 23 of Danmarks Nationalbank, *Financial stability*, 2nd half 2008.

³ Industriens Realkreditfond, IRF, was established in 1981 in a merger of Kreditforeningen for industrielle ejendomme and Industriens Hypotekfond, cf. p. 361 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993.

⁴ Totalkredit had been established in 1990 when a number of banks entered into a collaboration on activation of Provsbankernes Reallånefond, which had not provided any new mortgage loans for a number of years, cf. p. 50 of Danmarks Nationalbank, *Report and Accounts*, 1990.

⁵ Cf. p. 48 of Danmarks Nationalbank, *Report and Accounts*, 1993.

(Danica through the acquisition of the Baltica Group).¹ Other structural changes included the establishment of a new mortgage bank (BG Kredit) in 1998 under the ownership of a bank (BG Bank) and a mortgage bank (Realkredit Danmark)², and the merger of Danske Bank and RealDanmark in 2000.³

The erosion of sectoral boundaries throughout the 1990s reflected that more financial-market participants now had the resources to apply a more active strategy for developing their business scope after a number of years of focusing on basic operations. This opened up the potential for increased competition on fees, lending terms and, in particular, product development.

On the other hand, the erosion of sectoral boundaries and increasing degree of concentration meant that financing of investments, issuance of bonds, investment of savings in securities and securities trading were to a greater extent performed by the same bank/group or within the framework of a cooperation network, often as a package solution.

Much of the merger activity in the Danish financial sector in the first half of the 1990s was characterised by the formation of domestic financial groups. Towards the end of the 1990s and after 2000, the sector was increasingly driven by globalisation, resulting in cross-border mergers and acquisitions. The probable reason was that the potential for achieving significant economies of scale through domestic mergers and acquisitions was close to being exhausted.

A notable example of a cross-border group formation was initiated with the merger of Unibank and Tryg-Baltica Forsikring in March 1999.⁴ Tryg-Baltica was restructured as a holding company which was then merged with the holding company Unidanmark as the continuing company. In December 1999, this merger was followed by Unidanmark's acquisition of the Norwegian general insurance company Vesta. In the spring of 2000, Unidanmark merged with the Finnish/Swedish Merita-Nordbanken, creating the largest financial group in the Nordic region with an extensive physical presence in several Nordic countries.⁵ The group was named Nordic Baltic Holding, but – after a merger with the Norwegian Christiania Bank og Kreditkasse in October 2000 – it was renamed Nordea.⁶

¹ Cf. p. 50 of Danmarks Nationalbank, *Report and Accounts*, 1994. In 1999, Danske Bank sold its non-life insurance activities to TopDanmark.

² Cf. p. 57 of Danmarks Nationalbank, *Report and Accounts*, 1997.

³ Cf. p. 66 of Danmarks Nationalbank, *Report and Accounts*, 2000. RealDanmark was a holding company established by BG Bank and Realkredit Danmark in 1998.

⁴ Cf. pp. 62-63 of Danmarks Nationalbank, *Report and Accounts*, 1999.

⁵ Cf. pp. 63-64 of Danmarks Nationalbank, *Report and Accounts*, 2000.

⁶ Cf. Box 13, Examples of cross-border groups in the Nordic countries and the EU, in Danmarks Nationalbank, *Financial stability*, 2004.

The formation of cross-border financial groups, such as Nordea, and the increasing volume of cross-border credit activities, cf. below, raised a number of issues in relation to financial stability. This, in turn, resulted in formal cross-border cooperation agreements between national authorities, cf. Chapter 6.

ACTIVITIES OF FOREIGN BANKS IN DENMARK AND OF DANISH BANKS ABROAD

With the gradual lifting of restrictions on cross-border capital flows in many countries during the 1970s and 1980s, the Danish banking sector became more internationally oriented and open to foreign participation.

In 1975, an EC Directive enabled foreign banks to establish branches and subsidiary banks in Denmark and later that year the first foreign units were established. However, foreign banks found it difficult to achieve a satisfactory business volume in Denmark. In 1990, foreign branches and subsidiary banks located in Denmark accounted for less than 1 per cent of deposits and lending in the Danish banking sector.¹

A number of cross-border mergers and acquisitions in the second half of the 1990s increased the international presence in the Danish banking sector. A case in point was the formation of Nordea, cf. above. Moreover, Skandinaviska Enskilda Banken acquired Codan Bank in 1999, while Svenska Handelsbanken acquired Midtbank in 2001. Later that year, Midtbank was converted into a branch of Handelsbanken. In 2009, Lokalbanken i Nordsjælland was acquired by Svenska Handelsbanken.

In 2005, foreign-owned subsidiary banks and branches of foreign banks had a market share of approximately 30 per cent in Denmark in terms of total assets. Nordea accounted for the largest share, and most foreign subsidiary banks (including FIH²) had previously been under

¹ Cf. p. 366 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993. Market shares have been calculated on the basis of balance-sheet data booked by banks in Denmark. Thus the transaction volumes of foreign banks in Denmark may be underestimated. Even if Danish customers use a foreign bank that has a physical entity in Denmark, the bank may choose to book the transactions to another unit outside Denmark, cf. Jakob Windfeld Lund, Foreign Banks in Denmark, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2006.

² Finance for Danish Industry (FIH) was established in 1958 as a public limited company by Danmarks Nationalbank, the Danish Bankers Association, Danmarks Sparekasseforening, the Danish Insurance Association and the Federation of Danish Industries, cf. pp. 48-49 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993. The objective of FIH was to promote industrialisation by extending medium-term loans for industrial and small trades. FIH's lending was gradually provided in competition with other financial institutions, and Danmarks Nationalbank decided to sell its portfolio of shares in FIH i 1998/99. In 1999, FIH was acquired by the Swedish FöreningsSparbanken, cf. pp. 63 and 103 of Danmarks Nationalbank, *Report and Accounts*, 1999. In 2004, FIH was acquired by the Icelandic Kaupthing Bank, cf. p. 18 of Danmarks Nationalbank, *Financial stability*, 2005. During the 2008 financial crisis, Kaupthing Bank was nationalised in Iceland, cf. p. 13 of Danmarks Nationalbank, *Financial stability*, 2nd half 2008. In 2010, FIH was acquired by a consortium consisting of ATP, PFA, Folksam and CPDyvig, cf. the press release of 19 September 2010 from FIH Erhvervsbank "Consortium consisting of ATP, PFA, Folksam and CPDyvig to acquire FIH Erhvervsbank".

Danish ownership. Some of the foreign branches also had roots in Denmark.¹ Foreign banks thus preferred to realise their wish for a presence in Denmark through acquisitions of and mergers with local banks with existing branch networks rather than by setting up own units from scratch.

In 2005, most foreign banks in Denmark had a parent company in another Nordic country.² Nordic banks accounted for approximately 84 per cent of foreign banks' total assets with Danish counterparties. An explanation for the Nordic dominance was probably that the Nordic region is relatively homogenous in terms of culture, languages, legislation, traditions and product range. Consequently, it would often be easier for a Nordic bank to set up in Denmark than for a non-Nordic bank.

In order to service their customers in the domestic as well as the export markets, Danish banks set up representation offices abroad from the mid-1970s. Subsequently, foreign branches and subsidiary banks were established. In the 1990s and during the years after 2000, Denmark's largest bank, Danske Bank, launched a major international expansion programme through mergers and acquisitions. For instance, Danske Bank acquired Östgöta Enskilda Bank in Sweden in 1997, Focus Bank in Norway in 1999, National Irish Bank in Ireland in 2004, Northern Bank in Northern Ireland in 2004 and Sampo Bank in Finland in 2007. Danske Bank thus achieved quite significant market shares in the other Nordic countries.³

BALANCE-SHEET GROWTH AND GEARING

The period after 1980 was characterised by significant growth in the financial sector's total assets relative to the gross domestic product at factor cost, cf. Chart 4.3. This trend was observed not only in Denmark but also in other developed countries with a high level of income.⁴

The period as a whole was also influenced by higher real prices of housing and equities, cf. Chart 4.4. Rising housing prices are usually followed by increased lending in the financial sector when existing housing

¹ Cf. Jens Thomsen, Experience of Danish credit institutions in ERM II, *Bancni Vestnik Journal for Money and Banking*, Vol. 54(7-8), 2005.

² Cf. Jakob Windfeld Lund, Foreign Banks in Denmark, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2006.

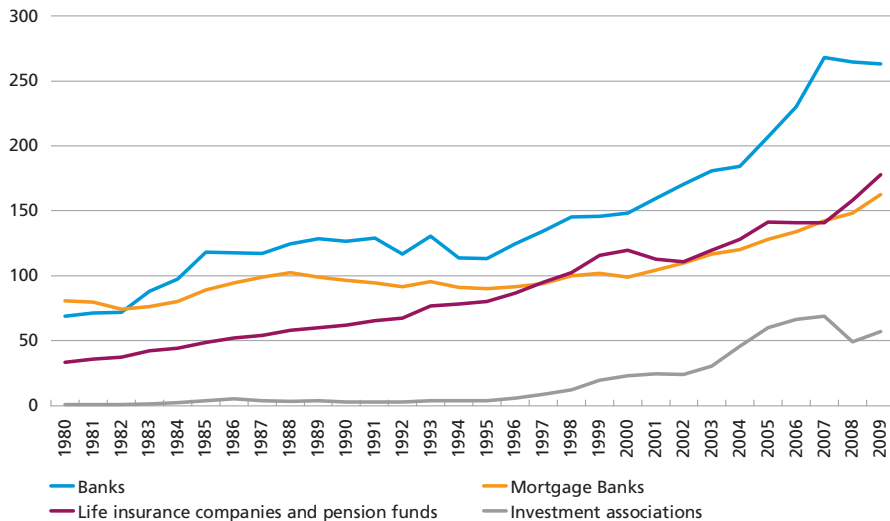
³ Cf. Bjarne Jensen, Et nordisk banksystem vokser frem (The Emergence of a Nordic Banking System – in Danish only), *Finans/Invest*, No. 5, 2000.

⁴ Cf. e.g. the overviews in Ross Levine, Financial Development and Economic Growth: Views and Agenda, *Journal of Economic Literature*, Vol. 35(2), 1997; Thomas Barnebeck Andersen, Finansiell udvikling og økonomisk vækst (Financial Development and Economic Growth – in Danish only), *Nationaløkonomisk Tidsskrift*, Vol. 139(1), 2001; and Todd A. Knoop, *Modern Financial Macroeconomics*, Blackwell 2008.

FINANCIAL INSTITUTIONS' TOTAL FINANCIAL ASSETS 1980-2009

Chart 4.3

Per cent of GDP at factor cost



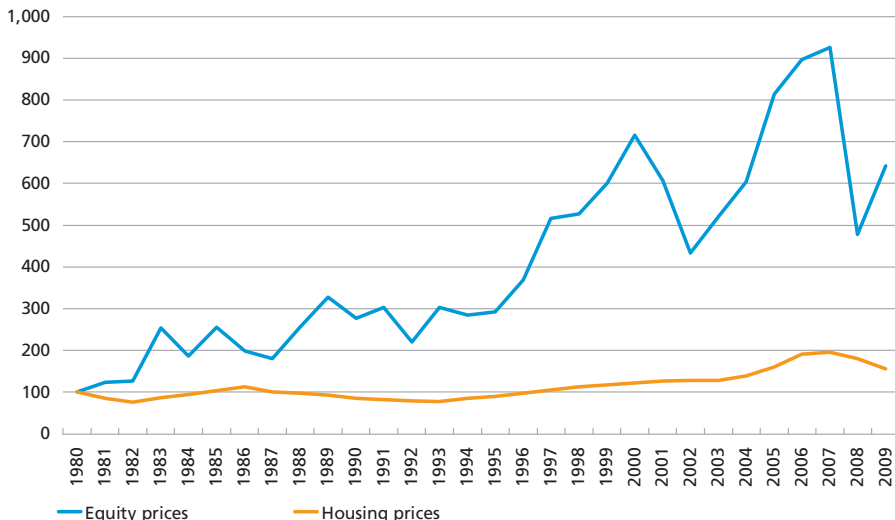
Note: Includes only key financial assets. Life insurance companies and pension funds include ATP, LD Pensions and, from 1999, SP.

Source: Kim Abildgren, A 'First Go' on Financial Accounts for Denmark 1875-2005, *Scandinavian Economic History Review*, Vol. 56(2), 2008. Updated on the basis of the sources specified in Abildgren, *op.cit.*

REAL PRICE DEVELOPMENTS FOR EQUITIES AND HOUSING 1980-2009

Chart 4.4

1980 = 100

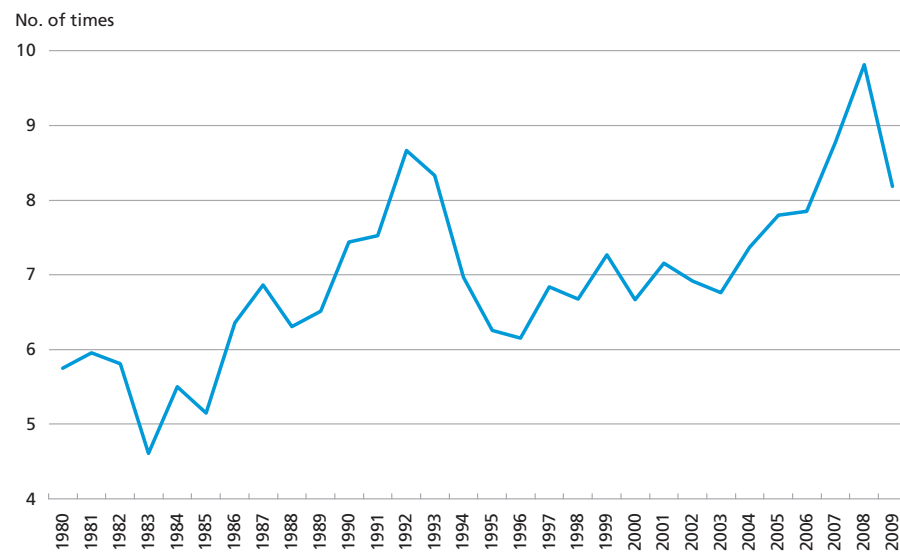


Note: The consumer price index has been used as the deflator. Equity prices have been calculated at year-end, while housing prices are annual averages.

Source: Kim Abildgren, Monetary Trends and Business Cycles in Denmark 1875-2005 – New Evidence Using the Framework of Financial Accounts for Organising Historical Financial Statistics, Danmarks Nationalbank, *Working Paper*, No. 41, November 2006. Updated on the basis of the sources specified in Abildgren, *op.cit.*

THE BANKS' LENDING GEARING 1980-2009

Chart 4.5



Note: Calculated as the ratio of lending to equity capital.

Source: Danish Financial Supervisory Authority.

is sold at new and higher prices. Higher housing prices also give homeowners the opportunity to mortgage their home for other purposes than housing¹, and this access was gradually extended during the period, cf. below.

Price increases in the securities markets were only part of the explanation for the growth in managed assets in life insurance companies and pension funds after 1980. A significant proportion of the growth in assets could be attributed to net pension contributions, underpinned e.g. by the building up of labour-market pensions agreed as part of the collective bargaining in 1991.²

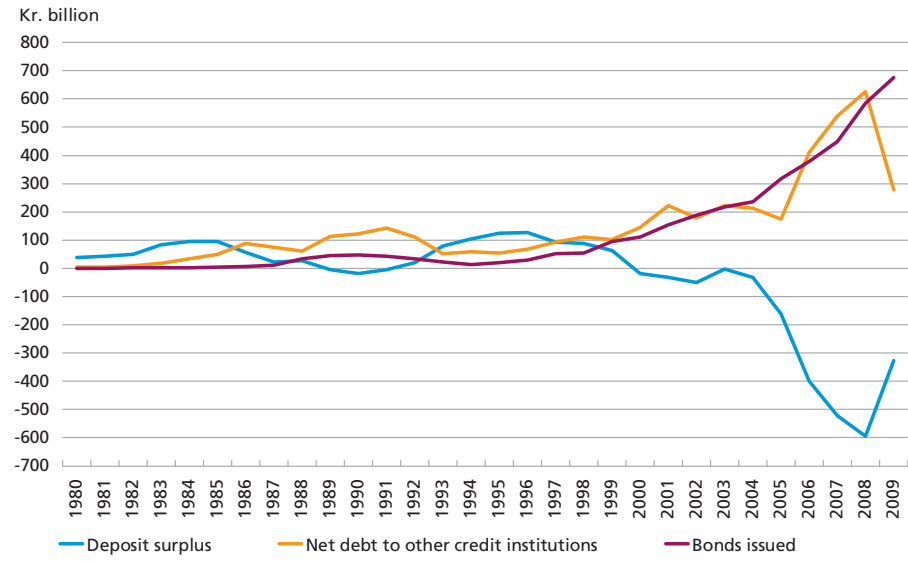
For the banks, a large share of the increase in total assets reflected significant growth in lending, which was not matched by corresponding growth in equity. This led to an increase in the banks' gearing of their equity capital, cf. Chart 4.5. It should be noted that lending gearing was characterised by significant increases following the easing of capital requirements in connection with the implementation of the Basel I and Basel II standards for capital adequacy in 1991 and 2007, respectively, cf. below.

¹ Cf. Lars Risbjerg, Trends in Mortgage-Credit Financing: Household Consumption, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2006.

² Cf. Box 2: Institutional Investors' Purchases of Foreign Securities in Danmarks Nationalbank, Recent Economic and Monetary Trends, *Monetary Review*, 2nd Quarter 2006.

THE BANKS' DEPOSIT SURPLUS, NET DEBT TO OTHER CREDIT INSTITUTIONS AND BOND ISSUES 1980-2009

Chart 4.6



Source: Danish Financial Supervisory Authority.

The banks' sensitivity was amplified by a large deposit deficit (i.e. customer funding gap) built up in the years after 2000, which was financed by issuing bonds and borrowing from foreign banks, cf. Chart 4.6.¹

Short-term financing through the money and capital markets is generally more sensitive to changes in the banking institutions' own credit standing than deposits are. The banks' dependence on money-market financing thus made them vulnerable, particularly to changes in foreign banks' ability and willingness to finance them.

The lifting of restrictions for cross-border portfolio investments in the 1970s and 1980s produced an increase in the volume of assets managed by investment associations. However, the balance-sheet growth of the investment associations did not really take off until the second half of the 1990s.² This growth reflected, in part, that low interest rates provided an incentive for savers to place their funds in the investment associations as an alternative to bank deposits. On top of that, there was a global trend towards international diversification of investor portfolios.³ Other things being equal, the transaction costs of joint invest-

¹ Cf. pp. 18-19 of Danmarks Nationalbank, *Financial stability*, 2007.

² Cf. Peter Hemme and Peder Schlegel, *De danske investeringsforeninger* (Danish Investment Associations – in Danish only), *FinansInvest*, No. 2, 1995; and Peter Hemme and Peter Wendt, *De danske investeringsforeninger 1995-1999* (Danish Investment Associations 1995-1999 – in Danish only), *FinansInvest*, No. 2, 2000.

³ In the academic literature, this was referred to as a reduction in the investors' "home bias".

ment were lower than the costs of direct purchase of securities; however, the popularity of the investment associations was probably also the result of massive marketing efforts. Finally, institutional investors increasingly found it convenient (e.g. relative to accounting and market research) to use investment associations as investment vehicles rather than purchasing securities directly – not least in light of the ever more differentiated range of securities.

Institutional investors invested in both Danish and foreign assets to optimise their returns, allowing for the risk and statutory rules for institutional investor investments. After 2000, foreign securities tended to account for a steadily increasing proportion of the assets of institutional investors, which was seen as a natural consequence of the strong growth in assets.¹ As a result, the portfolio transactions of Danish institutional investors increasingly determined short-term fluctuations in the krone rate, cf. Chapter 2.

The balance sheets of the financial institutions and price developments for financial and real assets during the years after 1980 were reflected in household and corporate balance sheets.²

Household pension wealth (calculated at estimated value after taxation) rose from approximately 25 per cent of the disposable income in 1980 to 120 per cent in 2009, and there were no indications that higher pension savings detracted significantly from other savings. Household housing debt increased much more rapidly than the disposable income, but with the upward trend in housing prices, housing wealth also rose. In 2009, household home equity corresponded to approximately 120 per cent of the disposable income, roughly equivalent to the average level since 1973.

Corporate sector debt to banks and mortgage banks in Denmark and abroad increased from about 90 per cent of private sector gross value added in 1980 to 195 per cent in 2009. In the period after 1990, Danish companies increasingly relied on credit facilities from domestic banks and mortgage banks rather than borrowing from foreign credit institutions. This should be seen in the context of the significant narrowing of the interest-rate spread between Denmark and abroad (including Germany).

¹ Cf. Box 2: Institutional Investors' Purchases of Foreign Securities, of Danmarks Nationalbank, Recent Economic and Monetary Trends, *Monetary Review*, 2nd Quarter 2006.

² Cf. Jan Overgaard Olesen and Erik Haller Pedersen, En opgørelse af boligformuen (An Estimation of Housing Wealth – in Danish only), Danmarks Nationalbank, *Working Paper*, No. 37, May 2006; Jan Overgaard Olesen, Household wealth in Denmark: stock-taking at a macro level, Danmarks Nationalbank, *Memoranda on economic and financial-market issues*, March 2009; Box 3 on "Household Wealth and Savings" in Danmarks Nationalbank, Recent Economic and Monetary Trends, *Monetary Review*, 4th Quarter 2009; and Kim Abildgren, Credit Dynamics in Denmark since World War II, *Nationaløkonomisk Tidsskrift*, Vol. 147, 2009.

DEVELOPMENT TRENDS IN HOUSING FINANCE¹

Home-financing opportunities changed radically after 1990, cf. Box 4.1, p. 124. Further liberalisation of mortgage-credit legislation in the early 1990s improved the opportunities for homeowners to take out home equity loans irrespective of the intended purpose, and from the mid-1990s mortgage banks launched new products at an increasing pace. This represented a major change from the 1970s and 1980s when mortgage credit was subject to detailed rules on lending limits and loan purposes and when changes in the rules on mortgaging were used as part of the general countercyclical economic policy. The change in mortgage-credit regulation also entailed that the Danish Financial Supervisory Authority took over the Supervisory Authority for Mortgage Credit Institutes from the National Housing Agency in 1990.

The general fall in interest rates from the early 1990s, in combination with periodic fluctuations in the level of interest rates, sparked a flurry of activity among homeowners looking for active debt management of their mortgage loans, cf. Chart 4.7. Until the early 1990s, Danish monetary history had seen few examples of significant remortgaging activity, cf. Box 4.2, p. 125.

The introduction of adjustable-rate loans in 1996² restructured lending by mortgage banks significantly over a short span of years. At the end of 1999, fixed-rate loans still accounted for more than 80 per cent of the lending volume of mortgage banks. By the end of 2009, this proportion had declined to approximately 30 per cent. Conversely, the proportion of adjustable-rate loans jumped from about 5 per cent to 65 per cent of the lending volume during the same period, cf. Chart 4.8 and Chart 3.6, p. 106.

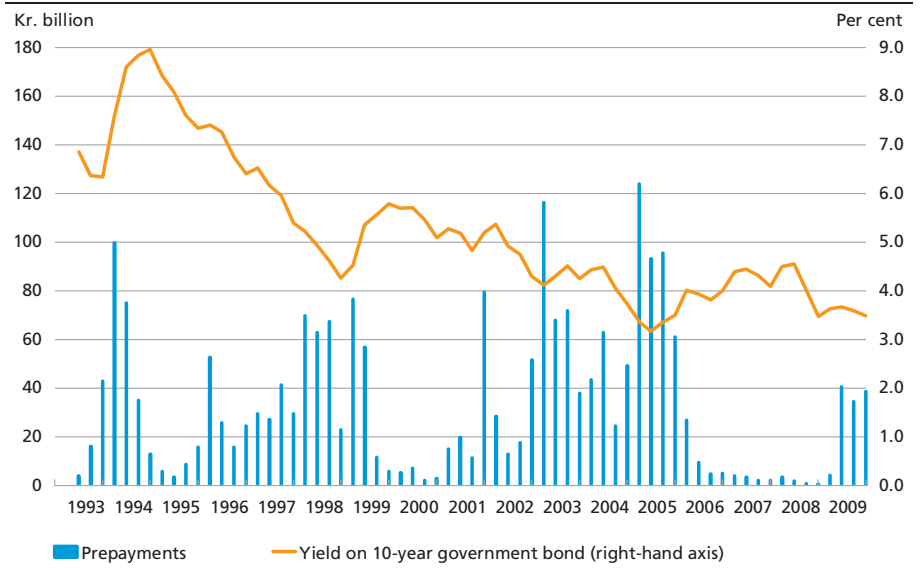
The years after 2000 saw a steady stream of new products. In 2003, a legislative amendment made it possible to opt for an interest-only period of up to 10 years.³ Furthermore, the banks began to offer adjustable-rate loans against real property as collateral on conditions that were in direct competition with the products provided by the mortgage banks.

¹ Cf. Lars Risbjerg, Trends in Mortgage-Credit Financing: Household Consumption, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2006.

² Cf. Bjarne Graven-Larsen, Klaus Kristiansen and Stig Tørnes-Hansen, Flexlån™ – Fremtidens realkredit (Flexlån™ – Mortgage Credit in the Future – in Danish only), *FinansInvest*, No. 2, 1997; and Svend Jakobsen, Flexlån™ – RD's nye patentmedicin (Flexlån™ – RD's New Panacea – in Danish only), *FinansInvest*, No. 2, 1997.

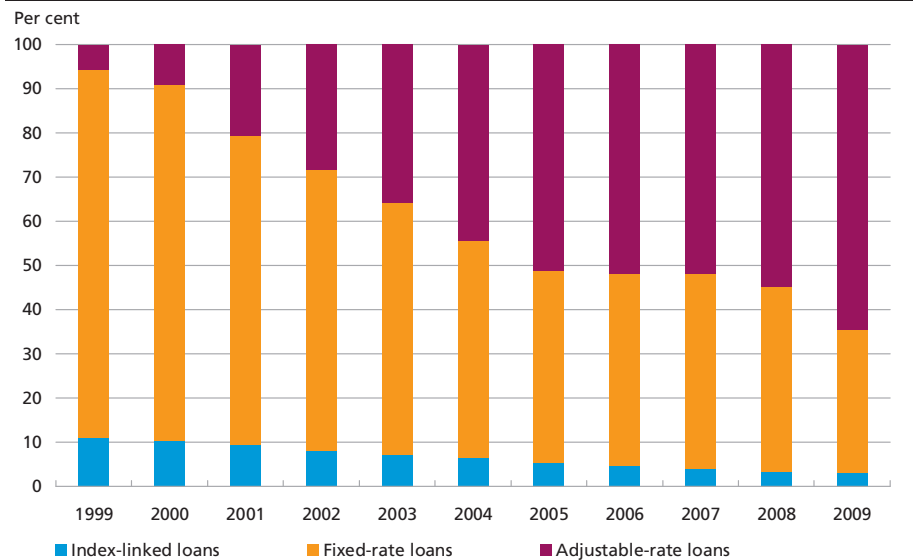
³ Cf. Michael Møller and Niels Chr. Nielsen, Afdragsfrie lån, realkredit og det finansielle system (Deferred-Amortisation Loans, Mortgage Credit and the Financial System – in Danish only), *FinansInvest*, No. 1, 2009.

PREPAYMENTS OF MORTGAGE LOANS AND 10-YEAR YIELD 1993-2009 Chart 4.7



Note: The bond yield is based on quarterly averages.
 Source: Copenhagen Stock Exchange.

MORTGAGE BANKS' DOMESTIC LENDING BROKEN DOWN BY LOAN TYPE, YEAR-END 1999-2009 Chart 4.8



Source: Danmarks Nationalbank.

HOME-FINANCING TRENDS AFTER 1990

Box 4.1

1992:

A liberalisation of mortgage-credit legislation in May 1992 extended the opportunities for mortgaging of owner-occupied homes, irrespective of the purpose, to 60 per cent of the cash value of the home by raising 20-year fixed-rate mixed loans (40 per cent serial loans and 60 per cent annuity loans). This *de facto* ended a long-standing tradition for imposing purpose restrictions.

Towards the end of the year, the access to loans was extended to 80 per cent of the cash value through up to 30-year fixed-rate mixed loans with effect from January 1993.

1993:

In connection with the adoption of the tax reform in June 1993, mortgage banks regained access to extend 30-year fixed-rate annuity loans for owners-occupied homes. Since the introduction of the 1986 package of austerity measures, mortgage lending had been provided in the form of mixed loans.

1996/97:

Several mortgage banks launched adjustable-rate loans, financed mainly by issuing non-callable fixed-rate bullet loans with different maturities. Loans subject to annual interest-rate adjustment became particularly popular.

1998:

Loans based on mortgage bonds denominated in euro were introduced (until 1 January 1999 in ECU).

1999:

A financing reform for non-profit residential housing was implemented, providing a free choice between lending based on traditional mortgage bonds and lending financed through index-linked bonds for financing of subsidised housing. Before 1999, housing had to be financed by index-linked bonds to receive public subsidies.

DLR's exclusive right to extend mortgage loans for farm properties based on the issuance of bonds in the range of 45-70 per cent of the property value was repealed.

2003:

In October 2003, the mortgage banks were authorised to offer mortgage loans with up to 10 years' deferred amortisation for financing of owner-occupied and holiday homes. Deferred amortisation could be linked to fixed-rate loans as well as adjustable-rate loans.

In 2003, several banks introduced housing loans in the nature of adjustable-rate overdraft facilities against real property as collateral.

2004:

In the autumn of 2004, the mortgage banks launched a new mortgage-credit product comprising adjustable-rate bond loans with a ceiling on the rate of interest. This cap applied throughout the term of the loan, i.e. for up to 30 years, and protected the borrower against any increases in interest rates that exceed the cap.

Source: Jens Verner Andersen and Jacob Gyntelberg, Index-Linked Mortgage Bonds, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 1999; Lars Risbjerg, Trends in Mortgage-Credit Financing: Household Consumption, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2006; Ulrik Knudsen and Michael Sand, Developments in the Danish Bond Market since 1970, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2004; and various editions of Danmarks Nationalbank, *Report and Accounts*.

REMORTGAGING ACTIVITY IN DANISH MONETARY HISTORY

Box 4.2

The first Danish mortgage bank, Kreditkassen for Husejere i Kjøbenhavn, was founded in 1797 in response to the huge demand for housing finance to rebuild Copenhagen after the great fire in 1795 when about one third of the buildings in the city were destroyed. In 1850, a new act provided the basis for the establishment of actual debtor-managed mortgage banks and mortgage banks played a key role in terms of extension of credit in the Danish economy already at the end of the 19th century and the beginning of the 20th century.

The first wave of remortgaging took place in 1886-89. The wave started when the Danish government took advantage of an international drop in interest rates to remortgage part of its bond debt. Subsequently, municipalities and borrowers in mortgage banks utilised the opportunity for remortgaging to reduce their interest costs.

The next wave of remortgaging took place in 1894-97 when the central government used another decline in interest rates to restructure its debt. The mortgage banks also remortgaged a number of bond loans but due to insufficient reserve funds to cover the costs, the borrowers did not benefit from the interest-rate reduction until after 1900.

The third wave of remortgaging took place during the crisis of the 1930s and was supported by the policy of interest-rate reduction launched by Danmarks Nationalbank in 1932 through discount-rate reductions and bond purchases. However, increased import demand fuelled by low interest rates put pressure on the limited foreign-exchange reserves, necessitating tightening of monetary policy already in the mid-1930s. As the volume of mortgage-credit loans in high-yield bond series was also limited, the remortgaging activity of the 1930s was relatively modest.

During World War II, ample liquidity provided the basis for a drop in interest rates, resulting in sustained remortgaging activity during the years 1942-1947.

The period from 1948-1982 saw a gradual and persistent rise in interest rates which left no scope for remortgaging. The restructuring of economic policy in the first half of the 1980s with the transition to a fixed-exchange-rate policy, restoration of government finances and abolition of wage indexation led to a sharp fall in long-term interest rates until the beginning of the 1990s. However, the remortgaging activity was relatively subdued as many of the high-interest loans raised during the first part of the 1980s were in the form of cash loans financed via bonds with a nominal interest rate far below the market rate. Remortgaging of these loans would result in a significant reduction of tax-deductible interest, while the capital loss on redemption of underlying bonds could not be deducted.

1993-94 saw the start of a large wave of remortgaging. It was driven by a drop in interest rates, along with step-by-step liberalisation of mortgage-credit legislation, cf. Box 4.1, and amendments to tax legislation. With effect from 1 January 1994, a temporary opportunity was introduced to retain the tax deductibility of capital losses on previously raised cash loans financed via bonds at a nominal interest rate below the market rate when the loan was redeemed in connection with the raising of a new loan. This facilitated remortgaging of cash loans raised at high interest rates in the first half of the 1980s.

CONTINUED

Boks 4.2

From the mid-1990s, remortgaging became a recurrent phenomenon, which should be seen against the background of falling interest rates and active marketing efforts by the credit institutions.

Source: Kim Abildgren, Monetary Trends and Business Cycles in Denmark 1875-2005 – New Evidence Using the Framework of Financial Accounts for Organising Historical Financial Statistics, Danmarks Nationalbank, *Working Paper*, No. 43, November 2006; Kim Abildgren, Krisen i 1930'erne (The Crisis of the 1930s – in Danish only), *Økonomi & Politik*, vol. 82(3), 2009; Bjarne G. Sørensen, Konverteringsbølgen (The Wave of Remortgaging – in Danish only), *Samfundsøkonomen*, No. 5, 1995; Svend Aage Hansen and Knud Erik Svendsen, *Dansk pengehistorie 1700-1914 (Monetary History of Denmark 1700-1914 – in Danish only)*, Danmarks Nationalbank, 1968; Erik Hoffmeyer and Erling Olsen, *Dansk pengehistorie 1914-1960 (Monetary History of Denmark 1914-1960 – in Danish only)*, Danmarks Nationalbank, 1968; and Niels Lynggård Hansen and Erik Haller Pedersen, Reasons for the Upswing in 1993-94, How Significant Was Fiscal Policy?, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2003.

The wider product range gave borrowers better opportunities for individual home-financing solutions. On the other hand, there were no indications of intensified price competition between the mortgage banks. In some cases, the mortgage banks even raised contribution rates in connection with the introduction of new products.¹ This development also entailed an ever-increasing need for advisory services to customers on the implications of interest-rate changes or changes in their ability to meet payments in connection with home purchases and remortgaging.²

A derived consequence of the expanded product range – and increased remortgaging activity – was that many of the latest generations of mortgage bonds were not characterised by the same volumes and liquidity as previously seen.³ Moreover, capped-rate bonds and deferred-amortisation bonds had new characteristics which investors had to take into consideration when using the new products.⁴

Viewed in isolation, the structural development in home financing towards more adjustable-rate loans made the households' disposable income more sensitive to fluctuations in short-term interest rates.⁵ Therefore, extensive use of adjustable-rate loans strengthened the impact of

¹ Cf. pp. 26-27 of Lars Jul Hansen and Jesper Ulriksen Thuesen, Trends in Mortgage-Credit Financing: the Market and its Players, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2006.

² Cf. Speech by Bodil Nyboe Andersen at the Annual Meeting of the Association of Danish Mortgage Banks on 29 April 2004 (printed on pp. 135-139 of Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2004).

³ The remortgaging activity e.g. entailed that a large proportion of the 30-year bonds were bought up in the market or drawn for early redemption, cf. Ulrik Knudsen, Conversions of 30-year Mortgage-Credit Bonds During the Last 10 Years, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2003.

⁴ Cf. pp. 26-28 of Lars Jul Hansen and Jesper Ulriksen Thuesen, Trends in Mortgage-Credit Financing: the Market and its Players, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2006.

⁵ It should be taken into consideration, however, that homeowners were also able to benefit from lower interest rates before the structural changes through remortgaging of long-term fixed-rate loans and that the differences between adjustable-rate loans and fixed-rate callable loans narrowed following the introduction of capped adjustable-rate mortgage loans, cf. Anders Møller Christensen and Kristian Kjeldsen, Adjustable-Rate Mortgages, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2002; and Lars Risbjerg, Trends in Mortgage-Credit Financing: Household Consumption, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2006.

Danmarks Nationalbank's interest-rate policy on the real economy, which – as a consequence of the fixed-exchange-rate policy – usually mirrored the interest-rate policy of the Bundesbank and later the ECB. The reason was that more households than previously had the interest-rate expenses on their housing loans changed when the monetary-policy interest rate was changed – especially for loans linked to short-term money-market interest rates. This was especially true of the banks' housing loans, which were, in some cases, directly linked to Danmarks Nationalbank's rate of interest on certificates of deposit. The experience drawn from the currency crises of the early 1990s was that sharp increases in the monetary-policy interest rates following temporary pressure on the krone could have a strong contagion effect on short-term money-market interest rates, e.g. 3- or 6-month interest rates, while the effect e.g. on 1- or 2-year interest rates was significantly smaller, although some impact was unavoidable.¹

Fundamentally, Danmarks Nationalbank was in favour of product development within home financing; however, in view of the introduction and popularity of adjustable-rate loans, Danmarks Nationalbank also stated that it would continue to use interest-rate policy to defend the krone rate if necessary – even if this took place at an unfortunate time for the homeowners whose loans were due for refinancing:

"When we had to raise the discount rate and the other short-term interest rates earlier in the 1990s this naturally also affected interest rates on overdraft facilities. This drew comments on the lines of why the defence of the currency against unrest should affect business enterprises and private individuals who had not speculated against the krone in any way. But the measure was necessary, and if it becomes necessary again I would like to point out now that we will not listen to the homeowners whose interest costs may rise – even if they have not speculated against the krone either."²

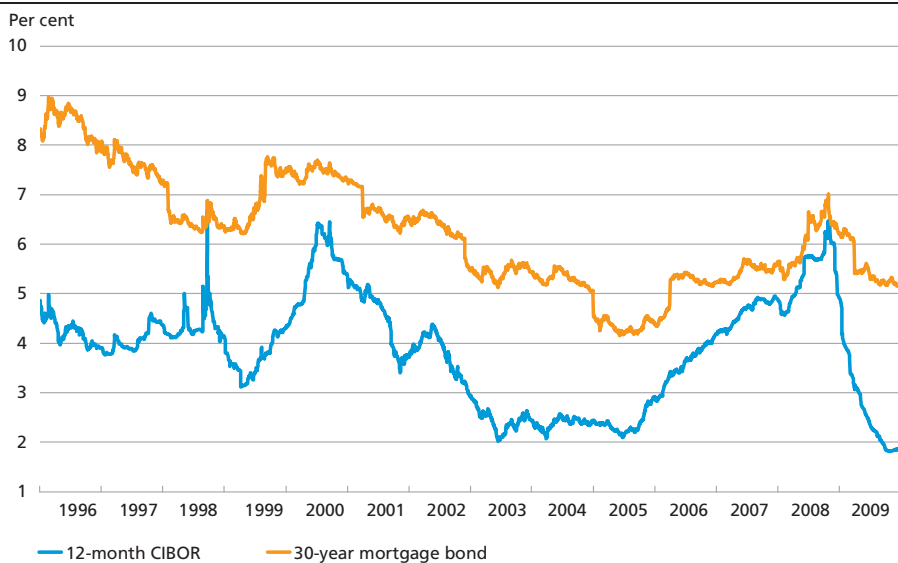
This warning would, however, turn out to be less relevant for a number of years as short-term interest rates remained at a relatively low level for quite a few years, cf. Chart 4.9.

¹ Cf. pp. 87-88 of Danmarks Nationalbank, *Monetary Policy in Denmark*, 2nd edition 2003.

² Quotation from the speech by Governor Bodil Nyboe Andersen at the Annual Meeting of the Association of Danish Mortgage Banks on 17 April 1997 (printed on pp. 45-46 of Danmarks Nationalbank, *Monetary Review*, May 1997).

SHORT-TERM AND LONG-TERM INTEREST RATES 1996-2009

Chart 4.9



Note: Daily observations.

Source: Danmarks Nationalbank.

Danish housing prices rose almost continuously from 1993 to 2007. It is difficult to draw any conclusions about real "equilibrium prices" for owner-occupied housing as they may be affected by structural factors and, accordingly, change over time. For instance, the general decline in inflation from the first half of the 1980s until the early 1990s meant that the interest-rate premium for inflation risk became smaller. Other things being equal, this resulted in higher real equilibrium prices. In addition, housing prices were probably underestimated in the early 1990s after a preceding 7-year period of sluggish economic growth and declining nominal housing prices. Analyses¹ indicate that price developments from the mid-1990s until the mid-2000s were attributable primarily to the positive trend in the households' disposable income, the low level of interest rates and the freezing of property taxes in 2002. Moreover, the introduction of adjustable-rate loans in 1996, viewed in isolation, exerted upward pressure on cash prices, and the introduction of deferred-amortisation loans in 2003 also contributed to inflating housing prices. However, the continued rise in housing prices after 2005 was probably also driven by expectations of further increases.

¹ Cf. Erik Haller Pedersen, The Development in Cash Prices of Owners-Occupied Housing, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2004; Box 4, Do Large Fluctuations in House Prices Constitute a Problem?, of Danmarks Nationalbank, Recent Economic and Monetary Trends, *Monetary Review*, 1st Quarter 2007; Erik Haller Pedersen and Søren Vester Sørensen, Economic Activity, Asset Prices and Credit, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2009; and The Ministry of Economic and Business Affairs, *Boligmarkedet og boligejernes økonomi (The Housing Market and the Finances of the Homeowners – in Danish only)*, Økonomisk tema, No. 9, April 2010.

Danmarks Nationalbank saw the introduction of deferred-amortisation loans, like the introduction of adjustable-rate loans, as a widening of the range of products available to the consumers.¹ However, Danmarks Nationalbank emphasised that the possibility of deferred amortisation should be limited to a period of no more than 10 years of the loan term.² At the end of the 10-year period, it would thus be possible to check that the loan-to-value limit was still observed if the deferred-amortisation period was to be extended in connection with mortgage renewal. Other things being equal, deferred amortisation implied a higher debt ratio relative to the property value – and thus increased credit risk for mortgage banks and other creditors. Deferred amortisation loans also made greater demands on advice in order to give the borrower an overview of the current and future financial situation.

In retrospect, deferred-amortisation loans were hardly introduced at the most opportune time. The legislative liberalisation of earlier decades – e.g. of mortgage-credit legislation in 1992/93 – often took place during periods of slow growth. However, the introduction of deferred-amortisation loans in 2003 coincided with the onset of a strong upswing – the strength of which had not been acknowledged at the time. It was amplified by the widespread use of adjustable-rate mortgages, as well as the low level of interest rates.

While many of the product innovations launched by the mortgage sector in the second half of the 1990s and the 2000s became very popular, e.g. due to massive marketing efforts, one of the innovations of the 1980s – index-linked loans – fared differently. In April 1982, the mortgage banks were authorised to extend index-linked loans on the basis of index-linked bonds on which the outstanding debt was indexed to the inflation rate and, accordingly, accrued interest at a real interest rate.³ Thus index-linked loans and index-linked bonds could provide a hedge against inflation for both borrowers and investors. The introduction of index-linked bonds reflected a legislative wish to reduce the central government's current expenses for subsidised housing while, at the same time, lowering the initial rent for non-profit residential housing. This

¹ Cf. p. 16 of Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2003.

² Cf. the newspaper *Berlingske Tidende* 16 January 2003.

³ Cf. "Redegørelse fra arbejdsgruppen vedr. indeksring af pengefordringer december 1974" (Account from the Task Force on Indexation of Money Claims December 1974 – in Danish only), Report No. 732, 1975; Anders Ølgaard, *Finansiering under inflation – indekslån og andre løsningsmuligheder* (Financing during Inflation – Index-linked Loans and Other Solutions – in Danish only), *National-økonomisk Tidsskrift*, Vol. 113(1), 1975; Torsten Gersfelt, *Financial Indexation*, published in International Savings Banks Institute (eds.), *Indexation of Monetary Assets and Obligations*, 1976; and Stig Tørnes-Hansen, *Indeksobligationer – status og tilbageblik* (Index-linked Bonds – Status and Overview), *FinansInvest*, No. 3, 2002.

type of financing was also expected to gain popularity among private borrowers.¹

However, index-linked loans never accounted for any significant share of home financing other than for social housing, cf. Chart 4.8, p. 123. When index-linked loans were introduced, the annual rate of inflation was approximately 10 per cent, while bond yields were around 20 per cent p.a., but the subsequent decade saw a sharp drop in both inflation and long-term yields. In a low-inflation environment, both borrowers and investors felt less need for inflation hedges. A further key factor was that the index supplement – as opposed to the inflationary compensation element of nominal interest rates – was not tax-deductible for private borrowers and that the exemption from real interest tax/pension yield tax for index-linked bonds, introduced in December 1982, was lifted for new issues as part of the 1999 Finance Act. That served to reduce the demand for index-linked bonds from investors liable to pay real interest-rate tax. The exemption from pension yield tax for index-linked bonds issued before 1999 was lifted in January 2008.

CONSOLIDATION OF LEGISLATION ON FINANCIAL ENTERPRISES

The financial groups established by the insurance companies in the 1980s were based on constructions with holding companies that were not directly subject to financial legislation.²

As regards legislation, liberalisation measures were introduced in 1990 that widened the scope for conducting other types of financial business through subsidiaries. Among other things, this meant that banks and insurance companies were able to establish subsidiaries offering other financial services, and in 1995 mortgage banks were given the same option.

However, structural developments up through the 1990s highlighted the need to ensure a level playing field in terms of both market conditions and legislation for different types of financial institutions conducting the same activities. As the financial enterprises established more complex structures by way of financial groups and crossed the traditional boundaries within the financial sector, it also became important to ensure that supervision of financial activities was independent of the

¹ Cf. Jens Verner Andersen and Jacob Gyntelberg, Index-Linked Mortgage Bonds, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 1999.

² Cf. pp. 76-79 of Den finansielle sektor efter år 2000 (The Financial Sector after the Year 2000 – in Danish only). Report No. 1376. Ministry of Economic Affairs, 1999. Delrapport nr. 3: *Udviklingen i den finansielle sektor* (Progress Report No. 3: *Financial Sector Developments*); and Birgitte Bundgaard Madsen, Financial Groups and Conglomerates, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2006.

specific corporate structure. This was reflected in the establishment of a single supervisory authority in the late 1980s and early 1990s.

In August 1997, the Danish government appointed a committee on "the Financial Sector after the Year 2000".¹ The remit of the committee was to analyse and assess the technological and market-related development in the financial sector, and to identify requirements for adaptation within the sector. The committee comprised a broad selection of representatives from various ministries, Danmarks Nationalbank, business and consumer organisations and the financial sector.

The committee's report was published in September 1999². The committee found that there was particular need for a public-sector effort to ensure forward orientation of financial supervision (including improved supervision of financial groups); elimination of barriers to structural adjustment and efficient financial markets; and increased transparency.³ In the subsequent years, a comprehensive reform of financial legislation was gradually implemented, based on the committee's recommendations.

In 2001 the Folketing (Danish parliament) passed the Financial Business Act, which was to be the new joint act relating to banks, mortgage banks, insurance companies and investment companies. The primary objective of the Act was to ensure that similar financial products were treated in the same way. This was achieved by compiling related rules and supervisory provisions from the Act on Danish Commercial Banks and Savings Banks, the Act on Insurance Companies, the Act on Investment Companies, the Mortgage Credit Act and the Act on Company Pension Funds into the Financial Business Act. Special characteristics of the individual financial sectors were initially retained in sector-specific acts, but through amendments to the Financial Business Act in subsequent years a number of acts – including the Act on Danish Commercial Banks and Savings Banks, the Act on Insurance Companies and the Act on Investment Companies – could be repealed. The Mortgage Credit Act and the Act on Investment Associations were also repealed, but were retained as "product acts", so that regulation of the products "mortgage bonds" and "investment certificates" was separated from regulation of mortgage banks and the investment associations' administration companies, respectively. Finally, the acts on ATP (Labour Market Supplementary Pension) and LD Pensions (Employees' Capital Pension Fund)

¹ Cf. pp. 59-60 of Danmarks Nationalbank, *Report and Accounts*, 1999.

² Cf. *Den finansielle sektor efter år 2000*. Report No. 1376. Ministry of Economic Affairs, 1999.

³ Cf. p. 59 of Danmarks Nationalbank, *Report and Accounts*, 1999.

were amended with a view to harmonisation of parts of these acts with the Financial Business Act.¹

In connection with the passing of the Financial Business Act in 2001 it was decided to establish the Financial Business Council. The Financial Business Council was modelled on the former Insurance Council, but its remit covered most of the financial area.² The Financial Business Council's secretariat was set up at the Danish Financial Supervisory Authority and its task was to make decisions in relation to supervisory issues relating to principles or issues with major consequences for financial enterprises, to advise the Danish Financial Supervisory Authority on issuing regulations and to assist the Danish Financial Supervisory Authority in its information activities. Members of the Council were to be appointed by the Minister for Economic and Business Affairs. In addition to the Chairman and Vice Chairman, they were to comprise representatives of financial sector organisations, the Danish Consumer Council and Danmarks Nationalbank.

INTERNATIONALISATION OF FINANCIAL SECTOR REGULATION

Denmark's membership of the EC in 1973 triggered a process whereby the legislative framework for the financial sector was increasingly harmonised with the frameworks of other member states. The aim was to create a single market for financial services and to ensure common ground rules and framework conditions for the financial sector.

Basically, it was a three-stage process. Stage one began in the 1970s when the EC Freedom of Establishment Directive from 1973 ensured freedom of establishment across national borders. This enabled foreign banks to operate in Denmark via subsidiaries or branches, and likewise Danish banks were able to set up activities abroad.³

Stage two of financial integration took off in the late 1980s when the member states implemented a number of key EC directives. In 1988 capital flows to and from Denmark were fully liberalised in accordance with the EC's fourth Capital Liberalisation Directive, and in the late 1980s Danish financial legislation was brought in line with the second Banking Directive, the Solvency Directive, the Own Funds Directive and the Accounting Directive.⁴ The EC rules on capital requirements for banks reflected the rules agreed upon by a broader group of countries

¹ Cf. pp. 147-148 of Danmarks Nationalbank, *Report and Accounts*, 2001; pp. 148-149 of Danmarks Nationalbank, *Report and Accounts*, 2002; pp. 154-158 of Danmarks Nationalbank, *Report and Accounts*, 2003; p. 157 of Danmarks Nationalbank, *Report and Accounts*, 2004.

² Cf. p. 56 of Danmarks Nationalbank, *Report and Accounts*, 2001. In connection with the establishment of the Financial Business Council, the Insurance Council was abolished.

³ Cf. p. 159 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993.

⁴ Cf. p. 299 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993.

under the auspices of the Basel Committee, cf. below. Furthermore, an amendment to the Mortgage Credit Act in 1989 provided free access to setting up new mortgage banks.¹ In the 1990s, especially regulation of securities markets came into focus in the EU, cf. below. The key result of the stage two initiatives was that financial enterprises in member states gained the right to conduct cross-border activities on the basis of home member state supervision² and pan-European rules.

One of the lessons learned at stage two was that it was time-consuming to ensure progress in terms of financial integration via detailed directives. Firstly, new directives had to be tabled and adopted at Community level through an extensive procedure involving the Council, the Commission and the Parliament. Then the directive had to be transposed into national legislation. The same applied to amendments to existing directives. As a result, legislation tended to lag behind developments in the financial sector.³

At stage three of regulatory integration the "Lamfalussy procedure" from 2001 turned the spotlight on streamlining the EU legislative process so that more importance would be attached to simply adopting framework directives under the co-decision procedure between the Council and the Parliament. Provisions of a more technical nature were to be laid down by the Commission after consultation of the member states in a number of committees at official level.⁴

The increasing financial integration between EU member states impacted on both the implementation of monetary policy and regulation of the financial sector in Denmark. The free movement of capital since 1988 had made it more clear that Danish monetary policy had to be governed entirely by the fixed-exchange-rate policy and did not leave scope for pursuing domestic stability-policy objectives via interest-rate policies, cf. Chapter 3.

Likewise, the Danish financial sector could only to a limited extent be regulated by diverging national rules. Over time, the regulatory basis for the financial sector mainly came to be based on EU legislation, which in turn frequently reflected broader international cooperation, e.g. in the

¹ When the EC's First Banking Directive was adopted in 1977, Denmark had undertaken an obligation to repeal the "need criterion" within 12 years. This criterion gave the Minister for Housing the right to reject applications to establish new mortgage banks on the basis of an evaluation of the needs of the market, cf. pp. 5-6 of Danmarks Nationalbank, *Monetary Review*, February 1990.

² Home member state supervision entails that supervision of the activities of a financial institution is primarily to be undertaken by the authorities of the member state in which the financial institution has been licensed.

³ Cf. Birgitte Bundgaard Madsen, The EU Legislative Process: From Directive Proposal to Consistent Application of the Regulatory Regime, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2007.

⁴ Cf. pp. 54-55 of Danmarks Nationalbank, *Report and Accounts*, 2003.

Basel Committee¹. International cooperation on the regulation of the financial sector was both desirable and necessary in a world where capital could move freely and where it was easy to shift between different types of financing across national borders.

CAPITAL REQUIREMENTS AND ACCOUNTING RULES FOR BANKS

In effect, changes to the solvency requirements up through the 1990s and 2000s eased the capital requirements for banks.

With effect from 1991, new capital-adequacy rules were introduced for banks, based on common EC guidelines for minimum capital requirements. The EC guidelines complied with the minimum standard for own-capital requirements agreed on by the Basel Committee in 1988 (the Basel I Accord).² This meant that from then on the capital adequacy of Danish banks was to be measured against their risk-weighted assets rather than their total debt and guarantee commitments. The new rules entailed considerable easing of the statutory capital requirement for banks.³ The new capital requirements were to be phased in over a number of years. The capital base was to make up at least 10 per cent of the risk-weighted assets in 1991 and 1992, 9 per cent in 1993 and 1994 and finally 8 per cent from 1995.⁴

The new Danish capital-adequacy rules for banks were, however, tighter than the minimum requirements laid down in the EC directives. The solvency requirement for the individual bank depended on whether subordinate loan capital was included in the calculation of the solvency ratio. The form of subordinate loan capital existing in Denmark at the time could be used to cover losses only in the event of compulsory winding-up and could therefore not be written down or used to cover losses if a distressed bank continued its activities through a merger or another form of injection of fresh capital. Experience from the Danish banking crises in the second half of the 1980s showed that restructuring an ailing bank by merging it with another bank often entailed lower costs to society than compulsory winding-up, cf. Chapter 5. For the banks that chose to include subordinate loan capital in its traditional form, the

¹ The Basel Committee on Banking Supervision was set up in 1974 with the purpose of strengthening the stability of the international financial system. Its secretariat is at the Bank for International Settlements, BIS, and the Committee comprises representatives of the central banks and financial supervisory authorities of a number of countries.

² Cf. p. 47-48 of Danmarks Nationalbank, *Report and Accounts*, 1989; and Federal Reserve Bank of New York (1988), *Financial Services at the Crossroads: Capital Regulation in the Twenty-First Century*, *Economic Policy Review*, Vol. 4(3), October.

³ The risk-weighted assets were around 30 per cent lower than the balance-sheet total, cf. p. 40 of Ministry of Economic Affairs, *Den danske pengeinstitutsektor (The Danish Banking Sector – in Danish only)*, Schultz, 1994.

⁴ Cf. pp. 35-40 of Ministry of Economic Affairs, *Den danske pengeinstitutsektor*, Schultz, 1994

solvency requirement was set at 10 per cent from 1991 and was not gradually reduced to 8 per cent as described above.¹

From 1991 the banks began to acquire new types of liable loan capital (supplementary capital), which – unlike the traditional subordinate loan capital – could be used to cover losses, even if the bank was not wound up, and which could therefore qualify the bank to apply the 8-per-cent solvency requirement from 1995.² The supplementary capital could only be included in the solvency calculation within certain limits.

With effect from 1996, the capital requirements for banks were changed so that market risk (interest-rate, equity market and exchange-rate risk, etc.) on assets held for trading was included in the calculation of solvency, including market risk in connection with financial derivatives³. The amended rules tightened the capital requirements for banks and led to an average fall of approximately 1 percentage point in the banks' solvency ratios.

In the second half of the 1990s and the early 2000s, several countries made it possible for banks to issue loan capital that, in terms of solvency, constituted a hybrid between supplementary capital ("Tier 2") and core capital ("Tier 1"), i.e. share capital and reserves. This capital instrument was in its nature a type of debt instrument that could not in general be used for covering current losses, but which was subordinate to other debt (including supplementary capital) in the event of compulsory winding-up. In 1998, the Basel Committee issued overall guidelines for the use of this type of capital ("Tier 1.5"). A legislative amendment in May 2002 also made it possible to include such capital instruments in the solvency calculations of Danish banks within certain defined limits, in accordance with the guidelines of the Basel Committee.⁴

In 1999, both the Basel Committee and the European Commission submitted proposals for revision of the capital-adequacy rules for consultation.⁵ These new Basel II proposals – resting on three pillars – took into account financial innovation, modern risk-management techniques, internal controls and new risk types in general to a greater extent than the existing rules did, cf. Box 4.3. Other risk types than credit and market

¹ Cf. p. 52 of Danmarks Nationalbank, *Report and Accounts*, 1990.

² Cf. p. 46 of Danmarks Nationalbank, *Report and Accounts*, 1991. In the period 1991-93, the banks raised supplementary capital totalling kr. 25 billion, cf. p. 47 of Danmarks Nationalbank, *Report and Accounts*, 1993.

³ I.e. claims for which the value depends on the development in the value of one or more underlying assets. The legislative amendment implemented the EU capital-adequacy directive on market risk from 1993. The EU Directive complied with the proposed capital requirement for market risk on financial derivatives agreed upon in 1993 in connection with the cooperation on the Basel standards, cf. p. 63 of Danmarks Nationalbank, *Report and Accounts*, 1994 and p. 62 of Danmarks Nationalbank, *Report and Accounts*, 1995.

⁴ Cf. Birgitte Bundgaard and Suzanne Hyldahl, Structure of the Banks' Capital – New Statutory Requirements and Opportunities, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2002.

⁵ Cf. pp. 60-61 of Danmarks Nationalbank, *Report and Accounts*, 1999.

THE THREE PILLARS OF THE BASEL II ACCORD

Box 4.3

First pillar: Minimum capital requirements

The minimum capital requirement in the first pillar was to be calculated as the sum of the minimum capital requirements for operational risk, market risk and credit risk. As was the case under Basel I, the total minimum capital requirement was to make up 8 per cent of the risk-weighted assets.

An explicit capital requirement for operational risk was a new element in Basel II, while only few changes had been made to the market-risk provisions. The rules for credit-risk provisions, on the other hand, were to be extended considerably. The financial institutions were given a choice of three approaches to calculating the capital requirement for credit risk with varying degrees of complexity: two internal ratings-based approaches utilising the financial institutions' own knowledge of their credit risk, and one standardised approach.

Second pillar: Supervisory review

The second pillar was based on the banks performing regular assessments of their own capital needs. In addition, the supervisory process was to be strengthened. This pillar therefore included a number of recommendations for supervisory authorities concerning oversight of financial institutions. These comprised applying differentiated capital requirements that exceeded the minimum requirement of 8 per cent, based on the consideration that the risk profiles of the various institutions differed substantially. Furthermore, it should be possible for supervisory authorities to intervene at an earlier stage, and in general they should oversee the financial institutions' internal procedures for assessment of their risk profile and capital base.

Third pillar: Market discipline

The third pillar, on market discipline, described how the institutions could contribute to financial stability and more transparent markets by publishing information about their capital base, etc.

risk, e.g. operational risk, were not explicitly included in the existing capital requirements. In addition, the existing credit-risk weights were not sufficiently fine-meshed.

In June 2004, the Basel Committee published the final Basel II Accord, and the Ecofin Council reached political agreement on implementation of the rules in the EU in December 2004.¹ The Basel II Accord was implemented in Denmark with effect from 1 January 2007, but with certain transitional arrangements. For most Danish banks, the transition to Basel II meant reduced capital requirements due to lower risk weights for

¹ The Basel II capital requirements are discussed in more detail in Suzanne Hyl Dahl, New Capital-Adequacy Rules for Banks, *Monetary Review*, 1st Quarter 2001; Lisbeth Borup and Morten Lykke, New Capital-Adequacy Rules for Credit Institutions, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2003; and Lisbeth Borup and Dorte Kurek, Proposal for a Directive on New Capital-Adequacy Rules (Basel II), Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2005.

exposures with retail customers and small and medium-sized enterprises.¹

The transition to new accounting standards in 2005 also reduced the banks' buffers against losses.² As from 2005, banks were no longer allowed to make provisions for lending on the basis of a demonstrated risk of losses under the prudence concept. Instead, lending was to be written down according to a neutrality principle following an objective indication of a value impairment. The new accounting standards from 2005 did not permit accumulation of "hidden" reserves. This reduced buffers and paved the way for increased credit expansion.

FRAMEWORK CONDITIONS FOR SECURITIES TRADING

The 1995 Stock Exchange Reform

In 1992, the EC Council of Ministers reached agreement on a Directive on investment services in the securities field.³

Like the other EC financial directives, the Investment Services Directive was based on the principles of mutual recognition and home member state supervision. Securities dealers were thus to be able to set up branches in other member states solely on the basis of authorisation in their home member state, and likewise securities dealers from other member states were to be able to trade directly on the stock exchange in any member state without having to establish a branch there. Moreover, the Directive stipulated that credit institutions should have direct access to stock exchanges, i.e. without being required to establish a separate subsidiary. To ensure transparency, certain minimum requirements were laid down for reporting of securities transactions and publication of related data.

The Investment Services Directive was to take effect in member states on 1 January 1996 at the latest. That required a number of fundamental amendments to Danish financial legislation and created a need for a second Stock Exchange Reform.

In preparation for the Stock Exchange Reform, an amendment to the Act on the Copenhagen Stock Exchange was introduced in 1993, giving Danish banks and mortgage banks, etc. access to trade directly on the Copenhagen Stock Exchange, CSE.⁴ As a result, many stockbroking companies owned by banks were discontinued.

¹ Cf. pp. 26-27 of Danmarks Nationalbank, *Financial stability*, 2008, and p. 26 of Danmarks Nationalbank, *Financial stability*, 2nd Half 2008.

² Cf. Danmarks Nationalbank, Effect of New Accounting and Capital-Adequacy Rules, *Financial stability*, 2007; and Borka Babic, Credit Institutions and Procyclicality, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2009.

³ Cf. pp. 52-53 of Danmarks Nationalbank, *Report and Accounts*, 1992.

⁴ Cf. p. 56 of Danmarks Nationalbank, *Report and Accounts*, 1993.

In July 1993, the Minister for Industry set up a Stock Exchange Committee that was to present proposals for a Stock Exchange reform. As a result of the Committee's work¹ CSE's stock-exchange monopoly was abolished in 1996, and CSE was restructured as a private limited liability company, cf. Box 4.4.² The Stock Exchange Reform also enabled the restructuring of both the Danish Securities Centre and the Guarantee Fund for Danish Options and Futures as private limited liability companies. This was a well-established legal structure that was chosen on the basis of efficiency and competition considerations, better opportunities for equity financing and the possibility of national and international alliances and mergers.³

Danmarks Nationalbank was entitled to trade and acted as agent to the Ministry of Finance in connection with the issuance of government bonds and therefore had the option to subscribe to shares in CSE. Against the background of the abolition of the stock-exchange monopoly and the establishment of the Danish Securities Council, which ensured Danmarks Nationalbank's continued influence on the regulation of the securities market, Danmarks Nationalbank chose not to subscribe to shares. As a result, Danmarks Nationalbank was not represented on the Board of the Copenhagen Stock Exchange A/S. Furthermore, at that time it could not be ruled out that several competing stock exchanges would be established in Denmark as a result of the Stock Exchange Reform. This also impacted on Danmarks Nationalbank's decision.

In early 1997, the Guarantee Fund for Danish Options and Futures was restructured as a limited liability company, FUTOP Clearingscentralen A/S, fully owned by CSE. In continuation of CSE's merger into the OMX Group in 2005, cf. below, clearing of Danish futures and options was transferred to Stockholmsbörsen AB (the Stockholm Stock Exchange).

Effective from 1 January 2000, the Danish Securities Centre was restructured from a private self-governing institution to a limited liability company, VP Securities Services, VP. In this connection, VP's existing equity capital was encapsulated in a new company as tied-up reserve assets. The shareholders of the new company were the stakeholders previously represented on the Board of the Securities Centre, who also

¹ Cf. *Børsreform II. Betænkning afgivet af Børsudvalget (Stock Exchange Reform II. Report by the Stock Exchange Committee – in Danish only)*. Report No. 1290. Ministry of Trade and Industry, 1995.

² Cf. pp. 51-52 of Danmarks Nationalbank, *Report and Accounts*, 1994; pp. 61-63 of Danmarks Nationalbank, *Report and Accounts*, 1995; pp. 48-50 of Danmarks Nationalbank, *Report and Accounts*, 1996; Nils Jul Clausen, *Børsreform II. Hovedpunkter i den fremtidige lovgivning (Stock Exchange Reform II. Highlights of the Coming Legislation – in Danish only)*, *Finans/Invest*, No. 4, 1995; and Nils Jul Clausen, *Børsreform II's lovpakke vedtaget (Adoption of the Legislative Package relating to Stock Exchange Reform II – in Danish only)*, *Finans/Invest*, No. 1, 1996.

³ Cf. pp. 28-29 of *Børsreform II. Betænkning afgivet af Børsudvalget*. Report No. 1290. Ministry of Trade and Industry, 1995.

STOCK EXCHANGE REFORM II 1995

Box 4.4

In July 1993, the Minister for Industry set up a Stock Exchange Committee that was to present proposals for a Stock Exchange reform. The Committee comprised representatives of ministries, Danmarks Nationalbank, securities dealers, investors and issuers of shares and bonds.

Originally, the Committee should have completed its work by mid-1994, but the deadline was postponed because the terms of reference were extended and especially because it proved to be difficult to reach a compromise. The Committee submitted its report in the spring of 1995, and the Folketing passed a legislative package on stock exchange reform in December 1995.

The main content of the reform, which was very close to the proposal from the Stock Exchange Committee, was as follows:

- The monopoly of the Copenhagen Stock Exchange (CSE) was abolished, and in the spring of 1996 CSE was restructured as a privately owned limited-liability company. Its owners primarily included securities dealers, but issuers of bonds and listed companies were also able to acquire shares. This ownership structure generated a more commercial interest in the ongoing adaptation of the market place to changes in market conditions and international developments.
- Participants in the securities market were given more responsibility for the financial infrastructure and the market structure. The newly established Danish Securities Council was tasked with overall regulation and supervision of the securities market, while issuance of more market-related rules was basically to be undertaken by market institutions (stock exchanges, central securities depositories, etc.). Members of the Securities Council were to be appointed by the Minister for Economic Affairs and were to include an independent Chairman and Vice Chairman, as well as representatives of traders, investors, issuers and Danmarks Nationalbank. The Securities Council's secretariat functions were to be undertaken by the Danish Financial Supervisory Authority. Through their representation on the Securities Council and the governing bodies of the market institutions, market participants were thus responsible for ongoing adjustment of rules, etc. This reduced the need to await legislative amendmend before market measures could be implemented, whether they related to financial instruments or changes in trading practices.
- A larger part of the financial sector became subject to supervision by public authorities. For example, investment companies needed a licence from the Danish Financial Supervisory Authority to operate. Investment companies included stock-brokers, which had been regulated since the 1986 stock exchange reform, as well as many of the previously unregulated investment companies ("boiler room brokers"), which thus became subject to supervision for the first time.
- In future, money-market brokers acting as intermediaries in listed money-market instruments had to be licensed by the Danish Financial Supervisory Authority so as to ensure compliance with the statutory provisions on integrity and CSE's rules on reporting, etc. Licensing required that the firm was operated as a limited-liability company and had a certain capital base. Other money-market brokers did not have to be licensed.
- Interdealer brokers were given access to act as intermediaries in professional securities trading outside the exchanges.

represented VP's major customers (banks, stockbrokers, mortgage banks, Danmarks Nationalbank, issuers of shares and investors).¹

In 2005, the Danish Securities Council (cf. Box 4.4) was restructured and allocated new tasks in connection with an amendment of the Danish Securities Trading Act. Under the amendment, the powers of the Danish Securities Council were divided into two areas:

- In the first area, the Council was to be part of the Danish Financial Supervisory Authority and make decisions in matters relating to principles or of great significance to players in the securities markets. Furthermore, the Council was to advise the Danish Financial Supervisory Authority on issuance of rules. The Council's previous competence to issue rules ceased, and its general competence to make decisions would no longer include routine issues concerning good practice, but solely issues relating to principles, in which the Consumer Ombudsman would also be involved.
- In the second area, the Council was appointed as an independent overall authority. Control of financial information in annual and interim reports was to be undertaken by the Council, while financial information in other documents, e.g. prospectuses, was to be controlled by the Danish Financial Supervisory Authority. For the purpose of the Council's control of financial information in annual and interim reports, the secretariat was to be split between the Danish Financial Supervisory Authority and the Danish Commerce and Companies Agency. To ensure that the Council had the necessary opportunity to take action to enforce control of financial information in annual and interim reports, the Council was authorised to issue orders to the relevant companies. Furthermore, it was given the right to suspend or delete the securities in question.

In future, the Danish Securities Council was to comprise seven representatives who were independent of the financial sector and seven members with a professional interest in the securities market. As previously, Danmarks Nationalbank was entitled to appoint one member.²

Nordic stock exchange cooperation and consolidation

In June 1997, CSE and the Stockholm Stock Exchange initiated formalised cooperation, Nordic Exchanges – NOREX, with a view to establishing a pan-Nordic market for securities.³ The Iceland Stock Exchange and Oslo

¹ Cf. pp. 62-63 of Danmarks Nationalbank, *Report and Accounts*, 2000.

² Cf. pp. 158-159 of Danmarks Nationalbank, *Report and Accounts*, 2004.

³ Cf. p. 62 of Danmarks Nationalbank, *Report and Accounts*, 1998.

Stock Exchange joined the NOREX Alliance in 2000.¹ Among other things, this cooperation led to consolidation of the trading systems of the exchanges so that market participants no longer had to use separate trading systems for each stock exchange. In 1999, CSE introduced the NOREX Alliance's common trading system, SAXESS, for trading in shares, and in October 2000 trading in bonds at CSE was also transferred to this system.²

OMX AB acquired CSE in 2005. The acquisition resulted in the new Swedish company OMX Group, which owned the stock exchanges in Copenhagen, Stockholm, Helsinki, Tallinn, Riga and Vilnius, among others. In 2007, OMX was acquired by NASDAQ. CSE – renamed "Nasdaq OMX Copenhagen" – remained domiciled in Denmark, however, and was still subject to Danish regulation and supervision.³

The central securities depositories in Denmark, Sweden and Norway in 1998 initiated cooperation with a view to supporting closer Nordic cooperation in the stock exchange area in preparation for future broader European cooperation. In the longer term, the vision was to create a pan-Nordic clearing and settlement company (Scandinavian Securities Settlement System, S4). The S4 project was, however, suspended in 1999.⁴

Transfer of wholesale trading in Danish government securities to MTS in 2003

In 1987, electronic bond trading was introduced on the Copenhagen Stock Exchange.⁵ Ten years later, only one third of turnover in bonds took place electronically. The rest of the transactions took place in the telephone market with subsequent reporting to CSE⁶.

The situation had not changed materially by 2002. Trading in Danish government bonds in CSE's electronic systems was still limited, except for transactions in which Danmarks Nationalbank, acting on behalf of the Danish government, was a party to the transaction. Professional trading in the wholesale market for Danish government bonds still predominantly took place by telephone. Price quotation by professional securities

¹ Cf. p. 61 of Danmarks Nationalbank, *Report and Accounts*, 2000.

² Cf. p. 62 of Danmarks Nationalbank, *Report and Accounts*, 2000; and Peter Belling and Ellen-Margrethe Soelberg, *Nyt handelssystem for aktier noteret på Københavns Fondsbørs (New Trading System for Shares Quoted at the Copenhagen Stock Exchange – in Danish only)*, *Finans/Invest*, No. 6, 1999.

³ Cf. p. 78 of Danmarks Nationalbank, *Financial stability*, 2006.

⁴ Cf. Jesper Berg and Mogens Kruse, *Securities Settlement in an International Perspective*, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2000.

⁵ Cf. p. 338 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993.

⁶ Cf. p. 49 of Danmarks Nationalbank, *Danish Government Securities*, 1998.

dealers vis-à-vis each other ("market making") also primarily took place by telephone.¹

The growing concentration that had characterised the Danish financial sector made the Danish wholesale market for government securities relatively sensitive to further concentrations. In 2001, the six largest market participants purchased around 95 per cent of the bonds and Treasury notes issued by the Danish government, and the number of participants in the Danish Securities Dealers Association's market maker arrangement had been reduced to 9 compared with 19 in 1996.²

In 2002, Government Debt Management at Danmarks Nationalbank, in cooperation with market participants, initiated work to introduce more efficient trading and market making in Danish government bonds on the basis of the electronic trading platform for European government securities, MTS³, which was the dominant system for wholesale trading in European government bonds. The choice of MTS made it possible to attract new market makers in Danish government bonds as many international banks already used MTS and were therefore able to become market makers under a Danish MTS solution without incurring extra costs.⁴

Trading in Danish government securities on MTS was introduced in November 2003, while Danish mortgage bonds were still traded via SAXESS or by telephone. On MTS, Danish government securities were traded in a special segment, MTS Denmark, operated by the Belgian MTS company, MTS Associated Markets.⁵ In connection with the introduction of Danish government securities on MTS, a number of Danish and international banks concluded primary dealer agreements with Government Debt Management at Danmarks Nationalbank. Under these agreements, the banks undertook an obligation to quote electronically tradable two-way prices on MTS within fixed spreads and for fixed amounts on a current basis. At the same time, Danmarks Nationalbank ceased to issue government securities on behalf of the central government via CSE's trading system and began to issue via MTS instead. All domestic government securities were still quoted at CSE, however.

In December 2003, a price-quoting system was also established in the retail market for Danish government securities. A number of banks concluded agreements with Government Debt Management at Danmarks

¹ Cf. Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 2002, Chapter 9: Electronic Trading and Market-Making in Danish Government Bonds.

² Cf. p. 101 of Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 2001.

³ Mercato dei Titoli di Stato, i.e. "market for government bonds".

⁴ Cf. Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 2002, Chapter 9: Electronic Trading and Market-Making in Danish Government Bonds.

⁵ Cf. Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 2003, Chapter 9: MTS Denmark and the Primary Dealer System for Danish Government Securities.

Nationalbank, under which they undertook a commitment to quote bid and ask prices on an electronic trading platform at CSE on a current basis. This arrangement made it possible for members of the CSE bond segment as well as private and small-scale investors to place orders and have trades executed in an electronic market for Danish government securities.

In the subsequent years, the establishment of the primary dealer system for Danish government securities led to a reduced concentration in the wholesale market for Danish government securities. In 2004-06, the six largest primary dealers purchased approximately 70 per cent of the government bonds issued. From the outset, the new market participants that came aboard in connection with the introduction of Danish government securities on MTS contributed a significant share of total turnover. The first experience with the introduction of the new market structure for Danish government securities in the autumn of 2003 also indicated that the market had become more transparent and liquid.¹

PENSION COMPANIES AND GUARANTEES

The transition to a consistent fixed-exchange-rate policy in 1982 and gradually increasing trust in this policy reduced devaluation and inflation expectations in Denmark during the 1980s and early 1990s. This led to a pronounced narrowing of long-term interest-rate spreads to Germany. Since this period was also characterised by a global decline in inflation, long-term nominal interest rates fell substantially, from over 20 per cent in the early 1980s to 5 per cent or lower in the years after 2000.

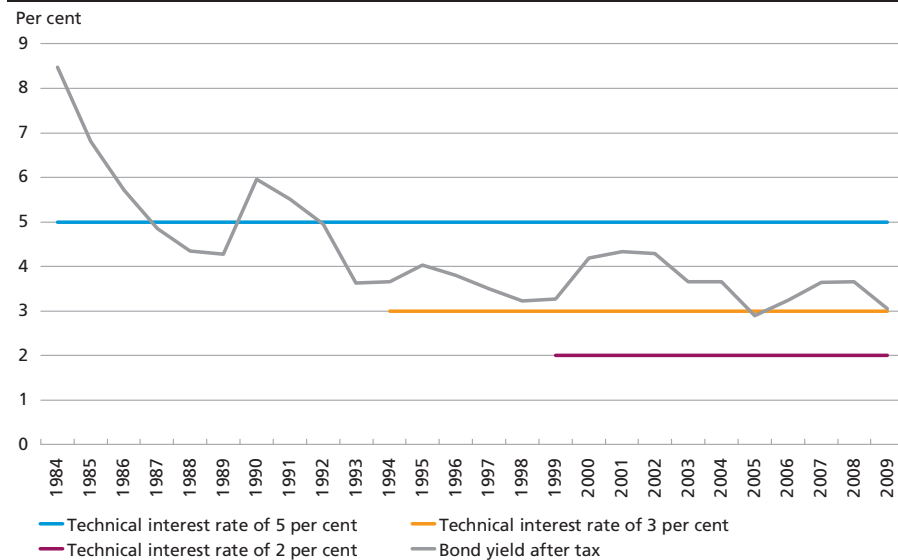
In the short term, the fall in interest rates gave the pension sector a capital gain, but in the longer term it put the sector under pressure. Firstly, because the companies had to re-invest their funds at still lower rates of interest, which reduced their current returns. The more frequent waves of remortgaging in the 1990s amplified this tendency, cf. Chart 4.7 on page 123. Secondly, pension companies had previously guaranteed savers a certain nominal return.

From 1982 until mid-1994, pension companies had been able to guarantee pension savers benefits corresponding to an average minimum return after tax of 5 per cent (or 4.50-4.75 per cent after deduction of a typical allowance for costs and loading for risk of 0.25-0.50 percentage

¹ Cf. Jens Verner Andersen and Per Plougmand Bærtelsen, Liquidity and Transparency in the Danish Government Bond Market, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2004.

MAXIMUM TECHNICAL INTEREST RATES AND 10-YEAR GOVERNMENT BOND
YIELD AFTER PENSION YIELD TAX/REAL INTEREST RATE TAX 1984-2009

Chart 4.10



Note: The bond yield has been calculated as the annual average of a 10-year effective bond yield after pension yield tax/real interest rate tax.

Source: Danmarks Nationalbank, Danish Financial Supervisory Authority and Ministry of Taxation.

point).¹ This promise was easy to keep in the 1980s when interest rates were high, but extremely difficult to keep at the low level of interest rates in the 1990s – not least because real interest rate tax was also payable, cf. Chart 4.10. Moreover, from 2000 the real interest rate tax was replaced by a nominal pension yield tax, at a time when developments in interest rates and prices pointed to a falling rate of real interest rate tax.² This eroded pension fund reserves and increased pressure on their capital.

In 1994, the Danish Financial Supervisory Authority lowered the technical interest rate from 5 per cent to 3 per cent. The technical interest rate was the maximum rate of interest after tax that the pension companies were allowed to use for calculating guaranteed pension and insurance benefits. In 1999, the technical interest rate was reduced further, to 2 per cent. However, these were maximum rates, and pension companies were free to establish pension schemes based on lower guaranteed returns or without any guarantees at all.

After 2000, many pension companies increasingly began to hedge their interest-rate risk fully or partly by means of financial instruments,

¹ Cf. Chapter 2 of Danish Financial Supervisory Authority, *Rapport om fastsættelse af maksimal grundlagsrente (Report on Fixing of Maximum Technical Interest Rate – in Danish only)*, 1997.

² Cf. Leif Lybecker Eskesen, Suzanne Hyldahl and Birgitte Søgaard Jensen, Amended Taxation of Pension Savings, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 1998.

and the pension companies came to rely more and more on the return on other investment assets in order to honour their guarantees in the long term.¹

Several pension companies were severely affected by the tumbling stock markets after the terrorist attacks on the USA on 11 September 2001.² Against that background, the Danish government introduced a number of legislative amendments which helped to ease pressure on the pension companies.³ Pressure on the sector also eased for some years after 2002, reflecting a period of sound financial performance. The low level of interest rates still constituted a significant re-investment risk for the pension companies, however, since old 5 per cent guarantees continued to weigh heavily on the liabilities of a number of pension companies.⁴

¹ Cf. p. 33 of Danmarks Nationalbank, *Financial stability*, 2005.

² Cf. Heidi Plousgaard, Mie Stage and Steen Rosenbak, Aktietab: Krise i pensionsbranchen (Losses on Shares: Crisis in the Pension Sector – in Danish only), *Jyllands-Posten*, 23 September 2001; Morten Crone, Kunder kommer til at betale for PFA-krise (Customers Will Foot the Bill for PFA Crisis – in Danish only), *Berlingske Tidende*, 30 September 2001; Thomas Flensburg and Lars Ole Løkke, Kurshop kan redde PFA-kunder (Price Hike May Save PFA Customers – in Danish only), *Politiken*, 13 October 2001; and André Lublin and Claes Kastholm Hansen, *Opgør – succes, svindel, krise i PFA (Taking Stock – Success, Fraud, Crisis in PFA – in Danish only)*, Aschehoug, 2005.

³ Cf. p. 58 of Danmarks Nationalbank, *Report and Accounts*, 2001.

⁴ In 2003 it was estimated that around two thirds of the pension companies' commitments were based on the high technical interest rate of 5 per cent, cf. p. 74 of Danmarks Nationalbank, *Financial stability*, 2003.

APPENDIX 4.A: MERGERS AND ACQUISITIONS IN THE DANISH BANKING SECTOR 1980-2009

1980 (3 mergers/acquisitions)

- Den Danske Provinsbank acquires Banken for Vejen og Omegn.
- Frederiksborg Bank acquires Universal Bank.
- Sparekassen Bikuben acquires Svostrup Sogns Spare- og Lånekasse.

1981 (10 mergers/acquisitions)

- Brovst Sparekasse acquires Øland Sparekasse.
- Jyske Bank acquires Finansbanken.
- Privatbanken acquires Haslev Bank.
- Sparekassen Bikuben acquires Præstbro Sparekasse.
- Sparekassen Nordjylland acquires Sparekassen Midtendsyssel.
- Sparekassen Nordjylland acquires Øster Hurup Sparekasse.
- Sparekassen SDS acquires Ikast Sparekasse.
- Sparekassen SDS acquires Sparekassen i Raaby.
- Sparekassen SDS acquires Øster Egesborg sogn spare- og lånekasse.
- Sparekassen Sydjylland acquires Glejbjerg Sparekasse.

1982 (6 mergers/acquisitions)

- Sparekassen Bikuben acquires Aggersborg Sparekasse.
- Sparekassen Bikuben acquires Lynggård Sogns Spare- og Lånekasse.
- Sparekassen Bikuben acquires Sparekassen Højby.
- Sparekassen Bikuben acquires Ølgod Sparekasse.
- Sparekassen SDS acquires Sparekassen Give.
- Tarm Bank acquires Aadum Sogns Sparekasse.

1983 (4 mergers/acquisitions)

- Jyske Bank acquires Vendelbobanken.
- Nordvestbank acquires Harbøre Sogns Sparekasse.
- Sjællandske Bank acquires Frederiksborg Bank.
- Sydbank acquires Aarhus Bank.

1984 (5 mergers/acquisitions)

- Amagerbanken acquires RB-Banken.
- Den Østjyske Egnssparekasse acquires Nr. Snede Ejstrup Sparekasse.
- Sparekassen Nordvestsjælland acquires Trundholm Sparekasse.
- Sparekassen Sydjylland acquires Sindbjerg Sogns Spare- og Laanekasse.
- Sydbank acquires Fynske Bank af 1872.

1985 (3 mergers/acquisitions)

- Den Danske Bank af 1871 acquires Haderslev Creditbank Aktieselskab.
- Den Danske Provinsbank acquires Kronebanken.
- Sparekassen Lolland acquires Sparekassen Rødby.

1986 (4 mergers/acquisitions)

- Sparekassen Bikuben acquires Serritslev og Sogns Spare- og Lånekasse.
- Sparekassen Nordjylland acquires Sparekassen Sæby.
- Sparekassen SDS acquires Ørum Sparekasse.
- Varde Bank acquires Henriques Bank Aktieselskab.

1987 (5 mergers/acquisitions)

- DK-Sparekassen is formed by merger of Horsens Sparekasse, Roskilde Sparekasse and Den Østjyske Egnssparekasse.
- Privatbanken acquires American Express Bank.
- Sparekassen Bikuben acquires Asnæs Sparekasse.
- Sparekassen Nordvestsjælland acquires Grevinge Sogns Sparekasse.
- Sydbank acquires 6'Juli Banken.

1988 (8 mergers/acquisitions)

- Aktivbanken merges with Aarhus Diskontobank.
- Amagerbanken merges with Bendix Bank.
- Andelsbanken merges with Hellerup Bank.
- Haandværker, Handels- og Landbrugsbanken merges with Toksværd sogns Spare- og Lånekasse.
- Sparekassen Faaborg merges with Håndværkersparekassen i Assens.
- Sparekassen Nordjylland merges with Hjallerup og Omegns Sparekasse.
- Sparekassen Nordjylland merges with Sparekassen Hadsund.
- Sparekassen Thy merges with Hundborg Sparekasse.

1989 (11 mergers/acquisitions)

- Bjergby Sparekasse merges with Flade-Sdr. Dråby Sparekasse.
- Grindsted Sparekasse merges with Bording Sparekasse.
- Interbank af 1985 merges with Erik Møllers Eftf. Bankaktieselskab.
- Jyske Bank merges with Holstebro Bank.
- Morsø Sparekasse merges with Solbjerg-Sundby Sparekasse.
- Provinsbanken merges with Handels- og Landbrugsbanken i Thisted.
- Sparekassen Bikuben merges with DK-Sparekassen.
- Sparekassen Bikuben merges with Sparekassen for Grevskabet Holsteinsborg og Omegn.
- Sparekassen Nordjylland merges with Hirtshals Sparekasse.

- Sparekassen Nordvestsjælland merges with Kirke-Helsingør Sparekasse.
- Sparekassen SDS merges with Sparekassen Bornholm.

1990 (7 mergers/acquisitions)

- Den Danske Bank is formed by merger of Den Danske Bank af 1871, Københavns Handelsbank and Provinsbanken.
- Sparekassen Bikuben merges with Errindlev Sparekasse.
- Sparekassen Bikuben merges with Frederiksberg Sparekasse.
- Sparekassen Bikuben merges with Mou Sparekasse.
- Sparekassen Bikuben merges with Sparekassen Højer.
- Sydbank merges with Sparekassen Sønderjylland.
- Unibank is formed by merger of Andelsbanken, Privatbanken and Sparekassen SDS.

1991 (6 mergers/acquisitions)

- Aktivbanken merges with Horsens Landbobank.
- Aktivbanken merges with Sydfyns Diskontobank.
- Aktivbanken merges with Topdanmark Bank.
- Sparekassen Bikuben merges with Gjørl Sparekasse.
- Sparekassen Bikuben merges with Sparekassen Sydjylland.
- Varde Bank merges with Esbjerg Bank.

1992 (6 mergers/acquisitions)

- Amtssparekassen Fyn merges with Langelands Bank.
- Fjerritslev Bank merges with Han Herreders Sparekasse.
- Hafnia Erhvervsbank merges with Hafnia Kapitalbank.
- Sparekassen Bikuben merges with Hasle Bank.
- Sparekassen Kronjylland merges with Sparekassen Fjends.
- Sparekassen Kronjylland merges with Spentrup-Gassum Sparekasse.

1993 (4 mergers/acquisitions)

- Andelskassen Egebjerg merges with Krarup Andelskasse.
- Codan Bank merges with Alliance Bank of Copenhagen.
- Folkesparekassen merges with Ejstrupholm Andelskasse J.A.K.
- Sparekassen Nordjylland acquires Konkursboet Himmerlandsbanken (winding-up estate).

1994 (7 mergers/acquisitions)

- Andelskassen Varde J.A.K. merges with Esbjerg Andelskasse.
- Asserballekov Andelskasse merges with Sundeved Andelskasse.
- Djurslands Bank merges with Nødager Sparekasse.

- Frederiks og Omegns Andelskasse merges with Haderup og Omegns Andelskasse.
- Føroya Banki merges with Sjóvinnubankin.
- Slagelse Sparekasse merges with Ørslev Sogns Spare- og Lånekasse.
- Thyholm Sparekasse merges with Søndbjerg-Odby Sparekasse.

1995 (4 mergers/acquisitions)

- Alm. Brand Bank merges with Alm. Brand Kreditbank.
- Morsø Sparekasse merges with Vejerslev-Blidstrup Sparekasse.
- Onsild og Omegns Andelskasse merges with Klejtrup Andelskasse.
- Sparekassen Himmerland merges with Als Sparekasse.

1996 (4 mergers/acquisitions)

- Bikuben GiroBank is formed by merger of Sparekassen Bikuben and GiroBank.
- Landesbank Schleswig-Holstein Girozentrale acquires Westdeutsche Landesbank.
- Roskilde Bank merges with Ringsted Sparekasse.
- Topdanmark Bank subject to winding-up is acquired by BG Bank.

1997 (6 mergers/acquisitions)

- Borris Andelskasse merges with Hanning-Sædding Andelskasse.
- Grønlandsbanken merges with Nuna Bank.
- Kærup Andelskasse merges with Janderup Andelskasse.
- Lån & Spar Bank merges with Ingeniørernes Pensionsbank.
- Sparekassen Thy merges with Harring-Stagstrup Sparekasse.
- Unibank merges with Borum Sparekasse.

1998 (4 mergers/acquisitions)

- Den Danske Bank merges with Nordania Leasing Bank.
- Folkesparekassen merges with Andelskassen Fyn J.A.K.
- Skælskør Bank merges with Lundforlund og Gjerlev Sogns Spare- og Lånekasse.
- Slagelse Sparekasse merges with Spare- og Laanekassen i Stillinge Sogn.

1999 (2 mergers/acquisitions)

- Jerslev Sparekasse is formed by merger of Hørby Sparekasse and Jerslev-Hellum Sparekasse.
- Slagelse Sparekasse merges with Munkebjergby-Bromme Sparekasse.

2000 (3 mergers/acquisitions)

- Den Danske Bank merges with Danica Bank.

- Morsø Sparekasse acquires Ebdrup Andelskasse.
- Skælskør Bank acquires Marvede Sparekasse.

2001 (5 mergers/acquisitions)

- Agerbæk-Glejbjerg Andelskasse is formed by merger of Agerbæk Andelskasse and Glejbjerg Andelskasse.
- Danske Bank merges with BG Bank.
- Oue-Rostrup-Arden Andelskasse is formed by merger of Rostrup Andelskasse and Oue & Arden Andelskasse.
- Spar Nord Bank merges with Aars Bank.
- Sparekassen Vendsyssel is formed by merger of Vrå Sparekasse and Jelstrup-Lyngby Sparekasse.

2002 (6 mergers/acquisitions)

- Andelskassen Midtjylland is formed by merger of Bording Andelskasse and Vorgod Andelskasse.
- Nordjyske Bank is formed by merger of Egnsbank Nord and Vendsyssel Bank.
- Ringkjøbing Landbobank merges with Tarm Bank.
- Sparekassen Thy acquires Hassing-Villerslev Spare- og Laanekasse.
- Svenska Handelsbanken acquires Midtbank.
- Sydbank merges with Egnsbank Fyn.

2003 (5 mergers/acquisitions)

- Andelskassen Midtjylland merges with Linde Andelskasse.
- J.A.K. Andelskassen Østervrå merges with J.A.K. Andelskassen Hjørring.
- J.A.K. Andelskassen Østervrå merges with J.A.K. Andelskassen Øst-vendsyssel.
- Sparekassen Løgumkloster merges with Sparekassen Ravsted.
- Vestjysk Bank merges with Nordvestbank.

2004 (2 mergers/acquisitions)

- Ringkjøbing Landbobank merges with Sdr. Lem Andelskasse.
- Bjergby-Flade Sparekasse merges with Tødsø-Erslev Sparekasse and continues under the name of Sparekassen Spar Mors.

2005 (14 mergers/acquisitions)

- Sparekassen Limfjorden acquires Hvidbjerg-Ørum Sparekasse.
- Søby-Skader-Halling Spare- og Laanekasse acquires Hvilsager-Lime Sparekasse.
- Andelskassen Østjylland is formed by merger of Hammershøj Andelskasse and Harridslev Andelskasse.

- Folkesparekassen merges with Andelskassen J.A.K. Holstebro.
- Sparekassen Thy acquires Helligsø-Gettrup Sparekasse.
- Egvad Andelskasse merges with Skjern Egnens Andelskasse under the name of Andelskassen Vestjylland.
- Sparekassen Vendsyssel acquires Hellevad-Ørum Sparekasse.
- Hammershøj og Omegns Andelskasse acquires Thorsager Andelskasse.
- Folkesparekassen acquires Århus Andelskasse.
- Sparekassen Østjylland acquires Spare- og Laanekassen i Vium Sogn.
- Andelskassen Sydvestjylland is formed by merger of Agerbæk-Glejbjerg Andelskasse and Årre og Omegns Andelskasse.
- Nordea Bank Danmark merges with Nordea Investment Management Bank.
- Thyholm Sparekasse merges with Snedsted-Nørhå Sparekasse and continues under the name of Sparekassen Limfjorden.
- Frøslev-Mollerup Sparekasse merges with Dragstrup-Skallerup Sparekasse.

2006 (9 mergers/acquisitions)

- Sparekassen Vestsalling merges with Sparekassen Sundsøre.
- Morsø Sparekasse acquires Durup Sparekasse, Fuur Sparekasse and Roslev Sparekasse.
- Sparekassen Vendsyssel acquires Jerslev Sparekasse.
- Andelskassen Midtjylland acquires Andelskassen Vestjylland and continues under the name of Andelskassen Midtvest.
- Spar Nord Bank acquires Sparekassen Midt Vest.
- Sparekassen i Skals acquires Almind Sparekasse.
- Skælskør Bank acquires Flakkebjerg og Omegns Sparekasse.
- Sparekassen Vendsyssel acquires Brovst Sparekasse.
- Sparekassen Østjylland merges with Thiset Sparekasse.

2007 (11 mergers/acquisitions)

- Sparekassen Kronjylland acquires Mørke Sparekasse.
- Eik Bank merges with SkandiaBanken.
- Stadil Sparekasse merges with Hover Sparekasse.
- Andelskassen J.A.K. Slagelse merges with Morsø Andelskasse.
- Andelskassen Østhimmerland merges with Onsild Andelskasse.
- Nykredit Bank merges with Nykredit Portefølje Bank.
- Folkesparekassen acquires JAK Østfyns Andelskasse.
- Den Lille Sparekasse is formed by merger of Gjerlev-Enslev Sparekasse and Galten Sparekasse.
- Sparekassen Kronjylland merges with Astrup Tulstrup Hvilsted Sparekasse.

- Den Jyske Sparekasse merges with Jelling Sparekasse.
- Andelskassen J.A.K. Slagelse acquires Eggeslevmagle Fælleskasse.

2008 (9 mergers/acquisitions)

- Vestjysk Bank acquires Aktieselskabet Ringkjøbing Bank.
- Morsø Bank acquires Sparekassen Spar Mors.
- Sparekassen Vendsyssel acquires Ulsted Sparekasse.
- Frøslev-Møllerup Sparekasse acquires Sparekassen Nordmors.
- Vestjysk Bank acquires Bonusbanken.
- Sparekassen Himmerland acquires St. Brøndum Sparekasse.
- Sparekassen Sjælland merges with Haarslev Sparekasse.
- Sydbank merges with bankTrelleborg.
- Folkesparekassen merges with JAK-Andelskasse Rødding.

2009 (7 mergers/acquisitions)

- J.A.K. Slagelse, Andelskassen acquires J.A.K. Andelskassen Brenderup.
- Lån & Spar Bank acquires Gudme Raaschou Bank.
- Andelskassen Varde merges with Thorstrup Andelskasse.
- Andelskassen Himmerland merges with Andelskassen Vesthimmerland.
- Handelsbanken – a branch of Svenska Handelsbanken AB – acquires Lokalbanken i Nordsjælland.
- Sparekassen Hobro merges with Den Lille Sparekasse.
- Den Jyske Sparekasse merges with Sparekassen Løgumkloster.

Note: The time of registration of a merger/acquisition varies, depending on whether the time of announcement, the time of regulatory approval, the time of adoption by the general meetings of the banks involved or the time of actual implementation is applied. The years stated in this Appendix may therefore differ from those stated in connection with mergers/acquisitions elsewhere in Monetary History of Denmark. If a group including a bank acquires another bank, and both banks continue as separate entities, the transaction is not classified as a merger or acquisition in the above list.

Source: Danish Bankers Association and Danish Financial Supervisory Authority.

**APPENDIX 4.B: SELECTED REPORTS, ETC. ON THE FINANCIAL SECTOR
SINCE 1980**

Etablering af en tilsynslovgivning for investeringsforeninger (Establishment of Legislation on Supervision of Investment Associations – in Danish only). Report by the committee concerning legislation on investment associations set up by the Ministry of Trade. Report No. 942, Ministry of Trade, 1981.

Gennemførelse af lov nr. 179 af 14. maj 1980 om en værdipapircentral (Implementation of Act No. 179 of 14 May 1980 on a Securities Centre – in Danish only). Ministry of Industry working group on the Danish Securities Centre. Report No. 948, Ministry of Industry, 1982.

Rapport om betalingskort (Report on Payment Cards – in Danish only). An examination of debit and credit card systems and electronic settlement of payments in connection with consumer purchases. Report No. 965, Ministry of Industry, 1982.

Betænkning om bankiervirksomhed (Report on Banker's Activities – in Danish only). The committee on the implementation of the First Banking Directive as regards banker's activities. Report No. 1009, Ministry of Industry, 1984.

Lovgivning om andelskasser (Legislation on Cooperative Banks – in Danish only). The committee on the implementation of the First Banking Directive as regards cooperative banks. Report No. 1002, Ministry of Industry, 1984.

Brancheglidning i den finansielle sektor (Erosion of Sectoral Barriers in the Financial Sector – in Danish only). Report No. 1108, Ministry of Industry, 1987.

Revision af lov om tilsyn med pensionskasser (Revision of the Act on Supervision of Pension Funds – in Danish only). Report No. 1096, Ministry of Industry, 1987.

Den fremtidige realkreditlovgivning (Future Mortgage-Credit Legislation – in Danish only). Report submitted on 29 May 1987 by the committee on adaptation of mortgage-credit legislation to the EC's First Banking Coordination Directive. Ministry of Housing, 1987.

Betænkning om privatisering af statsanstalten for livsforsikring (Report on privatisation of Statsanstalten for Livsforsikring – in Danish only). Report No. 1189. Ministry of Finance, Ministry of Justice and Legal Adviser to the Danish Government, 1990.

Insider-handel (Insider trading – in Danish only). Report by the Stock Exchange Committee. Report No. 1216. Ministry of Industry, 1991.

Fremtidens finansielle sektor. Finansverdenens nye spilleregler (The Financial Sector in the Future. The New Ground Rules in the Financial World – in Danish only). Report by the Ministry of Industry working group on the scope and anchoring of financial institutions. Report No. 1232. Ministry of Industry, 1992.

Den danske pengeinstitutsektor (The Danish Banking Sector – in Danish only). Report by the Interdepartmental Liaison Committee on the Financial Market. Ministry of Economic Affairs, 1994.

Redning af pengeinstitutter siden 1984 (Bank Rescue Operations since 1984 – in Danish only). Report by the Interdepartmental Liaison Committee on the Financial Market. Ministry of Economic Affairs, 1995.

Betænkning afgivet af det under Industriministeriet den 4. februar 1992 nedsatte udvalg vedrørende elektronisk betalingsformidling uden betalingskort (Report by the Committee Set Up under the Ministry of Industry on 4 February 1992 concerning Electronic Settlement of Payments without Payment Cards – in Danish only). Report No. 1255. Ministry of Industry, 1993.

Børsreform II (Stock-Exchange Reform II – in Danish only). Report by the Stock Exchange Committee. Report No. 1290. Ministry of Trade and Industry, 1995.

Demokrati og åbenhed om pensionsinstitutternes investeringsbeslutninger (Democracy and Openness about Pension Funds' Investment Decisions – in Danish only). Report No. 1306, Ministry of Economic Affairs, 1995.

Håndtering af pengeinstitutkriser (Managing Banking Crises – in Danish only). Ministry of Economic Affairs, 1997.

Den finansielle sektor efter år 2000 (The Financial Sector after the Year 2000 – in Danish only). Report No. 1376. Ministry of Economic Affairs, 1999.

Større valgfrihed i pensionsopsparingen (More Freedom of Choice in Pension Savings – in Danish only). Ministry of Economic and Business Affairs, Ministry of Employment, Ministry of Finance and Ministry of Taxation, 2003.

CHAPTER 5

Banking Crises 1984-95

BANKING CRISES IN THE 1980s AND THE EARLY 1990s

After the collapse of many banks during the inter-war period, the Danish banking sector was characterised by a pronounced calm from the end of World War II until the early 1980s. At the end of 1984, Denmark's seventh largest bank, Kronebanken, ran into problems, and the years up to the mid-1990s were characterised by a number of serious crises in the Danish financial sector. 102 banks closed in the period 1985-95, 52 of them due to difficulties.¹ These banks were mainly small or medium-sized. As a result, the situation was not as grave as in the 1920s when the five largest Danish banks all experienced problems.²

Danmarks Nationalbank was directly involved in finding solutions for six banks in financial distress, cf. Appendix 5.A. The banks were Kronebanken (1984-85), 6' Juli Banken (1987-88), C&G Banken (1987-88), Uni-bank (1992), Varde Bank (1992-93) and Himmerlandsbanken (1993). The acquisition of the distressed banks by other banks was often part of the solution, and in several cases there was even money left over for the shareholders. In addition, Danmarks Nationalbank provided bridge financing in connection with the Faroese banking crisis in the early 1990s.

The banking crisis led the authorities to take certain specific measures. Firstly, as a result of the suspension of payments by 6' Juli Banken in 1987, a general deposit guarantee scheme was established by law in Denmark with effect from February 1988.³ The purpose was to provide

¹ Cf. pp. 64-67 of Eigil Mølgaard, *Vagthund og syndebuk. Personlig beretning om finanskrisen i Danmark 1987-1995 (Watchdog and Scapegoat. A Personal Account of the Financial Crisis in Denmark 1987-1995 – in Danish only)*, Børsens Forlag, 2003.

² Cf. Per H. Hansen, *Banking Crisis and Lenders of Last Resort: Denmark in the 1920s and the 1990s*, published in Youssef Cassis, Gerald D. Feldman and Ulf Olsson (eds.), *The Evolution of Financial Institutions and Markets in Twentieth-century Europe*, Scholar Press, 1995; and Per H. Hansen, *På glidebanen til den bitre ende. Dansk bankvæsen i krise 1920-1933 (On the Slippery Slope to the Bitter End. Danish Banks in Crisis 1920-1933 – in Danish only)*, Odense Universitets Forlag, 1996.

³ Cf. pp. 293-298 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990 (Monetary History of Denmark 1960-1990 – in Danish only)*, Danmarks Nationalbank, 1993. The Act was adopted in order to comply with the European Commission's 1986 recommendation for the establishment of a deposit guarantee scheme by those countries which had not yet done so. All banks were to contribute to the Guarantee Fund for Depositors and Investors based on the size of the deposits comprised by the scheme. Only part of the banks' contributions (originally 25 per cent) were to be paid to the Fund, which placed the funds in liquid assets. The rest of the contributions were in the form of a guarantee. The administration of the Guarantee Fund was allocated to Danmarks Nationalbank until April 2010, when it was taken over by the Financial Stability Company (the Winding-Up Company). Originally, the limit for the Guarantee Fund's coverage of ordinary deposits in connection with suspension of payments or compulsory winding-up was kr. 250,000. This was raised to kr. 300,000 in 1995, kr. 375,000 (50,000 euro) in 2009 and kr. 750,000 (100,000 euro) in 2010. Certain special deposits are covered in full.

coverage for bank depositors' losses up to a specified amount in the event of the compulsory winding-up of a bank.

Secondly, Danmarks Nationalbank's losses in connection with the crisis of C&G Banken in 1987 were contributory factors behind the introduction in the latter part of the 1980s of requirements for the pledging of collateral for the banks' day-to-day overdraft facilities on their current accounts at Danmarks Nationalbank.¹

Finally, on several occasions the banking crises led to a discussion of the institutional anchoring of Danish financial supervision.

ECONOMIC BACKGROUND TO THE CRISES

In the mid-1980s, strong growth in the Danish economy and bank lending was replaced by an unusually long period of low growth and rising unemployment. The reversal resulted in low or negative real growth in lending by banks, cf. Chart 5.1. The weak economic development hit some sectors, notably the construction and property sectors, particularly hard and resulted in large write-downs in the banking sector for a number of years, cf. Chart 5.2.

In the late 1980s, and particularly in the early 1990s, Norway, Sweden and Finland experienced actual systemic crises during which significant parts of the banking sector, including several large nationwide banks, got into difficulties. This had major consequences for the rest of the economy.² The difficulties in the three countries' banking sectors were brought on by a reversal after a period characterised by strong credit

¹ Cf. p. 275 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993; and Chapter 3.

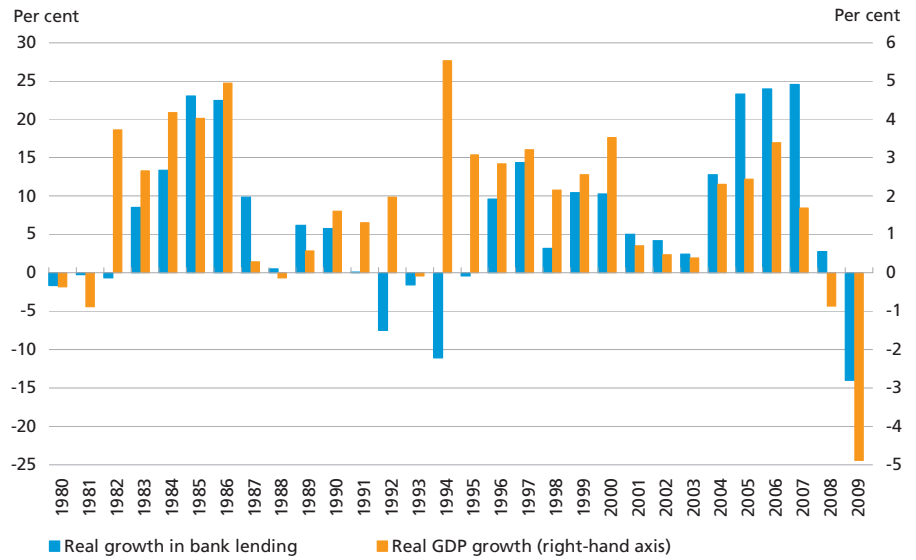
² For a more detailed description of the causes and management of the systemic crises in the three Nordic countries, including a comparison with Denmark, see Chapter 5 and Appendix 3 of Ministry of Economic Affairs, *Den danske pengeinstitutsektor (The Danish Banking Sector – in Danish only)*, Schultz, 1994; Ministry of Economic Affairs, *Redning af pengeinstitutter siden 1984 (Bank Rescue Operations since 1984 – in Danish only)*, Schultz, 1995; and Finn Østrup, *Finansielle Kriser (Financial Crises – in Danish only)*, Thomson, 2008.

The Norwegian banking crisis is also discussed in Official Norwegian Reports, *Bankkrisen (The Banking Crisis – in Norwegian only)*, Report from a committee established by Royal decree on 4 October 1991, submitted to the Norwegian Ministry of Finance, Trade and Customs on 31 August 1992, No. 32, 1992. Governor Bodil Nyboe Andersen, Danmarks Nationalbank, participated in the latter investigation.

The Swedish banking crisis is covered in, inter alia, Stefan Ingves and Göran Lind, The management of the bank crisis – in retrospect, Sveriges Riksbank, *Quarterly Review*, No. 1, 1996; Lars Heikensten, Financial Crisis – Experiences from Sweden, speech at a seminar arranged by the Swedish Embassy, Seoul, Korea, 15 July 1998; Peter Englund, The Swedish Banking Crisis: Roots and consequences, *Oxford Review of Economic Policy*, Vol. 15(3), 1999; Lars Jonung and Thomas Hagberg, How costly was the crisis of the 1990s? A comparative analysis of the deepest crises in Finland and Sweden over the last 130 years, *European Commission Directorate-General for Economic and Financial Affairs Economic Papers*, No. 224, March 2005; and Pär Österholm, The Effect on the Swedish Real Economy of the Financial Crisis, *National Institute of Economic Research Working Paper*, No. 110, 2010.

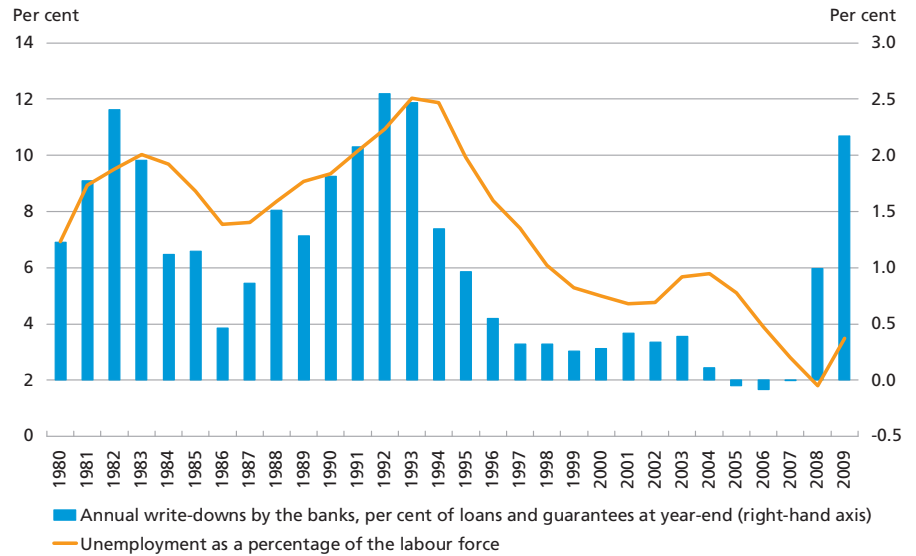
Perspectives on the Nordic banking crises in a larger international and historical context can be found in e.g. Edward J. Fryd, The Length and Cost of Banking Crises. *IMF Working Paper*, No. 99, March 1999; Glenn Hoggarth, Ricardo Reis and Victoria Saporta, Cost of Banking System Instability: Some Empirical Evidence, *Journal of Banking and Finance*, Vol. 26(2), 2002; Carmen. M. Reinhart and Kenneth S. Rogoff, *This Time is Different*, Princeton University Press, 2009; and Carmen. M. Reinhart and Vincent R. Reinhart, After the Fall, *NBER Working Paper*, No. 16334, 2010.

REAL GROWTH IN BANK LENDING AND GDP 1980-2009 Chart 5.1



Note: Real growth in lending by the banks is based on deflation by the consumer price index.
 Source: Statistics Denmark and the Danish Financial Supervisory Authority.

ANNUAL BANK WRITE-DOWN RATIOS AND AVERAGE UNEMPLOYMENT RATES 1980-2009 Chart 5.2



Note: As from 2005, write-downs (losses and provisions) were no longer made on the basis of a demonstrated risk of losses under the prudence concept. Instead, lending was to be written down according to a neutrality principle following an objective indication of a value impairment, cf. p. 63-64 of Danmarks Nationalbank, *Financial stability*, 2005. Negative figures for losses and provisions reflect a reversal of previous write-downs and provisions as income.

Source: Statistics Denmark and Danish Financial Supervisory Authority.

 ACCUMULATED LOSSES OF OUTPUT IN CONNECTION WITH THE BANKING
 CRISES IN NORWAY, SWEDEN AND FINLAND IN THE 1980s AND THE EARLY
 1990s

Table 5.1

Per cent of GDP	Gross loss of output	Net loss of output
Norway	12.9	6.8
Sweden	12.5	3.8
Finland	28.8	10.0

Note: The loss of output is calculated on the basis of two calculations of the real GDP development trend. One calculation concerns the actual long-term trend development in real GDP (actual GDP trend), while the other concerns the trend development in real GDP, assuming that the banking crisis had never occurred (counterfactual GDP trend). The gross loss of output is calculated as the accumulated percentage deviation between the counterfactual GDP trend and the actual GDP trend in the years of banking crisis. The net loss of output is calculated as the gross loss of output minus the accumulated percentage deviation between the actual GDP trend and the counterfactual GDP trend in the boom years preceding the banking crisis.

Source: P. 139 of Christoph Schwierz, Economic costs associated with the Nordic banking crisis, Chapter 4 of Norges Bank, *Occasional Papers*, No. 33, 2004.

growth and liberalisation of the financial sector. Initially, the crises put the public sector under considerable financial strain. Capital injections and public loans in Sweden, Norway and Finland in the period 1991-94 alone were estimated at 65 billion Swedish kronor, 25 billion Norwegian kroner and 44 billion Finnish markka, respectively, in 1995. In addition, guarantees accounted for substantial amounts.¹ Many of the original costs were subsequently recouped, however, as part of the public expenditures took the form of share capital in the banks concerned that could later be sold.

For Denmark, the costs to the central government and Danmarks Nationalbank in the form of loans and outstanding guarantees, etc. to rescue Danish banks (excluding Faroese banks) up through the 1980s and the early 1990s could similarly be estimated at around kr. 5-6 billion, cf. Appendix 5.A. Here, too, many of the original disbursements were recouped in the form of repayments of loans and dividend from estates being wound up.

It is extremely difficult to estimate the economic costs of banking crises. To assess the loss of output in connection with banking crises, hypotheses as to the potential economic development if the crises had never occurred are necessary. Furthermore, it may be argued that it is not enough to consider the lower output that may result from a crisis-stricken financial sector's reluctance to lend (gross loss of output). When calculating the loss of output, a positive case may be made for setting off the higher output created during a preceding expansion of lending, if this was at the root of the actual banking crisis (net loss of output).

Table 5.1 shows a number of calculations of the loss of output in connection with the banking crises in Norway, Sweden and Finland in

¹ Cf. p. 86 of Ministry of Economic Affairs, *Redning af pengeinstitutter siden 1984*, Schultz, 1995.

ACCUMULATED BANK LOSSES IN THE NORDIC COUNTRIES 1981-95		Table 5.2
Per cent of lending	1981-95	1991-94
Denmark	23.1	10.8
Finland	23.1	15.0
Norway	19.4	9.2
Sweden	24.8	19.3

Note: Data for the period 1981-95 relates to losses, while data for the period 1991-94 relates to losses and provisions.
 Source: P. 79 of Finn Østrup, *Finansielle Kriser*, Thomson, 2008; and p. 88 of Ministry of Economic Affairs, *Redning af pengeinstitutter siden 1984*, Schultz, 1995.

the 1980s and the early 1990s. Calculations of this kind are subject to considerable uncertainty. However, there cannot be any doubt that the banking crises in the three countries had significant economic consequences.

In the period 1981-95, the size of the losses incurred by Danish banks and calculated relative to the lending volume was, overall, more or less on a par with those of the other Nordic countries, cf. Table 5.2. But Denmark undoubtedly rode out the crisis years much more easily than the other Nordic countries. This is attributable to various factors:

- In the other Nordic countries, especially in Sweden and Finland, the losses were concentrated to a greater extent on a few years in the early 1990s. In Denmark, on the other hand, the losses were spread over a somewhat longer period.
- As previously mentioned, the most serious crises in Denmark were limited to small and medium-sized banks in contrast to the situation in the other Nordic countries where several leading banks experienced serious problems. In Norway, the three largest commercial banks were nationalised; two out of the six largest Swedish banks received financial support from the government, and in Finland most of the public support were allocated to two large banks.¹
- The Danish financial sector's solvency ratio was relatively high before the onset of the crisis compared with those of the other Nordic countries,² reflecting that, historically, Danish banks had been subject to more stringent equity capital requirements. In most other countries, the introduction of new capital requirements by the Basel Committee³ constituted a tightening compared with the previous capital requirements when they came into force in the early 1990s. In Denmark, the transition to the Basel capital adequacy rules resulted in a significant

¹ Cf. pp. 64-66 of Ministry of Economic Affairs, *Den danske pengeinstitutsektor*, Schultz, 1994.

² Cf. pp. 76-77 of Ministry of Economic Affairs, *Den danske pengeinstitutsektor*, Schultz, 1994.

³ Capital base of minimum 8 per cent of risk-weighted assets. The Basel Committee on Banking Supervision was set up in 1974 with the purpose of strengthening the stability of the international financial system. The Committee, which has its secretariat at the Bank for International Settlements, BIS, is mainly made up representatives of the central banks and financial supervisory authorities of a number of countries.

easing of the statutory capital requirements imposed on banks,¹ enabling Danish banks to absorb losses for a number with years of poor financial results.

- In Denmark, provisions had traditionally been made for exposures where there was a risk of losses, thus providing banks with extra financial cushioning. Moreover, the accounting rules had been based on expensing both actual losses and provisions (estimated future losses). In this way losses were spread over several years. In Finland, up to 1990, profit and loss accounts were based solely on expensing actual losses. While both Norway and Sweden required provisions to be made for expected losses, the Swedish requirements for provisions had been eased at the onset of the banking crisis. In Norway, the requirement for provisions had by no means been complied with in practice, and a gradual tightening of the rules with effect from 1986-87 coincided with the downturn of the business cycle.²
- The liberalisation of the Danish financial sector in the 1970s and 1980s had been a gradual process, giving the sector the necessary time to improve risk management systems and prepare for the new, more liberal market conditions. In the other Nordic countries, the deregulation process was carried out at a later time, thus stretching over a shorter period.³
- The fact that in its practice the Danish Financial Supervisory Authority had attached great importance to visiting individual banks with a view to reviewing exposures and procedures may also have played a role. In the other Nordic countries, rather than being based on visits to individual banks, which was only the case to a modest extent, the supervision focused more on controlling figures and formal rules based on the banks' reports.⁴
- Finally, the 1990 merger of six of the largest Danish banks with varying solvency ratios into two major banks⁵ contributed to the robustness of the Danish banking sector.

Despite the above, there was no doubt that the crisis in the Danish financial sector in the second half of the 1980s, and particularly in the early 1990s, was indeed serious. If the 1992 liquidity crisis in Unibank,

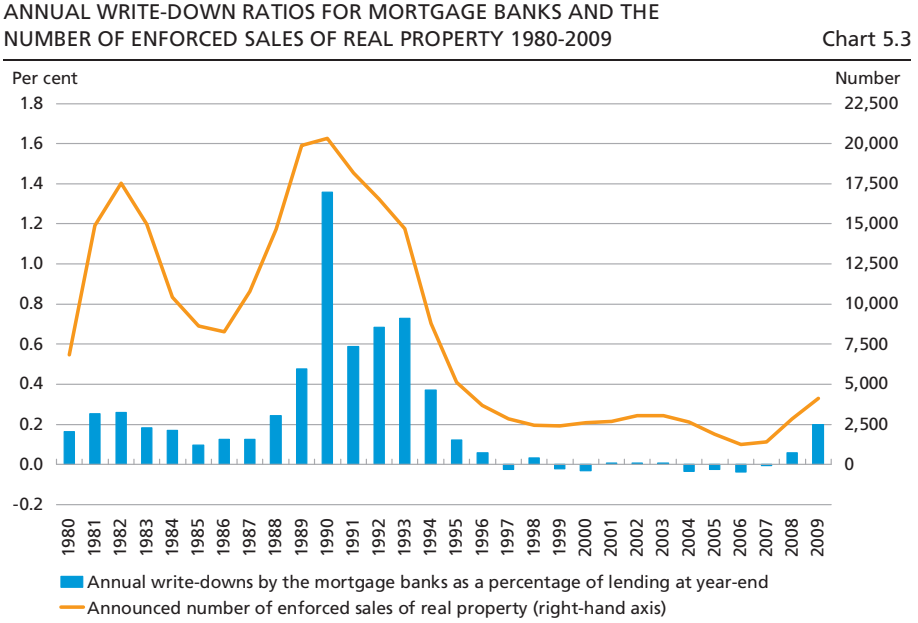
¹ Cf. p. 45 of Danmarks Nationalbank, *Report and Accounts*, 1991. See also Chapter 4.

² Cf. p. 49 of Danmarks Nationalbank, *Report and Accounts*, 1992; and pp. 78-79 of Ministry of Economic Affairs, *Den danske pengeinstitutsektor*, Schultz, 1994.

³ Cf. p. 48 of Danmarks Nationalbank, *Report and Accounts*, 1992; and pp. 73-75 of Ministry of Economic Affairs, *Den danske pengeinstitutsektor*, Schultz, 1994.

⁴ Cf. pp. 77-78 of Ministry of Economic Affairs, *Den danske pengeinstitutsektor*, Schultz, 1994

⁵ Den Danske Bank, Handelsbanken and Provinsbanken merged and continued as Den Danske Bank, while Sparekassen SDS, Privatbanken and Andelsbanken were combined to form Unibank, cf. Chapter 4.



Note: In 1990, the principles for write-downs (losses and provisions) were restructured so that future provisions had to be made for probable losses and not only for certain losses. In principle, some of the provisions in 1990 therefore relate to previous years. Negative figures for losses and provisions reflect a reversal of previous write-offs and provisions as income.

Source: Statistics Denmark and Danish Financial Supervisory Authority.

Denmark's second largest bank, had developed unfavourably, it might have had very serious implications for the stability of the Danish financial sector and the economy in general, especially since Denmark was plunged into a major currency crisis during the same period, cf. Chapter 1.

A comparison of the extent of the crises in Denmark and the other Nordic countries should also allow for the differences in institutional home financing conditions. In Finland and Norway, mortgage institutions played a lesser role than banks, and the Swedish mortgage institutions suffered relatively modest losses.¹ In Denmark, on the other hand, the mortgage banks saw a few years of substantial losses and provisions from the late 1980s, cf. Chart 5.3. The particularly large losses were caused by the general economic conditions, among other things, where low growth, limitation of interest deductibility² and tightening of the home financing rules³ had led to decreasing property prices and excess commercial property capacity, cf. Chart 5.4. The mortgage banks' write-

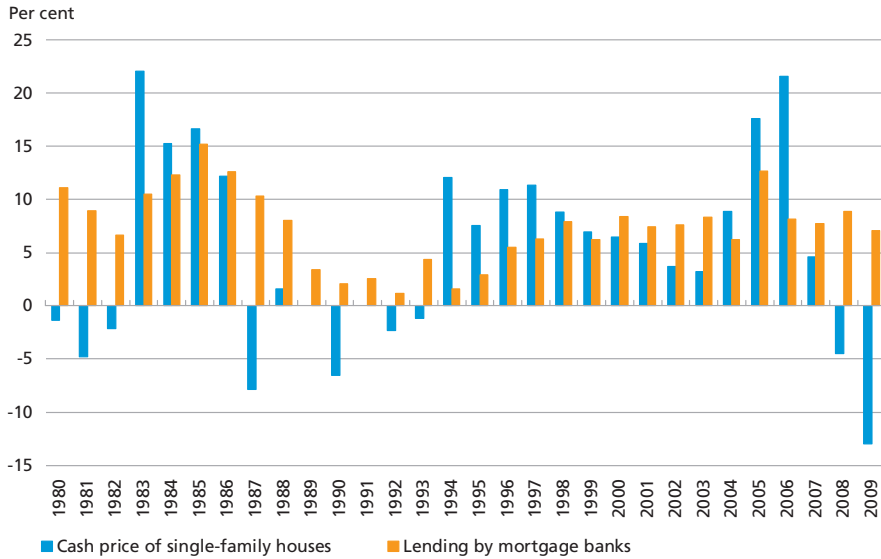
¹ Cf. p. 73 of Finn Østrup, *Finansielle Kriser*, Thomson, 2008.

² Via the tax reform with effect from 1987, cf. Kristian Kjeldsen and Erik Haller Pedersen, Taxation of Asset Income and the Financial Markets, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2002.

³ Via the October 1986 package of austerity measures. This included the "mixed loan" requirement (40 per cent serial loans and 60 per cent annuity loans) to finance owner-occupied housing. This increased the redemption element and initial debt service payments compared with pure annuity loans, cf. p. 301 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993.

GROWTH IN LENDING BY MORTGAGE BANKS AND IN THE CASH PRICE OF SINGLE-FAMILY HOUSES 1980-2009

Chart 5.4



Source: Statistics Denmark and the Danish Financial Supervisory Authority.

offs became particularly large in 1990. At that time the provision principles were restructured so that in future provisions had to be made for probable losses and not only for certain losses.

Finally, to emphasise the gravity of the Danish crisis it should also be mentioned that the two largest Danish insurance companies at the time, Baltica and Hafnia, suffered major losses in the early 1990s and ceased to exist as independent companies. While the losses did not result from their core activities (insurance), loan-financed strategic investments contributed significantly to the crises for both companies. Baltica was also hit by the property market slowdown as the group had invested in and provided loans for cyclical fixed assets financed via short-term loans.¹

FOLLOW-UP ON THE BANKING CRISES

In connection with the adoption of the government guarantee for Danmarks Nationalbank's loan to Varde Bank in December 1993, the government decided that a report was to be prepared on the situation in the banking sector and the expectations of the development in the coming years. The report was prepared by the Interdepartmental Liaison Committee on the Financial Market.²

¹ Cf. p. 83 of Ministry of Economic Affairs, *Økonomiministeriet i 50 år (50 Years of the Danish Ministry of Economic Affairs – in Danish only)*, Schultz, 1995.

² Cf. Ministry of Economic Affairs, *Den danske pengeinstitutsektor*, Schultz, 1994.

In connection with the report, Danmarks Nationalbank emphasised that the problems of individual banks in the preceding years should to a large extent be seen in light of the protracted recession; that problems of individual banks could never be avoided completely; that, in principle, winding-up should continue to be a possible solution for ailing banks; that a decision on how to solve a bank's problems would be unavoidable for the government in some cases, and that the government's involvement in such situations must be minimised.¹

Furthermore, Danmarks Nationalbank was of the opinion that it was impossible to provide general solutions beforehand for the management of a crisis in a bank. Consideration had to be given to various issues when assessing how to manage the crisis. The outcome of such considerations would vary according to the situation of the individual bank and the general conditions in the sector at the time in question. A crisis in a large nationwide bank in a period when the sector was in difficulties would have far more serious implications than an isolated crisis in a specialist bank.²

Under normal money-market conditions it was difficult to imagine that solvent banks would be unable to borrow in the money market if they were willing to pay the market rate for a loan with the relevant credit risk. But of course situations might arise where, due to asymmetrical information, a solvent bank might find it difficult to finance lending in the market. Experience from Varde Bank also showed that, in practice, it was often difficult to distinguish between illiquidity and insolvency. As a result, Danmarks Nationalbank, like other central banks, was extremely restrictive when it came to providing liquidity guarantees to banks whose solvency was subject to the slightest doubt.³

In the autumn of 1994, the government asked the Interdepartmental Liaison Committee on the Financial Market to prepare a report on the economic consequences of the crises in the banking sector since 1984.⁴ The report was published in June 1995. The Committee concluded that in the cases where the government and Danmarks Nationalbank had participated in the rescue of banks during the period in question, the economic values that were rescued had been proportionate to the total public costs.⁵

In addition, the Committee sought to identify any distinctive features in relation to the development in the accounts of banks that had had to

¹ Cf. p. 9 of Danmarks Nationalbank, *Monetary Review*, November 1994.

² Cf. p. 12 of Danmarks Nationalbank, Report on the Danish Banking Sector, *Monetary Review*, November 1994.

³ Cf. p. 14 of Danmarks Nationalbank, Report on the Danish Banking Sector, *Monetary Review*, November 1994.

⁴ Cf. Ministry of Economic Affairs, *Redning af pengeinstitutter siden 1984*, Schultz, 1995.

⁵ Cf. p. 86 of Ministry of Economic Affairs, *Redning af pengeinstitutter siden 1984*, Schultz, 1995.

close down in the period 1984-93. It concluded that it was impossible to assess with any certainty based on individual key ratios, on key ratios taken as one, or on a group of key ratios whether a bank was headed for serious trouble. Many continuing banks had been characterised by the same key ratio values as the banks that had closed down. As a result, it was impossible to identify a group of key ratios that could serve as an indicator of banks in jeopardy.¹ However, the Committee was able to establish that:

"The banks that closed down during the boom in the mid-1980s were characterised by very strong lending growth over a short period before the crisis. This may indicate that the growth in lending took place, to some extent, at the cost of credit quality."²

Furthermore, the Committee stated that:

"The last financial statements of all the closed-down banks included clean audit reports."³

and that:

"Most of the banks that closed down were characterised by management failure."⁴

THE GUARANTEE FUND FOR DEPOSITORS AND INVESTORS AND THE RESCUE OF DANISH BANKS

In connection with the solution for Himmerlandsbanken in 1993, the government and the Danish Bankers Association agreed that they would endeavour to make it possible for the Guarantee Fund to contribute to the controlled winding-up of ailing banks in future.⁵

The agreement led to an amendment of the Act on the Guarantee Fund for Depositors and Investors with effect from 1994.⁶ This enabled the Guarantee Fund to contribute financially to a solution where all or

¹ Cf. p. 49 of Ministry of Economic Affairs, *Redning af pengeinstitutter siden 1984*, Schultz, 1995.

² Quotation from pp. of 49-50 Ministry of Economic Affairs, *Redning af pengeinstitutter siden 1984*, Schultz, 1995.

³ Quotation from p. 9 of Ministry of Economic Affairs, *Redning af pengeinstitutter siden 1984*, Schultz, 1995.

⁴ Quotation from p. 8 of Ministry of Economic Affairs, *Redning af pengeinstitutter siden 1984*, Schultz, 1995.

⁵ Cf. p. 13 of Danmarks Nationalbank, Report on the Danish Banking Sector, *Monetary Review*, November 1994.

⁶ Cf. p. 54 of Danmarks Nationalbank, *Report and Accounts*, 1993.

part of a bank's activities were transferred to another bank if such a solution meant lower costs for the Guarantee Fund than covering the depositors in the event of compulsory winding-up. The decision on the Guarantee Fund's possible participation in such solutions had to be made by the Guarantee Fund's Board of Directors based on information from the Danish Financial Supervisory Authority.

In connection with the difficulties of Lindknud-Hovborg Andelskasse in June 1994, the Guarantee Fund took the view that the requirement for the Fund's active participation had not been met. The reason was that if Lindknud-Hovborg Andelskasse was acquired by Brørup Sparekasse, the financial burden on the Fund would exceed its estimated loss in the event of compulsory winding-up.¹ As a result, Lindknud-Hovborg Andelskasse could no longer continue as an independent bank and was ordered to be wound up at the end of June 1994.

In the mid-1990s, the European Commission called into doubt the option for the Guarantee Fund to contribute financially to the compulsory winding up of an ailing bank.² The reason was that the European Commission found the arrangement to be in conflict with the rules on state aid as it involved statutory contributions from the banks to the Fund. The relevant provision was removed from the Act on the Guarantee Fund for Depositors and Investors in June 2007.³

ORGANISATION OF THE FINANCIAL SUPERVISORY SYSTEM

The Supervisory Authority for Banks and Savings Banks was originally established in 1963 through a merger of the Supervisory Authority for Banks and the Supervisory Authority for Savings Banks⁴. Historically, the supervision of Danish banks and savings banks had never been placed under the auspices of the central bank.

Danmarks Nationalbank's involvement in the rescue of banks in the mid-1980s and the losses incurred in that connection led to deliberations as to whether transferring the Supervisory Authority for Banks to Danmarks Nationalbank would be the most rational solution.⁵ At the annual meeting of the Danish Bankers' Association in 1987, governor Erik Hoffmeyer, Danmarks Nationalbank, made the following statement:

¹ Cf. Guarantee Fund for Depositors and Investors, *Beretning og regnskab (Report and Accounts – in Danish only)*, 1994.

² Cf. pp. 4-5 of Guarantee Fund for Depositors and Investors, *Beretning og regnskab*, 1996.

³ At the same time, the option was introduced to establish voluntary private contingency schemes. Against this background, the Danish Bankers Association in June 2007 established "Det Private Beredskab til Afvikling af Nødlidende Banker, Sparekasser og Andelskasser" (the Danish Contingency Association), cf. p. 116 of Danmarks Nationalbank, *Financial stability*, 2007, and p. 78 of Danmarks Nationalbank, *Financial stability*, 2008.

⁴ Cf. p. 15 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993.

⁵ Cf. p. 276 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993.

"It is well-known that in most other countries the Supervision of Commercial Banks and Savings Banks is under the jurisdiction of the central bank, for the simple reason that if the central bank is the granter of liquidity support it must also have knowledge of procedures for the supervision of banks."¹

The Supervisory Authority continued to be organised outside the remit of Danmarks Nationalbank, however, and in 1988 the Danish Financial Supervisory Authority was created as an independent entity under the Ministry of Industry through the merger of the Supervisory Authority for Banks and Savings Banks and the Supervisory Authority for Insurance Companies. The merger was effected primarily for rationalisation purposes rather than to create a single supervisory authority.

The issue of the Danish Financial Supervisory Authority's anchoring emerged again in 1989, following the government's presentation of its plan to streamline the public sector. The idea of transferring the Supervisory Authority to Danmarks Nationalbank aroused strong resentment in the Danish Insurance Association, whose managing director Steen Leth Jeppesen made the following statement in the daily newspaper *Berlingske Tidende* in January 1989:

"I find a possible transfer of the Danish Financial Supervisory Authority to Danmarks Nationalbank problematic. ... I realise that initially this would affect the supervision only, but in my opinion it would not be sustainable in the long term if the legislation remains under the Ministry of Industry."²

The Danish Financial Supervisory Authority remained an independent entity under the Ministry of Industry (later the Ministry of Business and Industry), and in January 1990 the Danish Financial Supervisory Authority also took over the Supervisory Authority for Mortgage Credit Institutes from the National Housing Agency.

In February 1996, the debate on the anchoring of the Danish Financial Supervisory Authority was raised again when an opposition majority launched a discussion on moving the Supervisory Authority from the Ministry of Business and Industry to another ministry or to Danmarks Nationalbank. The matter was raised after the Danish Financial Super-

¹ Cf. Danmarks Nationalbank, "Extract from a Speech by Governor Erik Hoffmeyer at the Annual Meeting of the Danish Bankers Association on December 2, 1987", *Monetary Review*, February 1988.

² Quotation from the article "Finanstilsynet i politisk klemme" (The Danish Financial Supervisory Authority in a Political Fix – in Danish only) in *Berlingske Tidende*, 12 January 1989.

visory Authority had been criticised in connection with the suspension of payments by the Hafnia insurance company in the summer of 1992.¹ The Danish Financial Supervisory Authority's resources also featured in the debate.

In Danmarks Nationalbank's view, it would be unnatural to take over a single supervisory authority that was responsible for the supervision of not only banks and mortgage banks but also insurance companies. Insurance companies were very remote from the group of institutions with which Danmarks Nationalbank was in contact in connection with the implementation of monetary policy. Furthermore, the European trend in this area had been towards the establishment of independent financial supervisory authorities outside the auspices of the central banks. In connection with the work on the Maastricht Treaty, it had also been established that rather than having executive supervisory functions, the European Central Bank, which was charged with implementing the single monetary policy in Stage 3 of Economic and Monetary Union, was only to have advisory functions in connection with the supervision of financial institutions.² In the business daily *Børsen*, governor Bodil Nyboe Andersen, Danmarks Nationalbank, therefore rejected the proposal to transfer the supervisory authority to Danmarks Nationalbank:

"Ultimately, a conflict of interest may arise between Danmarks Nationalbank and the Danish Financial Supervisory Authority and it is consequently inappropriate for the two authorities to belong together. ... Danmarks Nationalbank is banker to the banks and responsible for interest-rate policy as well as monetary and foreign-exchange policy. As I see it, it would be a problem if we are also to supervise the banks."³

At the end of 1996, the Danish Financial Supervisory Authority became an independent entity under the remit of the Ministry of Economic Affairs. In 2001, the Ministry of Economic Affairs and the Ministry of Business and Industry merged into the Ministry of Economic and Business Affairs with the Danish Financial Supervisory Authority as part of its remit.⁴

¹ Cf. the article "Politisk flertal vil flytte Finanstilsynet" (Political Majority Wants to Move the Danish Financial Supervisory Authority – in Danish only) in *Berlingske Tidende*, 26 February 1996.

² Cf. p. 18 of Danmarks Nationalbank, *Report and Accounts*, 1991. However, the Maastricht Treaty included the following provision: "The Council ... may ... confer specific tasks upon the European Central Bank concerning policies relating to the prudential supervision of credit institutions and other financial institutions with the exception of insurance undertakings" (the Treaty of Lisbon, Article 127).

³ Quotation from the article "Nationalbanken afviser at være finanstilsyn" (Danmarks Nationalbank Refuses to Act as Financial Supervisory Authority – in Danish only) in *Børsen*, 27 February 1996.

⁴ Cf. the Danish Financial Supervisory Authority's website.

APPENDIX 5.A: DANMARKS NATIONALBANK'S INVOLVEMENT IN FINDING SOLUTIONS FOR BANKS IN FINANCIAL DISTRESS 1984-95

Kronebanken (1984-85)¹

In December 1984, the Supervisory Authority for Banks and Savings Banks established that Denmark's seventh largest bank was unable to continue as an independent bank after determining a need for additional provisions for a large commitment to a single building contractor in particular. Kronebanken had more than 320,000 deposit accounts, most of them ordinary employee accounts.

Danmarks Nationalbank chose to contribute to a solution based on the following considerations:

"As the negotiations for a merger of Kronebank and another bank have been unsuccessful, the government and Danmarks Nationalbank have decided to ensure the continuation of the bank for the sake of the depositors and other creditors."²

Following negotiations with the government, Danmarks Nationalbank and Denmark's three largest banks provided a guarantee of kr. 500 million to cover any losses in addition to equity and subordinate loan capital. Danmarks Nationalbank's share of the guarantee against losses amounted to kr. 125 million. In addition, Danmarks Nationalbank committed to making liquidity available to Kronebanken.³

The reorganisation of Kronebanken was continued by a new executive board, and a merger of Kronebanken and Den Danske Provinsbank⁴ was agreed in June 1985. This offer did not impose any significant losses on Kronebanken's shareholders.⁵

On formal approval of the agreement, the guarantee against losses provided by Danmarks Nationalbank and the three leading banks became void, and Danmarks Nationalbank's liquidity guarantee also ceased to apply. Danmarks Nationalbank's total costs consisted in interest-rate losses on the liquidity support estimated at kr. 19 million.⁶

¹ Cf. pp. 293-295 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993; pp. 56-57 of Danmarks Nationalbank, *Report and Accounts*, 1984; and p. 63 of Danmarks Nationalbank, *Report and Accounts*, 1985.

² Quotation from a press release issued by Danmarks Nationalbank and the Ministry of Industry on 20 January 1985 (printed on p. 216 of Ministry of Economic Affairs, *Håndtering af pengeinstitutkriser (Managing Banking Crises – in Danish only)*, Schultz, 1997).

³ Cf. a press release from the Supervisory Authority for Banks and Savings Banks of 18 December 1984.

⁴ Later part of Danske Bank.

⁵ Cf. pp. 293-295 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993.

⁶ Cf. p. 79 of Ministry of Economic Affairs, *Redning af pengeinstitutter siden 1984*, Schultz, 1995.

6' Juli Banken (1987-88)¹

6' Juli Banken suspended its payments in March 1987. Danmarks Nationalbank took the following view:

"...6' Juli Banken's method of doing business was so special and its significance for the Danish banking sector so limited that there were no monetary-political reasons for intervention.

The government did, however, establish contact with the Danish Bankers Association for the purpose of establishment of a depositors' guarantee scheme.

In view of the fact that the Bankers Association was already working on the drafting of a general deposit-guarantee scheme, the Nationalbank found it appropriate that an ad hoc scheme for the 6' Juli Banken's depositors be established and the Nationalbank gave a commitment to supply liquidity in support of such a scheme."²

6' Juli Banken had 20,000 deposit accounts, of which just over 90 per cent were of less than kr. 100,000. The Danish Bankers' Association prepared a proposal for an ad-hoc solution that would cover in full all deposits in 6' Juli Banken of less than kr. 50,000 and cover in part all larger deposits. However, representatives of 6' Juli Banken's depositors demanded to be covered in full, and a legislative initiative to establish a deposit guarantee scheme that would also cover 6' Juli Banken's depositors gradually achieved an opposition majority in the Danish Parliament.

At the end of April 1987, Sydbank expressed an interest in acquiring the assets and liabilities of 6' Juli Banken to ensure full depositor coverage. It was a condition that Sydbank would not suffer any financial losses. In June, Danmarks Nationalbank approved a scheme under which Danmarks Nationalbank and two mortgage banks subscribed to subordinate loan capital. Danmarks Nationalbank's share amounted to kr. 125 million. In addition, Danmarks Nationalbank provided liquidity support for Sydbank in the form of a loan of up to kr. 700 million over 18 months at a favourable rate of interest. Finally, Danmarks Nationalbank provided a guarantee for any unbooked guarantees in 6' Juli Banken.

¹ Cf. pp. 295-296 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993; and p. 54 of Danmarks Nationalbank, *Report and Accounts*, 1987.

² Quotation from The Nationalbank's press release of July 1, 1987 concerning the 6' Juli Banken case (printed as Annex 1 to Danmarks Nationalbank, *Report and Accounts*, 1987).

When the winding-up of 6' Juli Banken was completed in 1993, Danmarks Nationalbank had to accept that the kr. 125 million capital injection had been lost. Danmarks Nationalbank also recorded an interest-rate loss on the liquidity support of approximately kr. 50 million.¹

In July 1987, in connection with its involvement in the 6' Juli Bank case, Danmarks Nationalbank stated that:

"... the implementation of a general deposit-guarantee scheme, whereunder all deposits will not be fully covered, must imply that the Nationalbank will not be able to guarantee bank liabilities not covered under such a scheme in any future cases arising."²

C&G Banken (1987-88)³

In the spring of 1987, the Supervisory Authority for Banks and Savings Banks became aware that C&G Banken had exceeded the statutory exposure limits for single exposures in connection with loans and guarantees granted to a construction company. The Supervisory Authority initiated an extraordinary audit that showed a need for additional provisions. In July 1987, two of C&G Banken's principal shareholders put up security for the estimated risks on two major exposures and subscribed to subordinate loan capital together with the other principal shareholders.

In late September 1987, it became evident that the exposure with the construction company required further capital injections. At a meeting with the participation of the Supervisory Authority, the principal shareholders, Kreditforeningen Danmark⁴ and Danmarks Nationalbank, it was decided to spin off the exposures with the construction company to a separate company. The necessary capital base would then be provided by the principal shareholders and Kreditforeningen Danmark.

However, a review of the remainder of the bank made it clear that substantial additional provisions were required. Accordingly, there was no basis for further capital injections, and C&G Banken suspended its payments in October 1987. In the preceding months, Danmarks Nationalbank, in view of the negotiations – and the assumption that C&G Banken was solvent⁵ – had gradually provided extraordinary

¹ Cf. p. 80 of Ministry of Economic Affairs, *Redning af pengeinstitutter siden 1984*, Schultz, 1995.

² Quotation from Danmarks Nationalbank's press release of July 1, 1987 concerning the 6' Juli Banken case (printed as Annex 1 to Danmarks Nationalbank, *Report and Accounts*, 1987).

³ Cf. pp. 296-297 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993; p. 54-55 of Danmarks Nationalbank, *Report and Accounts*, 1987; and p. 46 of Danmarks Nationalbank, *Report and Accounts*, 1988.

⁴ Later renamed Realkredit Danmark, RD.

⁵ Cf. p. 80 of Ministry of Economic Affairs, *Redning af pengeinstitutter siden 1984*, Schultz, 1995.

liquidity support in step with the latter's dwindling access to financing via the money market. On C&G Banken's suspension of payments, Danmarks Nationalbank's claim amounted to kr. 369 million. C&G Banken was ordered to be wound up in May 1988. It had 1,200 depositors who were covered in accordance with the rules of the newly established deposit guarantee scheme.

In 1995, Danmarks Nationalbank received a dividend of kr. 116 million from the estate being wound up, corresponding to around 31 per cent of its claim at the time of C&G Banken's suspension of payments in 1987.¹

Unibank (1992)

In late June 1992 there were rumours that the Danish Financial Supervisory Authority had taken special initiatives such as extraordinary investigations, recommending a merger or similar with respect to Denmark's second largest bank, Unibank². Following an approach from Unibank, the Danish Financial Supervisory Authority issued a press release to disprove these rumours:

"In view of a series of rumours concerning the situation of Unibank, the Danish Financial Supervisory Authority has received an account from the management about the bank's current situation.

In the Supervisory Authority's opinion, the rumours that have come to our notice are completely unfounded.

The Supervisory Authority denies all rumours that it has taken special initiatives regarding Unibank such as extraordinary investigations, recommending a merger or similar.

In view of its general statutory obligation to supervise banks, the Danish Financial Supervisory Authority monitors Unibank as a matter of routine.

The Supervisory Authority is therefore familiar with the bank's major corporate exposures and is of the opinion that the bank has hedged the risk on these exposures to a normal extent.

Based on the information received by the Supervisory Authority there is no cause for concern about Unibank's solvency or liquidity."³

¹ Cf. p. 87 of Danmarks Nationalbank, *Report and Accounts*, 1995.

² Later part of Nordea.

³ Quotation from a press release issued by the Danish Financial Supervisory Authority on 19 June 1992 (printed on pp. 7-8 of Ekspertgruppen til undersøgelse af Finanstilsynets forvaltning (Expert Group Investigating the Danish Financial Supervisory Authority's Administration), *Uddrag af baggrundsrapport. Unibank-sagen (Excerpt of Background Report. The Unibank Case – in Danish only)*, 2004).

In order to:

"... counter any liquidity problems abroad for Danish banks as a consequence of the rumours concerning a bank which did comply with the solvency requirements, the Nationalbank made a stand-by agreement with Unibank to supply liquidity if necessary..."¹

Danmarks Nationalbank issued a press release on 21 June 1992² describing the stand-by arrangement and stating that Danmarks Nationalbank would provide the necessary liquidity. This soon restored calm in relation to Unibank. In early 1995, Danmarks Nationalbank and Unibank formally agreed to terminate the stand-by agreement.³

In 1999, the Minister for Economic Affairs decided to launch an investigation into the Danish Financial Supervisory Authority's administration of a number of cases from the first half of the 1990s, including Unibank. The expert group investigating the matter issued its report in 2004, raising criticism against the Danish Financial Supervisory Authority's press release of 19 June 1992 about the situation in Unibank:

"This declaration of support was given without any real reservations and left the impression that the Danish Financial Supervisory Authority had profound knowledge of Unibank's situation at the time of the press release. However, the available data shows that the Danish Financial Supervisory Authority had no detailed knowledge of the bank's circumstances at the time of the press release. It had been several months since the Supervisory Authority had had any in-depth contact with Unibank regarding significant financial conditions."⁴

The expert group stated the following about Unibank's financial situation in June 1992:

"... that Unibank was undoubtedly facing a serious situation..."⁵

¹ Quotation from p. 49 of Danmarks Nationalbank, *Report and Accounts*, 1992.

² Printed as Annex 4 to Danmarks Nationalbank, *Report and Accounts*, 1992.

³ Cf. p. 49 of Danmarks Nationalbank, *Report and Accounts*, 1994.

⁴ Quotation from p. 61 of Ekspertgruppen til undersøgelse af Finanstilsynets forvaltning i nogle større sager ca. 1990-95 (Baltica-sagen, Hafnia-sagen m.fl.) Sammenfattende rapport (Expert Group to Investigate the Danish Financial Supervisory Authority's Administration of a Number of Large Cases c. 1990-95 (the Baltica Case, the Hafnia Case, et al.) Summary report – in Danish only), 23 June 2004.

⁵ Quotation from p. 23 of Ekspertgruppen til undersøgelse af Finanstilsynets forvaltning, *Uddrag af baggrundsrapport. Unibank-sagen*, 2004.

and that:

"... if it did not receive external help the rumours might prove the bank's undoing. On the other hand, the bank's situation was not so serious as to require dramatic government measures."¹

Varde Bank (1992-93)²

During the autumn of 1992 it became clear that Varde Bank, Denmark's 9th largest bank, was in need of a comprehensive adjustment of its balance-sheet structure and business scope. Loans for financing activities and property administration accounted for a large part of the bank's lending – sectors that had been affected by the economic downturn of the previous years. Moreover, the bank's situation was sensitive to developments in a substantial number of large individual arrangements.

The solution for Varde Bank was divided into several phases. In order to give Varde Bank the necessary time for the adjustment, Danmarks Nationalbank in cooperation with the Danish Financial Supervisory Authority in November 1992 established a Guarantee Consortium with the four largest banks in Denmark as well as three regional banks. The kr. 750 million guarantee³ was only to be invoked if the equity capital and the supplementary capital had been lost. In connection with the establishment of the Guarantee Consortium, Danmarks Nationalbank agreed to stand by with liquidity for Varde Bank.

During 1993 the situation gradually changed as the losses continued, and Varde Bank's future as an independent institution became increasingly doubtful. In the autumn of 1993 it was assessed that Varde Bank no longer met the statutory solvency requirement and was unable to continue as an independent bank. In order to provide a stable environment in the period necessary to achieve a solution for the controlled winding-up of Varde Bank, Danmarks Nationalbank, at the request of the Minister for Finance and against a government guarantee, undertook to provide the necessary liquidity for the bank.

¹ Quotation from p. 23 of Ekspertgruppen til undersøgelse af Finanstilsynets forvaltning, *Uddrag af baggrundsrapport. Unibank-sagen, 2004.*

² The Varde Bank crisis is discussed in detail in Niels C. Andersen and Jens Dalsgaard, *The Winding-Up of Varde Bank*, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2005; and *Rapport afgivet af udvalget til undersøgelse af visse forhold omkring Aktieselskabet Varde Bank – in Danish only*, Schultz, 1994. The latter report was prepared by an impartial expert committee appointed by the Danish Financial Supervisory Authority and Danmarks Nationalbank in March 1994.

³ Cf. the Danish Financial Supervisory Authority's and Danmarks Nationalbank's joint press release of November 8, 1992 on the establishment of a guarantee consortium for Varde Bank (printed as Annex 8 to Danmarks Nationalbank, *Report and Accounts*, 1992). Danmarks Nationalbank subscribed to kr. 250 million of the guarantee. In addition, Danmarks Nationalbank was liable for the remaining kr. 500 million of the guarantee capital. The guarantee was to remain in force until 30 November 1995 but was later extended, cf. below.

Negotiations were conducted with a number of banks with a view to selling Varde Bank's core activities (all deposits and loans in the core area of Ribe County). The solution¹ was that Sydbank Sønderjylland² took over those activities, while in March 1994 the remaining part of Varde Bank was restructured as a winding-up company under the name of VB Finans. As Sydbank Sønderjylland acquired more liabilities than assets, Varde Bank had to pay Sydbank Sønderjylland for the transfer. In order to enable the divestment to Sydbank Sønderjylland and the continued operation of the winding-up company, Danmarks Nationalbank granted Varde Bank a government-guaranteed³ loan of around kr. 4 billion. This loan replaced Danmarks Nationalbank's previous liquidity commitment.

Danmarks Nationalbank had the following motives for participating in the Varde Bank solution:

"In view of the conditions in the other Nordic countries it was important not to weaken confidence in the Danish financial system, since this might in itself lead to liquidity problems for otherwise sound Danish banks. Weakened confidence would in all probability primarily affect medium-sized banks, which to a large degree relied on liquidity from abroad. It was found that Varde Bank was too large to go into insolvent liquidation proceedings without any risk of systemic implications, and that owing to Varde Bank's size and poor financial position other banks would not be inclined or able to acquire it outright.

Moreover, despite its expansion Varde Bank still had a very large market share in south-western Jutland (approximately 30-40 per cent), and it was deemed that closing the bank could have a very significant impact on the local economy."⁴

¹ Political coordination was undertaken by the "interministerial reference group for Varde Bank". The reference group was managed by the Ministry of Industry, and the other members were the Ministry of Finance, the Danish Financial Supervisory Authority, the Ministry of Economic Affairs and Danmarks Nationalbank.

² Later renamed Sydbank.

³ Cf. a legal document of 14 December 1993 to the Finance Committee of the Folketing (Danish parliament) applying for a government guarantee for a drawing right on Danmarks Nationalbank (in Danish only). The loan was liable after Tier 1 capital, supplementary capital and guarantee capital but before subordinate loan capital. In connection with the solution, the guarantors accepted to extend the period of the above-mentioned kr. 750 million guarantee to ensure the necessary time to settle the exposures remaining in Varde Bank. To ensure that VB Finans was operated in accordance with the model's underlying intentions, and to ensure insight into the ongoing winding-up process, Danmarks Nationalbank was allowed to appoint an advisor to the company's Board of Directors, without whom no significant financial decisions could be made. In addition, the loan from Danmarks Nationalbank could be terminated at two weeks' notice.

⁴ Quotation from pp. 112-113 of Niels C. Andersen and Jens Dalgaard, *The Winding-Up of Varde Bank*, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2005.

In 1999, the Minister for Economic Affairs decided to launch an investigation into the Danish Financial Supervisory Authority's administration of a number of large cases of systemic importance from the first half of the 1990s, including Varde Bank. The expert group investigating the matter presented its report in 2004.¹ No serious criticism was raised against the handling of the Varde Bank case.

In general, the winding-up of Varde Bank was characterised by stretching over a very long period due to legal proceedings. In connection with the final winding-up of the estate of VB Finans in 2002, Danmarks Nationalbank took over the risk for the remaining settlement.²

Danmarks Nationalbank's loan of around kr. 4 billion to Varde Bank in 1993 had been repaid by the end of 2000. Its immediate losses on the guarantee provided in 1992 could later be calculated at approximately kr. 200 million. In addition, a reduction was granted on the interest rate payable by VB Finans (interest rebate) if the company operated with a deficit. This was the case in the first two years of the winding-up company's life, during which the rebate totalled approximately kr. 120 million. The calculation of Danmarks Nationalbank's total costs should also include the costs to Danmarks Nationalbank of remunerating the employees working on the case, as well as the costs of legal assistance. It should be noted, however, that the subsidiary of the estate being wound up, VB Finans af 1996 A/S, paid taxes of just over kr. 60 million on operating profits from its establishment up to the liquidation in 2003.³

Himmerlandsbanken (1993)

In 1993, the financial problems of Himmerlandsbanken became so serious that it was unable to continue as an independent bank. In August 1993, Sparekassen Nordjylland⁴ acquired the majority of the bank's assets and liabilities (excluding subordinate capital). The remaining part of Himmerlandsbanken was ordered to be wound up.⁵ This solution entailed that all deposits were covered.

In connection with the solution, Danmarks Nationalbank together with a number of banks (the Guarantee Consortium) provided a guarantee of maximum kr. 150 million. Danmarks Nationalbank's share was kr. 90 million. The purpose of the guarantee was to cover certain specific exposures that were not taken over by Sparekassen Nordjylland, and also to cover unbooked guarantees or compensation claims on the Himmerlands-

¹ Ekspertgruppen til undersøgelse af Finanstilsynets forvaltning, Finanstilsynets forvaltning i nogle større sager ca. 1990-95 (Baltica-sagen, Hafnia-sagen m.fl.), 2004.

² Cf. p. 57 of Danmarks Nationalbank, *Report and Accounts*, 2004.

³ Cf. pp. 120-121 of Niels C. Andersen and Jens Dalsgaard, *The Winding-Up of Varde Bank*, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2005.

⁴ Later renamed Spar Nord.

⁵ Cf. pp. 48-49 of Danmarks Nationalbank, *Report and Accounts*, 1993.

banken winding-up estate. In addition to the guarantee of kr. 150 million, Danmarks Nationalbank provided an unlimited guarantee for unbooked liabilities. Claims accepted as unsecured claims on the winding-up estate were subject to the guarantees of the Guarantee Consortium or Danmarks Nationalbank. On the other hand, the purpose of the guarantee was not to cover the share capital or subordinate capital.

In March 2001, the estate being wound up lost a case at the court of Hobro concerning Himmerlandsbanken's issue in 1991 of bonds as subordinate capital. The estate was ordered to acknowledge that the capital originally subscribed to as subordinate capital was to be recognised as an unsecured claim on the estate being wound up. The estate appealed the case to the High Court, and the Western High Court upheld the ruling of the City Court in September 2002. In April 2005, the Supreme Court upheld the previous rulings of the Court of Hobro and the Western High Court because the prospectus did not provide a true and fair view of Himmerlandsbanken's financial situation, meaning that the subscription as subordinate capital was unreasonable under the Danish Contracts Act.¹ According to the Supreme Court judgment, subordinate capital was subscribed to as bonds covered by the guarantee. Danmarks Nationalbank's total contribution to the winding-up of Himmerlandsbanken amounted to around kr. 90 million.²

In connection with the solution for Himmerlandsbanken in 1993, the government and the Danish Bankers Association agreed that they would endeavour to make it possible for the Guarantee Fund for Depositors and Investors to contribute to the controlled winding-up of ailing banks in future. In this connection Danmarks Nationalbank stated that in future it could not be expected to act as guarantor in cases such as the winding-up of Himmerlandsbanken.³

With a view to investigating and clarifying the sequence of events relating to certain tax conditions in connection with Sparekassen Nordjylland's acquisition of exposures from Himmerlandsbanken, an investigative court was established by a parliamentary resolution of 4 November 1993.⁴

¹ Cf. pp. 122-123 of Niels C. Andersen and Jens Dalsgaard, The Winding-Up of Varde Bank, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2005.

² Cf. p. 49 of Danmarks Nationalbank, *Report and Accounts*, 1993; and pp. 57-58 of Danmarks Nationalbank, *Report and Accounts*, 2005.

³ Cf. p. 13 of Danmarks Nationalbank, Report on the Danish Banking Sector, *Monetary Review*, November 1994.

⁴ Cf. *Beretning afgivet af undersøgelsesretten vedrørende visse forhold i forbindelse med Sparekassen Nordjyllands overtagelse af engagementer fra Himmerlandsbanken* (Report presented by the investigative court concerning certain issues in relation to Sparekassen Nordjylland's acquisition of exposures from Himmerlandsbanken – in Danish only), Schultz, 1994. It was followed by a legal inquiry, cf. Per Harder, *Redegørelse vedr. visse tjenestemænds forhold i sagen om Sparekassen Nordjyllands overtagelse af dele af Himmerlandsbanken* (Survey concerning the circumstances of certain officials in the matter of Sparekassen Nordjylland's acquisition of parts of Himmerlandsbanken – in Danish only), 1996.

The Banking Crisis in the Faroe Islands (1992-93)¹

The banking crisis in the Faroe Islands in the early 1990s was characterised by strong media focus and gave rise to considerable political controversy internally in the Faroe Islands and Denmark and also between the Faroe Islands and Denmark.

In the autumn of 1992, after a period of major economic problems in the Faroe Islands, the Danish Financial Supervisory Authority established that two large Faroese banks – Sjóvinnubankin and Føroya Banki – were in need of additional provisions of such a magnitude that both banks needed capital injections to continue to meet the statutory solvency requirement.

As part of an agreement between the Danish and Faroese governments, in November 1992 the Faroese government injected new capital of almost kr. 500 million into Sjóvinnubankin via a fund (the Financing Fund of 1992). Under the agreement, the bank's share capital was written down substantially. The Faroese government financed part of the capital injection – kr. 300 million – by a loan from the Danish government.

In the autumn of 1992, Føroya Banki received a capital injection of around kr. 330 million from its majority shareholder, Den Danske Bank.

During 1993 the Faroese economy and thus the situation of the Faroese banks deteriorated further. Due to increasing difficulties in the fishing industry, in February 1993 the Faroese government had to contribute a further kr. 350 million to Sjóvinnubankin's capital base via the Financing fund, once again financed by a loan from the Danish government.

For both loans from the Danish government, Danmarks Nationalbank provided bridge financing against a government guarantee. In connection with the capital injection in February 1993, Danmarks Nationalbank provided contingency liquidity for Sjóvinnubankin – also against a government guarantee – to cover the need for liquidity until the loan to the Faroese government could be disbursed.²

Following an approach from Den Danske Bank to Prime Minister Poul Nyrup Rasmussen, negotiations concerning an exchange of equity were initiated in February 1993 between Den Danske Bank and the Financing

¹ The banking crisis in the Faroe Islands in the 1990s is discussed in Richard Mikkelsen, *Færøerne i bankkrisens tegn (The Faroe Islands and the Banking Crisis – in Danish only)*, Handelshøjskolens Forlag, 2001; Jørn Astrup Hansen, *Færøske Banker 1906-2006 (Faroese Banks 1906-2006 – in Danish only)*, Handelshøjskolens Forlag, 2007; Richard Mikkelsen, *Bankvæsenet på Færøerne – et historisk rids*, Festskrift til Anders Ølgaard (*The Faroese Banking Sector – A Historical Outline – A Festschrift in Honour of Anders Ølgaard – in Danish only*), Special Edition of Nationaløkonomisk Tidsskrift, 1996; and *Beretning afgivet af Undersøgelseskommissionen vedrørende Den Færøske Banksag*, bind 1-5 (*Report presented by the Commission Investigating the Faroese Banking Case, Volumes 1-5 – in Danish only*), January 1998.

² Cf. pp. 49-50 of Danmarks Nationalbank, *Report and Accounts*, 1992.

Fund of 1992 with the participation of the Danish Financial Supervisory Authority. Den Danske Bank was to transfer its controlling interest in Føroya Banki to the Financing Fund in exchange for a minority stake of 30 per cent in Sjóvinnubankin. The agreement was approved by the Danish government on 12 March 1993, and by the Faroese government on 22 March 1993, after which date the shares were exchanged.¹

In May 1993 there were concerns that the Faroese banks would need further capital injections. As both the banks and the Faroese government were also experiencing liquidity problems, an agreement was concluded between the Danish and the Faroese governments. In this connection, the Faroese government received a commitment for a government loan of kr. 1 billion. Of this, an amount of kr. 560 million was reserved for the Faroese banks, should they need further capital injections via the Financing Fund.²

In September 1993, according to the Danish Financial Supervisory Authority, the need for additional provisions was of such a magnitude that a new agreement had to be concluded between the Danish and the Faroese governments. Under this agreement, the Faroese government was granted a further government loan of kr. 1.3 billion. The entire amount was to be used for the recapitalisation of Føroya Banki and Sjóvinnubankin.

In October 1993, an investigation led the Danish Financial Supervisory Authority to conclude that the smallest Faroese bank, Fossbankin, no longer met the statutory solvency requirement. The bank was ordered to be wound up in November 1993, and its depositors were covered under the rules of the Guarantee Fund for Depositors and Investors.³

Føroya Banki and Sjóvinnubankin were merged in April 1994 under the name of Føroya Banki.

A Commission was set up by Act no. 356 of 8 June 1995 to investigate the Faroese Bank case. Section 2(1) of the Act defined the terms of reference for the Commission as follows:

"Section 2. The Commission's mandate is to investigate and clarify the overall sequence of events in connection with the initiatives taken to save SB and FB from financial collapse from 1992 up to the merger of the banks in 1994. Notably, the Commission is to investigate the circumstances of the exchange of equity on 22 March 1993 between Den Danske

¹ Cf. pp. 18-19 of *Beretning afgivet af Undersøgelseskommissionen vedrørende Den Færøske Banksag*, January 1998.

² Cf. p. 9 of Danmarks Nationalbank, *Monetary Review*, August 1993.

³ Cf. p. 50 of Danmarks Nationalbank, *Report and Accounts*, 1993.

Bank and the Financing Fund of 1992. The investigation may involve all information of significance to the implementation of the Commission's mandate."

The Commission's report was published in 1998. It raised criticism against Danmarks Nationalbank for not communicating clearly enough its view on the equity exchange in 1993.¹

After the deep crisis in the early 1990s, economic recovery was achieved in the Faroe Islands. From the second half of the 1990s up to 2002, the Faroese economy saw a favourable period of strong growth in GDP and exports. In step with the improvement in the economy, the Financing Fund of 1992, which had provided a large proportion of the funds for the banks during the crisis, obtained substantial assets via its ownership of most of Føroya Bank. Part of Føroya Bank was privatised in 2007, when 66 per cent of the bank's share capital was offered for sale.²

¹ Cf. pp. 954-55 of *Beretning afgivet af Undersøgelseskommissionen vedrørende Den Færøske Banksag*, January 1998.

² Cf. p. 5 of Jørn Astrup Hansen, *Færøske Banker 1906-2006*, Handelshøjskolens Forlag, 2007; Bjarne Skafte and Pernille Thinggård, The Economic Situation in the Faroe Islands, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2003; Niels Bartholdy, Status of the Faroese Economy, Mid-2007, *Danmarks Nationalbank Monetary Review*, 3rd Quarter 2007; and p. 78 of the High Commissioner of the Faroe Islands, *Beretning 2008 (Report 2008 – in Danish only)*.

CHAPTER 6

The Financial Stability Efforts of Central Banks

INTERNATIONAL TREND: FINANCIAL STABILITY REVIEWS

In the period from the mid-1990s, central banks worldwide increased their focus on the stability of the financial system as a whole. In 1996, the Bank of England published the first issue of its regular Financial Stability Review focusing on financial institutions, financial markets and payment systems. Sveriges Riksbank and Norges Bank followed suit in 1997, and by 2005 around 50 central banks all over the world were publishing such regular reviews.¹

The reviews sought to identify where the most significant risks for the financial system would be likely to arise. Indeed, central banks had always been interested in the stability of the financial system – as participants in payment systems and lenders of last resort, and in view of the importance of financial stability in monetary-policy transmission. Consequently, the new regular reviews incorporated analyses previously prepared for internal use.

The hope was that, by focusing on risk, the reviews would contribute to financial stability, cf. the following statement from Eddie George, Governor of the Bank of England, and Sir Andrew Large, Chairman of the Securities and Investments Board, on the publication of the Bank of England's first financial stability review in 1996:

"The risks faced by market practitioners have become more complex, and the techniques used to control them more sophisticated. ... So it is more important than ever for practitioners and regulators to keep abreast of the latest developments.

With that objective in mind, the Bank, in association with the Securities and Investments Board, has decided to launch the Financial Stability Review. It will provide a regular forum

¹ Cf. Martin Čihák, *How Do Central Banks Write on Financial Stability?*, *IMF Working Paper*, No. 163, June 2006; and Jakob de Haan, Richard Jong-A-Pin and Sander Oosterloo, *Financial stability reviews: A first empirical analysis*, *Journal of Financial Stability*, Vol. 2(4), 2007.

in which a range of contributors can set out their ideas about risk management, financial regulation, and developments in financial markets. Hitherto, much of the work of the Bank and the SIB on these issues has been carried out behind the scenes. At the same time, public expectations of the financial services industry, and of the regulatory framework that underpins it, are higher than ever. In these circumstances, there is a clear need to ensure that the objectives, and limits, of financial regulation are well understood. We believe that, by placing more of our ideas and research in the public domain, we will be better able to do this."¹

In connection with the presentation in 1997 of its first financial stability review, Sveriges Riksbank emphasised the recent bank crisis and the Riksbank's role in the payment system:

"The Financial Market Report will twice a year present the Riksbank's appraisal of tendencies in the financial system in the context of the Riksbank's function as the overseer of payment system stability. It is evident, not least from the bank crisis, that the State has strong reasons for promoting good stability in the financial system."²

DANMARKS NATIONALBANK'S FINANCIAL STABILITY REVIEWS

Financial stability was the topic of the Nordic central bank meeting in Sweden in June 1999, and Danmarks Nationalbank published its first regular financial stability review in 2000. For the first two years, the reviews were part of Danmarks Nationalbank's Monetary Review, but from 2002 they became separate publications.

In its first financial stability review, Danmarks Nationalbank cited the international trend in the area as the motivation for deciding to publish financial stability reviews. The objective of the reviews was to provide a systematic overview of developments and their importance for financial stability:

"One of the principal tasks of Danmarks Nationalbank, like other central banks, is to contribute to the efficiency and stability of the financial markets. Financial stability is essen-

¹ Quotation from p. 2 of Bank of England in association with the Securities and Investment Board, *Financial Stability Review*, Issue one, Autumn 1996.

² Quotation from the press release "Satisfactory stability in the financial system", 7 November 1997.

tial to maintaining sound macroeconomic development. The following analysis ... describes trends in the financial sector in Denmark and their implications for financial stability. The central banks in many other countries, among them Sweden, Norway and Finland, have prepared similar analyses of the development in the financial sector."¹

Danmarks Nationalbank's reviews defined financial stability as a condition whereby the overall financial system was robust enough for any problems within the sector not to spread and prevent the financial markets from functioning as providers of capital and financial services.

Like the reviews of other central banks, Danmarks Nationalbank's first financial stability reviews were dominated by analyses that had previously been prepared for internal use, e.g. analyses of trends in the banks' financial statements and general financial and economic trends. Over time, Danmarks Nationalbank developed tools specifically for analysis of financial stability.²

Since Danmarks Nationalbank was not the supervisory authority for Danish banks and mortgage banks, it had no information about the accounts of the individual institutions beyond the information published in the institutions' annual and interim reports. Indeed, the purpose of Danmarks Nationalbank's financial stability reviews was not to consider the robustness of the individual financial institutions. That was the task of the Danish Financial Supervisory Authority.³

Analysis of financial stability turned out to be a difficult exercise for central banks in Denmark and abroad. Moreover, with the exception of communication, central banks had no instruments to ensure financial stability at the macroeconomic level in the same way as they used interest and liquidity policies to achieve price stability.

One of the issues considered in the reviews was the shift in the banks' funding structures around the millennium rollover. Until the late 1990s, the banks' deposits and lending were of similar magnitude. In the early years of the new millennium the banks, against the backdrop of strong lending growth, accumulated a large deposit deficit (customer funding gap), which was financed e.g. by issuing bonds and by borrowing from credit institutions abroad, cf. Chapter 4. In 2001, Danmarks Nationalbank issued a warning that these financing sources might be less stable than traditional deposits:

¹ Quotation from p. 19 of Danmarks Nationalbank, *Financial stability, Monetary Review*, 2nd Quarter 2000.

² E.g. failure rate and stress test models, cf. Box 6 of Danmarks Nationalbank, *Financial stability*, 2003; and Box 6 of Danmarks Nationalbank, *Financial stability*, 2006.

³ Cf. p. 9 of Danmarks Nationalbank, *Financial stability*, 2003.

"The banking institutions' lending has increased significantly since 1995 ... Growth in lending was stronger than growth in deposits, and by the end of 2000 the banking institutions had a deposit deficit on an aggregated level. ... 40 per cent of the banking institutions in the analysis experienced a deposit deficit at the end of 2000. ...

Deposit deficits are financed by funding from other sources, e.g. by increasing the net debt to other credit institutions in Denmark and abroad, by issuing bonds, or by increasing the capital base. The banking institutions' net debt to other credit institutions, as well as their bond issues, have risen as the deposit surplus has declined.

In connection with the change in the balance-sheet structure it is important to evaluate the refinancing risk associated with the types of funding used. In periods of tighter credit expansion than at the present time, debt to other credit institutions is typically less stable than deposits in terms of actual maturity and volume."¹

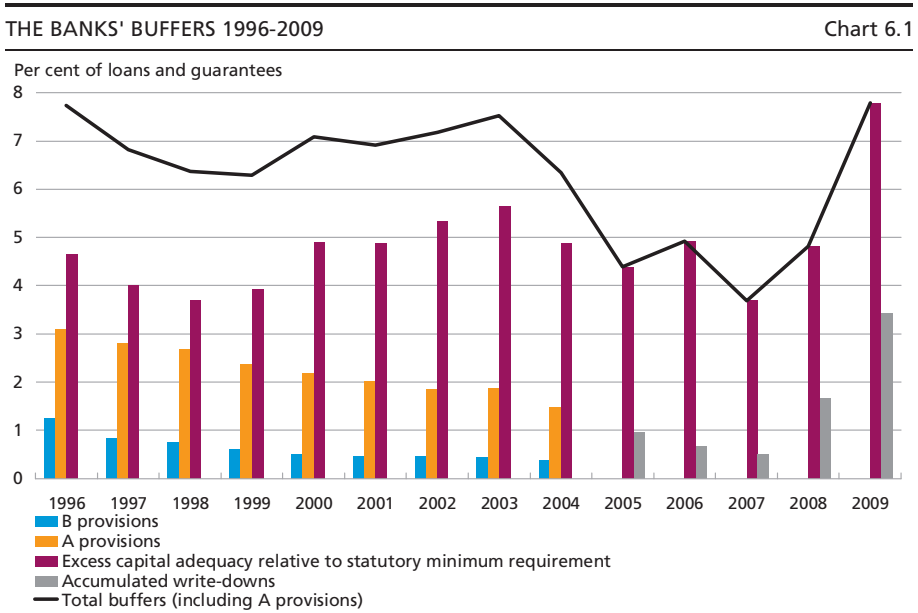
In several of the years following 2001, Danmarks Nationalbank pointed out the risks entailed by the banks' growing deposit deficit.² In general, short-term financing via the international money and capital markets was less stable and more sensitive than deposits to changes in the credit ratings of the institutions. Moreover, shifts in the general risk appetite and risk premiums could quickly raise the price of market-based financing.

Another topic discussed in Danmarks Nationalbank's financial stability reviews was the reduction of the banks' buffers against losses resulting from the transition to new accounting standards as of 1 January 2005, cf. Chart 6.1. The reason was that the new rules abolished the principle of prudential provisions:

"The banking institutions' total buffer against losses comprises cumulative provisions for losses on loans and guarantees, and the part of the capital that exceeds the statutory 8 per cent requirement. Overall, the sector's buffer was reduced in 2004 due to a fall in the excess capital adequacy, as well as lower provisions. The new IAS/IFRS ac-

¹ Quotation from pp. 36-37 of Danmarks Nationalbank, *Financial Stability, Monetary Review*, 2nd Quarter, 2001.

² Cf. pp. 25-26 of Danmarks Nationalbank, *Financial stability*, 2002; pp. 28-29 of Danmarks Nationalbank, *Financial stability*, 2003; pp. 108-109 of Danmarks Nationalbank, *Financial stability*, 2006; and p. 7 of Danmarks Nationalbank, *Financial stability*, 2007.



Note: Up to end-2004 provisions were broken down as A and B provisions. A provisions were for probable losses, while B provisions were for unavoidable losses. A provisions were supposed to have a certain buffer effect.
 Source: Danish Financial Supervisory Authority and annual and interim reports.

counting standards, effective from 1 January 2005, and the new capital-adequacy rules, Basel II, will both have an impact on the size and composition of the future buffers of the banking institutions.

In general, the banking institutions should exert caution in relation to minimising their buffers."¹

A third issue was the banks' high lending growth. Danmarks Nationalbank described these risks in more cautious terms. Historically, however, there was evidence of a link between lending growth and losses:

"A major part of the – mainly small and medium-sized – banking institutions with the strongest growth in lending in the period 1996-2000 accounted for the largest increase in losses and provisions in 2001"²,

but such correlations were not necessarily stable over time:

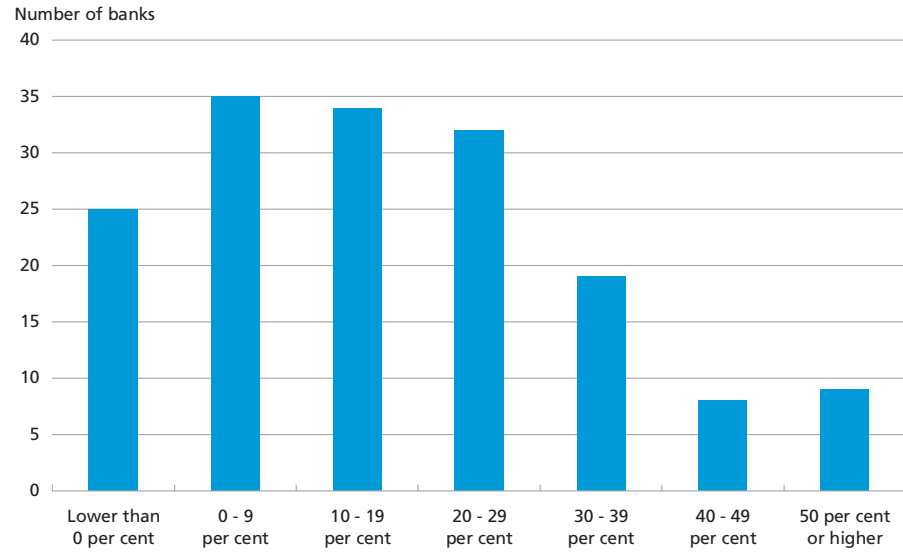
"Historically, periods of high lending growth have often been followed by rising losses and provisions, indicating that

¹ Quotation from p. 9 of Danmarks Nationalbank, *Financial stability*, 2005.

² Quotation from p. 23 of Danmarks Nationalbank, *Financial stability*, 2002.

DANISH BANKS' LENDING GROWTH IN 2005

Chart 6.2



Source: Danish Financial Supervisory Authority.

credit quality tends to deteriorate during periods of high lending growth. However, the high lending growth in the late 1990s has not resulted in increased losses and provisions to the same extent as previously. A possible explanation is that the economic decline in 2002 and 2003 was relatively modest, causing the rate of unemployment to rise only slightly. Moreover, other vital factors, such as property prices, developed favourably."¹

Finally, on the basis of published financial statements it was difficult to identify the institutions whose high lending growth could jeopardise them in a period of strong lending growth for virtually all banks.

In 2005 overall lending by banks rose by 25 per cent on the preceding year. 17 of the 160 or so banks experienced lending growth in excess of 40 per cent, and in nine cases the growth rate was 50 per cent or higher, cf. Chart 6.2.

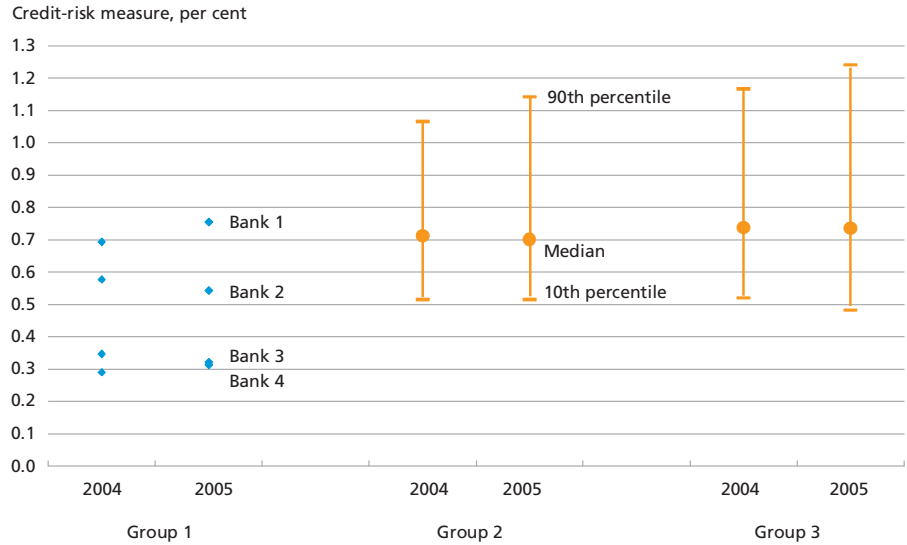
The credit risk was generally lower for the large Danish banks than for other Danish banks in 2005, cf. Chart 6.3. The main reason was that the estimated failure rate was lower for the companies using the large Danish banks than for those using the medium-sized and small banks.²

¹ Quotation from pp. 17-18 of Danmarks Nationalbank, *Financial stability*, 2005.

² Cf. pp. 28-31 of Danmarks Nationalbank, *Financial stability*, 2006

10TH, 50TH AND 90TH PERCENTILES FOR CREDIT RISK ON THE LENDING PORTFOLIOS OF BANKS IN THE DANISH FINANCIAL SUPERVISORY AUTHORITY'S GROUPS 1-3, 2004 AND 2005

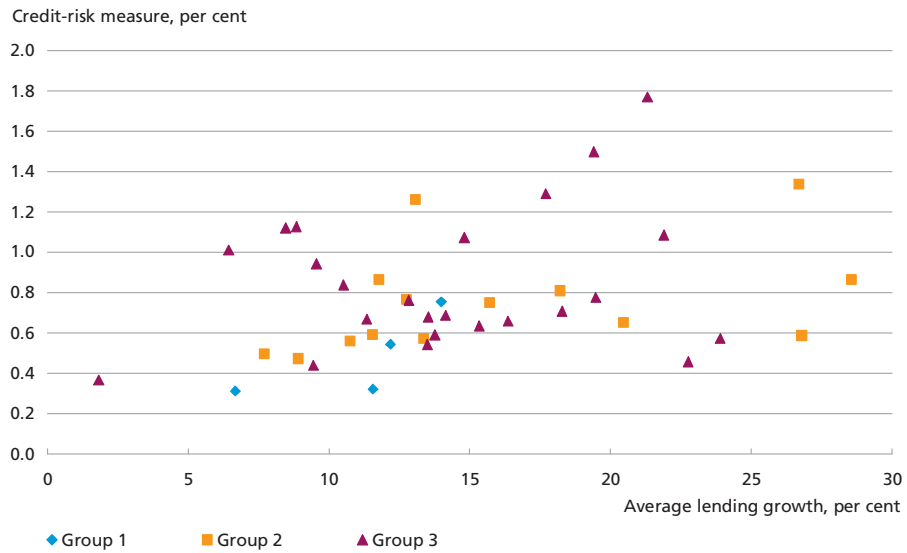
Chart 6.3



Note: The credit risk measure is a measure of the risk of losses on the banks' lending portfolios, calculated using Danmarks Nationalbank's failure-rate model. The method of calculation is described in Box 5, "Calculation of banking institutions' credit risk on their lending portfolios" in Danmarks Nationalbank, *Financial stability*, 2006.
 Source: P. 30 of Danmarks Nationalbank, *Financial stability*, 2006.

RELATION BETWEEN CREDIT RISK AND AVERAGE LENDING GROWTH, 2002-05, BANKS IN GROUPS 1, 2 AND 3

Chart 6.4



Note: Lending growth has been calculated as an average of lending growth for the years 2002-05.
 Source: P. 20 of Danmarks Nationalbank, *Financial stability*, 2006.

There was a tendency for high lending growth in the period 2002-05 to coincide with higher credit risk, cf. Chart 6.4. The credit-risk spread between banks with high lending growth was relatively large, however.

COOPERATION AGREEMENTS AND FINANCIAL CRISIS MANAGEMENT EXERCISES

In the period from the late 1990s, credit institutions in many countries generally engaged more and more in cross-border activities, cf. Chapter 4. Consequently, there was increasing focus on how to establish more formalised cross-border relations between national authorities, especially in areas not covered by EU legislation.¹

At the informal Ecofin meeting in Lisbon in April 2000, the ministers and central bank governors discussed the Brouwer Report on Financial Stability that had been prepared by an ad hoc working party under the auspices of the Economic and Financial Committee. One of the conclusions of the report was that the practical cooperation between supervisory authorities and central banks needed to be strengthened e.g. by stepping up the exchange of information.² In April 2001, the report was followed up by another report from the "Brouwer group", focusing on crisis prevention and management as well as the need for greater cooperation and formalised agreements between the various authorities involved nationally and internationally.³

Danmarks Nationalbank welcomed the enhanced cross-border cooperation on financial stability and regarded it as a must in an increasingly globalised world:

"The financial sector is developing towards increasingly large units crossing traditional sector divides and national borders. This makes greater demands of the managements of the groups in question and of the authorities in the relevant countries, including cooperation between the authorities.

...

Where a branch is as large as or larger than the home-country entity, or a branch in an individual host country is so large that it has systemic importance and could affect the financial stability of the host country, very close collabor-

¹ Cf. the chapter "Branches of Foreign Credit Institutions" in Danmarks Nationalbank, *Financial stability*, 2004.

² Cf. p. 71 of Danmarks Nationalbank, Financial Stability, *Monetary Review*, 2nd Quarter 2000.

³ Cf. p. 83 of Danmarks Nationalbank, Financial Stability, *Monetary Review*, 2nd Quarter 2001.

ation should be established between the authorities across national borders, irrespective of the home-country supervision."¹

In the years after the millennium rollover, Danmarks Nationalbank concluded a number of international agreements on cooperation in the financial stability area:

- Effective 1 March 2003, the central banks and supervisory authorities within the EU concluded a Memorandum of Understanding, MoU, on exchange of information in the event of a banking crisis. The purpose was to ensure cooperation and exchange of information between supervisory authorities and central banks in the EU in the initial phases of a cross-border financial crisis.²
- On 1 July 2005, the banking supervisory authorities, central banks and finance ministries of the EU agreed on an MoU on cooperation in financial crisis situations. The MoU related to principles and procedures for exchange of information between authorities within the EU in the event of a banking crisis where there was a risk that the crisis would spread to several member states and also be of a systemic nature. To further strengthen cross-border cooperation between the authorities, the MoU also related to issues such as contingency planning, stress tests and crisis exercises.³
- On 11 June 2003, the central banks of Denmark, Finland, Iceland, Norway and Sweden signed an MoU on financial crisis management. The MoU was applicable to a crisis in any bank which was domiciled in a Nordic country and had at least one cross-border subsidiary in the area. The MoU would not be applicable if the bank in question was represented in other Nordic countries via branches.⁴ The focus of the MoU was on practical arrangements. The MoU stated that any central bank may call for a meeting of a crisis management group comprising high-level officials from all central banks. Furthermore, the MoU indicated which central bank was to take the leading role and outlined the contacts the central banks needed to make with supervisory authorities, ministries, bank managers and other parties. Finally, the MoU also specified which information should be obtained from the bank concerned and analysed.⁵

¹ Quotations from pp. 81 and 87 of Danmarks Nationalbank, *Financial stability*, 2003.

² Cf. p. 56 of Danmarks Nationalbank, *Report and Accounts*, 2003.

³ Cf. p. 58 of Danmarks Nationalbank, *Report and Accounts*, 2005.

⁴ Cf. p. 22 of Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2003.

⁵ Cf. Danmarks Nationalbank's press release "Nordic Central Banks Conclude MoU on Financial Crisis Management" of 12 June 2003 (printed on pp. 105-106 of Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2003).

Increased central-bank focus on financial stability also generated a need for clarification of the division of work between national authorities. In the spring of 2005, an MoU concerning financial supervision was concluded between Danmarks Nationalbank, the Danish Ministry of Finance, the Danish Ministry of Economic and Business Affairs and the Danish Financial Supervisory Authority. The MoU confirmed the existing informal and pragmatic cooperation on maintaining financial stability and, if required, coordinating the handling of financial crises by the parties to the MoU. Responsibility for the cooperation was anchored in a Coordination Committee on Financial Stability made up of representatives of all four authorities. Under the MoU, Danmarks Nationalbank and the Danish Financial Supervisory Authority also concluded a bilateral MoU. This MoU was to contribute to transparency in relation to the cooperation, and contribute to a clearer division of tasks, easier administration and exchange of knowledge and information between the two parties. The MoU comprised three sub-agreements on the stability of the financial system, financial statistics, and payment systems and clearing centres, respectively.¹

The MoUs on financial stability were not intended as manuals, answer books or handbooks that should be followed to the letter in the event of a financial crisis, but rather as checklists. All crises would differ from previous experience in several respects and would have to be managed accordingly. However, the MoUs provided useful and systematic guidelines concerning exchange of information and cooperation in the event of a systemic crisis. Moreover, the MoUs contributed to closer practical cooperation between the authorities in periods of calm financial systems and created valuable networks and contacts that could play a decisive role when tensions were high. This applied especially in connection with the exercises in management of simulated financial crises which were conducted among the Nordic countries and in an EU context. However, experience showed that real-life banking crises inevitably involved special, case-specific circumstances that were difficult to take into account when planning such exercises.

¹ Cf. p. 58-59 of Danmarks Nationalbank, *Report and Accounts*, 2005. The MoU is printed on pp. 21-23 of Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2005.

CHAPTER 7

Economic and Monetary Union in the EU, EMU

THE LONG ROAD TO THE SINGLE CURRENCY¹

The launch of the euro as "book money" in 1999 and physical euro banknotes and coins in 2002 marked the end of a lengthy process towards a single currency that started more than 30 years earlier.

The idea of an Economic and Monetary Union, EMU, in the European Community, EC, was first launched in 1970 with the preparation of the Werner plan.² At the time, the EC consisted of Belgium, France, the Netherlands, Italy, Luxembourg and West Germany. The economic foundation for the plan was the high degree of economic growth and stability enjoyed by the EC member states during the 1960s. Exchange rates were kept stable within the Bretton Woods system where each currency was pegged to the US dollar, subject to a fluctuation band of +/- 1 per cent. The EC member states had imposed a slightly narrower fluctuation band of +/- 0.75 per cent on themselves, and in practice the exchange rates were kept even more stable. No EC currencies were realigned in the period 1962-68. This pattern of calm and stability was broken in 1969 when the French franc came under strong pressure and finally had to be devalued, while the D-mark was revalued.

At the European Council in The Hague, the Netherlands, in December 1969, at the initiative of German Chancellor Willy Brandt a decision was taken to prepare a plan for the establishment of an economic and monetary union. Willy Brandt's EMU initiative can be seen as an attempt

¹ Cf. Jens Thomsen, *Udviklingen i det monetære samarbejde* (Development in Monetary Cooperation – in Danish only), *Samfundøkonomen*, No. 3, 1989; Jens Thomsen, *Danmark og økonomisk og monetær union* (Denmark and Economic and Monetary Union – in Danish only), *Dansk Udenrigspolitisk Årbog*, 1989; CEPR, *The Monetary Future of Europe*, papers from a conference 11-12 December 1992, March 1993; Jens Pagter Kristensen, Thomas Aslev Christensen and Gitte Wallin Pedersen, *Europæisk monetært samarbejde – fra EMS til ØMU* (European Monetary Cooperation – from EMS to EMU – in Danish only), Handelshøjskolens Forlag, 1998; Niels Bartholdy and Jens Thomsen, Euro 2002, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2002; Daniel Gros and Niels Thygesen, *European Monetary Integration*, 2nd Edition, Longman, 1998; Niels Thygesen, *Perspectives on Europe's Monetary Unification*, *EPRU-Analysis*, No. 23, December 2004; Tommaso Padoa-Schioppa, *The Euro and Its Central Bank*, MIT Press, 2004; and Hanspeter K. Scheller, *The European Central Bank – History, role and functions*, 2nd revised edition, European Central Bank, 2006.

² Cf. p. 167 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990* (Monetary History of Denmark 1960-1990 – in Danish only), Danmarks Nationalbank, 1993.

to actively embrace closer cooperation within the Community to accommodate the concerns of other EC member states, especially France, at the perspectives of Willy Brandt's new dialogue with East Germany ("Ostpolitik").

The decision at the Hague summit led to the appointment of a working group headed by Pierre Werner, Luxembourg's Premier, with the remit to prepare a plan for the establishment of EMU. The Werner group submitted its report in October 1970 outlining the "indispensable structures and mechanisms" of a final EMU. These included irrevocably locked exchange rates, full liberalisation of capital flows, and transfer of considerable economic and political competence from the national to the Community level. The report called for the establishment of a common "centre for economic-policy decisions" (including decisions on the national public budgets), as well as a common central bank. The report proposed a transition to EMU in three stages until 1980, but did not clearly define the stages.

Despite the adoption of a resolution by the EC Council of Ministers in March 1971¹ on the implementation of the Werner plan in three stages, the plan stranded and was never realised. This was also the case for the outline EMU plans which were part of the agreement on the establishment of the European Monetary System, EMS, in 1979. In the spring of 1978 Germany's Chancellor, Helmut Schmidt, launched the idea of a European Monetary System. In the first instance, Schmidt had only discussed the idea with the French President, Giscard d'Estaing², but it was submitted to the other Heads of State or Government of the EC member states at the European Council in Copenhagen in April 1978 under the Presidency of Danish Prime Minister Anker Jørgensen.

With the EMS, a declaration of intent was adopted whereby the considerations would continue and a "final system", including a European monetary fund, would be established within 2 years. This could be interpreted in various ways, from the pooling of a small proportion of the member states' foreign-exchange reserves to the establishment of an actual European central bank. However, it was never quite clear what this entailed, since the plans were shelved after the first turbulent years with the EMS, cf. Chapter 1.³

¹ Cf. p. 19 of the Ministry of Economic Affairs, *Økonomisk og Monetær Union (Economic and Monetary Union – in Danish only)*, November 1989.

² Cf. p. 139 f. of Valéry Giscard d'Estaing, *Le pouvoir et la vie*, Compagnie 12, 1988; and pp. 219-241 of Helmut Schmidt, *Die Deutschen und ihre Nachbarn. Menschen und Mächte II*, Siedler Verlag, 1990. For a more general retrospect, see "Valéry Giscard d'Estaing and Helmut Schmidt on *The Future of Europe – views from Founding Fathers*, Discussion upon invitation of the European Central Bank moderated by Jean-Claude Trichet, Frankfurt am Main, 2 April 2009 (available at the ECB's website).

³ Cf. also European Commission, Documents relating to the European Monetary System, *European Economy*, No. 12, July 1982.

The EC integration process gained new momentum in the mid-1980s with the amendment to the Treaty of Rome known as the Single European Act. The Single European Act took effect in 1987 and formed the basis for establishing the Single Market. Until 1987/88, the plans to establish a monetary union had been put on the back burner. At a conference in Paris in December 1987 and in a subsequent memorandum in January 1988, the French Minister of Finance, Edouard Balladur, proposed that a European central bank be established. Similar thoughts were expressed by the Italian Minister of Finance, Giuliano Amato, in February 1988. Since the spring of 1987, the German Foreign Minister, Hans-Dietrich Genscher, had been advocating an economic and monetary union, and in February 1988 he reiterated the proposal that a European currency area and a European central bank should be established. The European central bank should be based on the same principles of independence as applied to the Bundesbank. The German Minister of Finance, Gerhard Stoltenberg, and his Luxembourg counterpart, Jacques F. Poos, followed up on this debate in, respectively, March and April 1988.¹

At the EC summit in Hanover in June 1988, it was decided to appoint an expert group. Within one year the group was to prepare a report with proposals for the establishment of an economic and monetary union.

THE DELORS COMMITTEE

The expert group (the Delors Committee) consisted of Jacques Delors, President of the European Commission, the central-bank governors of the 12 EC member states (with a "personal mandate"), another member of the European Commission, and three independent experts, including professor Niels Thygesen of the University of Copenhagen.

The Delors Committee submitted its report in April 1989. The report provided a roadmap for an economic and monetary union in 3 stages with increasing responsibility for the formulation of the member states' economic policies. The report was adopted unanimously by the committee members.²

Unanimity was secured with the focus of the final report on how to realise an economic and monetary union. However, the report refrained

¹ Cf. pp. 66-69 of Erik Hoffmeyer, Decisionmaking for European Economic and Monetary Union, Group of Thirty, *Occasional Paper*, No. 62, 2000; pp. 311-312 of Daniel Gros and Niels Thygesen, *European Monetary Integration*, Longman, 1992; and Jens Pagter Kristensen, *Den Europæiske Centralbank (The European Central Bank – in Danish only)*, *Samfundøkonomen*, No. 6, 1988.

² Except for a single point regarding the establishment of a European reserve fund already in Stage 1, cf. Erik Hoffmeyer's speech on the Delors Report to the Danish Economic Association on 2 May 1989 (printed on pp. 19-22 of Danmarks Nationalbank, *Monetary Review*, May 1989).

from discussing the pros and cons of a monetary union, which had been the subject of a fair amount of debate in the Committee. In these debates, Germany, the Netherlands and Denmark had distanced themselves from the very rosy image of EMU's benefits for growth and prosperity being painted at the time.¹ Moreover, it was essential to Germany that the report did not call for national central banks to relinquish monetary independence until the third and final stage of EMU,² and that the plans for the European Central Bank, ECB, and its monetary policy were extensively modelled on the Bundesbank.

The monetary aspects of EMU (a single currency and a single monetary policy) had been the key topics of discussion in the Delors Committee. However, it was also emphasised that general economic policy was to be in compliance with a monetary union – especially as far as fiscal policy was concerned. While it was relatively easy to specify how to establish and organise a European central bank, it was much more difficult to clarify how to coordinate other aspects of economic policy. The Delors Report – as opposed to the Werner Report – did not propose that a specific institution be set up to formulate general economic policy.³

In many respects the Delors Report was only an outline with few specific details. This, for instance, applied to the description of "Stage 2". However, at the overall level, the proposals outlined by the Delors Report matched what was later realised.

STAGE 1 OF EMU

On the basis of the Delors Report, the European Council in Madrid in June 1989 adopted the commencement of Stage 1 of EMU on 1 July 1990 with strengthened monetary cooperation; at the same time, most EC member states were to have liberalised capital flows. The latter was a German precondition for proceeding with EMU.

The most important objective of Stage 1 of EMU was greater convergence of economic development, to be achieved through improved coordination of economic policy. The basis for strengthening economic and political cooperation was provided by two decisions by the Council of Ministers in March 1990⁴. In terms of monetary policy, the framework for cooperation was strengthened by changing the mandate for the

¹ Cf. p. 70 of Erik Hoffmeyer, Decisionmaking for European Economic and Monetary Union, Group of Thirty, *Occasional Paper*, No. 62, 2000.

² Cf. p. 72 of Erik Hoffmeyer, Decisionmaking for European Economic and Monetary Union, Group of Thirty, *Occasional Paper*, No. 62, 2000.

³ Cf. Erik Hoffmeyer's speech on the Delors Report to the Danish Economic Association on 2 May 1989 (printed on pp. 19-22 of Danmarks Nationalbank, *Monetary Review*, May 1989).

⁴ Cf. pp. 17-18 of Danmarks Nationalbank, *Report and Accounts*, 1990.

Committee of Central Bank Governors¹. The mandate was extended with a view to increased discussion of the planning of monetary policy in the member states. Moreover, the public relations of the Committee of Central Bank Governors were to be strengthened through presentation of reports and announcements on EC monetary policy and other economic and political decisions with a potential impact on monetary developments.

The European Council in Strasbourg in December 1989 decided to convene an inter-governmental conference by the end of 1990 to consider the amendments to the Treaty of Rome necessary to move beyond Stage 1 of EMU. A simultaneous inter-governmental conference was to deal with the aspect of the Political Union.²

INTER-GOVERNMENTAL CONFERENCE ON EMU

The Inter-Governmental Conference on EMU was convened in Rome in December 1990 and continued with monthly meetings of ministers in the 1st half of 1991. The Monetary Committee³ and the European Commission, among others, submitted reports for discussion. Moreover, the Committee of Central Bank Governors – upon the request of the Ecofin Council⁴ – prepared draft statutes for the European Central Bank, ECB, which was to be in charge of conducting the single monetary policy in the final stage of EMU, cf. Box 7.1. At the start of the conference, the European Commission proposed draft treaty amendments based on the outcome of preparatory work by various forums.⁵ Moreover, several member states submitted independent inputs for discussion.

At the Inter-Governmental Conference on EMU, agreement was to be reached on the actual content of EMU in a number of areas. One of the key outstanding issues was the competences of the ECB vis-à-vis the political authorities in the implementation of foreign-exchange policy towards non-EC countries (especially the USA and Japan). It had been agreed that the exchange-rate system and any central rates were to be determined by the political authorities, while the day-to-day administra-

¹ The Committee of Central Bank Governor was created in 1964 as a forum for collaboration between EC central bank governors.

² Cf. p. 12 of Ministry of Economic Affairs, *Økonomisk og Monetær Union III (Economic and Monetary Union III – in Danish only)*, September 1991.

³ The Monetary Committee was an EC advisory committee made up of two representatives from each member state (one from the civil service and one from the central bank) and two representatives from the Commission. The main task of the Monetary Committee was to prepare the Ecofin meetings and advise the ministers. On implementation of Stage 3 of EMU in 1999, the Monetary Committee was dissolved and replaced by the Economic and Financial Committee, EFC.

⁴ The Economic and Financial Affairs Council of the EC (and subsequently the EU).

⁵ Cf. pp. 17-20 of Danmarks Nationalbank, *Report and Accounts*, 1990. The European Commission's draft treaty of 10 December 1990 is printed as Appendix 5 of the Ministry of Economic Affairs, *Økonomisk og Monetær Union II (Economic and Monetary Union II – in Danish only)*, January 1991.

PROPOSAL OF THE COMMITTEE OF CENTRAL BANK GOVERNORS FOR
STATUTES OF THE ECB

Box 7.1

The proposal of the Committee of Central Bank Governors for statutes of the ECB was submitted in November 1990. The proposal was expanded at the inter-governmental conference, but the contents of the final treaty were close to the proposal of the Committee of Central Bank Governors:

- The primary monetary-policy objective in the single currency area was to ensure price stability. Without prejudice to the objective of price stability, general economic policies in the European Community were to be supported. The ESCB was to act in accordance with the principle of an open market economy with free competition.
- Another decisive element was the principle of independence. Neither the ECB nor any member of its decision-making bodies could seek or take any political instructions in the performance of their tasks.
- Moreover, the ECB was to have at its disposal the necessary monetary-policy instruments.
- As far as possible, the implementation of monetary policy was to be decentralised through the national central banks of the euro area in accordance with the principle of subsidiarity.
- To compensate for the extensive independence, various provisions were to ensure democratic control and supervision of the ECB. The ECB was established under the Treaty, the content of which was a political decision. Moreover, the members of the Governing Council were to be appointed through the political system; importance should be attached to ensuring that the members were appointed from among persons of recognised standing and professional experience in monetary or banking matters.
- The Chairman of the Ecofin Council and a member of the Commission were also to have access to participate in the meetings of the Governing Council, without voting rights.
- Moreover, the ECB was to provide information about its activities at regular intervals e.g. in consultations with the European Parliament and through the publication of an annual report.

Source: The Committee of Central Bank Governors, DRAFT for Statute of the European System of Central Banks and the European Central Bank (printed as Appendix 2 of the *Ministry of Economic Affairs, Økonomisk og Monetær Union II*, January 1991).

tion was to be undertaken by the ECB. However, agreement had not been reached on where to draw the line, including to what extent the ECB was to be able to turn down political wishes for foreign-exchange interventions that might jeopardise monetary stability.¹ The solution was to make foreign-exchange policy politically determined; however, the ECB would be under no obligation to intervene if such intervention could jeopardise the objective of price stability.² *Ex post* the issue of

¹ Cf. pp. 21-22 of Danmarks Nationalbank, *Report and Accounts*, 1990; and p. 10 of the Ministry of Economic Affairs, *Økonomisk og Monetær Union II*, January 1991.

² Cf. p. 96 of Erik Hoffmeyer, *Decisionmaking for European Economic and Monetary Union*, Group of Thirty, *Occasional Paper*, No. 62, 2000.

foreign-exchange policy turned out to be only of minor significance; since the introduction of the euro in 1999, the ECB has intervened in the foreign-exchange market only on few occasions.¹

General economic policy (other than monetary policy) was another issue to be considered. France proposed the notion of "gouvernement économique" as a political counterweight to the ECB. Under this notion, the Council of Ministers was to lay down guidelines for economic policy, which were to be binding on the member states and, in a non-specified manner, also on the ECB. However, agreement was reached that the Ecofin should be able to lay down only non-binding guidelines on the member states.²

The scope of the ECB's supervisory competences was also discussed. The result was that the ECB would not initially be given any executive supervisory functions, but only advisory functions related to the supervision of financial institutions. However, the Maastricht Treaty contained the following provision:

"The Council may ... confer specific tasks upon the European Central Bank concerning policies relating to the prudential supervision of credit institutions and other financial institutions with the exception of insurance undertakings."³

Reaching agreement on the specific criteria for economic convergence to apply to participants in Stage 3 of EMU was also fraught with difficulties – especially as far as the limits for government deficit and government debt were concerned.⁴ Ultimately, agreement was reached on the four convergence criteria for the transition to Stage 3 outlined in Box 7.2.

During the negotiations, the UK maintained that it did not agree that economic and monetary cooperation should lead to Stage 3 with a single currency and a single monetary policy. Instead, the UK submitted a proposal for a hard ECU to be issued by a European Monetary Fund already in Stage 2. The hard ECU would never be devalued against the national currencies of the Community. The popularity of the new currency would then be up to the markets to decide. In general, the idea of

¹ In view of the possible consequences for the world economy of the exchange-rate fluctuations, in September 2000, the ECB, together with the central banks of the USA, Japan, Canada and the UK, intervened in support of the euro. The ECB intervened on a few more occasions during the first part of November 2000, cf. pp. 45-46 of Danmarks Nationalbank, *Report and Accounts, 2000*; and p. 43 of the ECB, *Monthly Bulletin. 10th Anniversary of the ECB, 2008*.

² Cf. p. 96 of Erik Hoffmeyer, *Decisionmaking for European Economic and Monetary Union*, Group of Thirty, *Occasional Paper*, No. 62, 2000; and pp. 221-255 of Kenneth Dyson and Kevin Featherstone, *The Road to Maastricht*, Oxford University Press, 1999.

³ Treaty of Lisbon, Article 127.

⁴ Cf. pp. 51-52 of Ministry of Economic Affairs, *Økonomisk og Monetær Union III*, September 1991.

 THE MAASTRICHT TREATY CONVERGENCE CRITERIA FOR PROCEEDING TO
 STAGE 3 OF EMU

Box 7.2

- The ratio of government deficit to the gross domestic product, GDP, must, as a general rule, not exceed 3 per cent, and the ratio of gross government debt to GDP must not exceed 60 per cent. The criteria provided some measure of flexibility, however. Firstly, the reference value for the government deficit was not absolute – it was acceptable if the percentage had decreased substantially and persistently to a level close to the reference value. Moreover, it was significant whether the deviation from the reference value could be characterised as temporary and exceptional. Secondly, the criterion of gross government debt was not absolute either. It could be sufficient if the ratio was declining and approaching 60 per cent of GDP at satisfactory pace. Ultimately, the Council would decide whether a member state complied with these criteria.
 - The average inflation rate, measured by means of consumer prices compared with the same month in the preceding year and observed over a period of one year before the examination, must not exceed by more than 1.5 percentage points that of, at most, the three best performing member states in terms of price stability.
 - Observed over a period of one year before the examination, the yield on long-term bonds or comparable securities must not exceed by more than 2 percentage points that of, at most, the three best performing member states in terms of price stability.
 - The member state must have observed the normal fluctuation margins within the ERM for at least two years without devaluation vis-à-vis the currencies of other member states.
-

strengthening the ECU was favourably received by the other member states, but the UK proposal as a whole failed to win the support of the other member states.¹

During the negotiations, Denmark proposed that the ERM fluctuation band be narrowed to +/- 1.5 per cent at the entry to Stage 2 of EMU in order to promote economic convergence.² This proposal failed to win sufficient support, however, and did not become part of the final treaty. Several member states found that the proposal was not compatible with the Basle-Nyborg Agreement of 1987, in which it had been agreed to utilise the fluctuation band of the system to its full extent to make currency speculation associated with uncertainty about future exchange-rate fluctuations, cf. Chapter 1.

¹ Cf. p. 19 of Danmarks Nationalbank, *Report and Accounts*, 1990; and pp. 21-24 of the Ministry of Economic Affairs, *Økonomisk og Monetær Union II*, January 1991; p. 10 of the Ministry of Economic Affairs, *Økonomisk og Monetær Union III*, September 1991; and Erik Hoffmeyer's presentation "The ECU in the Process towards Economic and Monetary Union" at the conference held in connection with the annual meeting of Association Bancaire Pour l'ECU in Copenhagen on 21 June 1991 (printed on pp. 15-18 of Danmarks Nationalbank, *Monetary Review*, August 1991).

² Cf. pp. 23-24 of Ministry of Economic Affairs, *Økonomisk og Monetær Union III*, September 1991.

THE BIRTH OF THE MAASTRICHT TREATY

At the EC Summit in Maastricht, the Netherlands, on 9-11 December 1991, the Heads of State or Government reached agreement on a draft treaty text that would amend the existing EC treaties to form the Treaty on European Union, EU. The draft treaty was signed in Maastricht on 7 February 1992 and was to come into force after its approval by the member states.¹

Under the final draft treaty, the third and final stage of EMU with a single monetary policy and introduction of a single currency was to be implemented by 1 January 1999, and, in principle, all member states meeting the requirements in terms of price, exchange-rate, interest-rate and government budget and debt convergence were to participate in Stage 3.

As late as in October 1991, by all accounts the political negotiations would result in the adoption of the principle that no member state would be forced to participate in Stage 3 of EMU.² At a late stage of the negotiations, a French and Italian initiative made it mandatory for member states that met the criteria to participate in Stage 3. Therefore, the final draft treaty contained special protocols that permitted the UK and Denmark to opt out of Stage 3. With "Protocol on certain provisions relating to Denmark", Denmark could claim a treaty-bound right not to participate in Stage 3. If Denmark opted not to participate in Stage 3, the country would instead be subject to the exemptions and rules stipulated by the Maastricht Treaty for member states that did not qualify for Stage 3 – member states with a derogation. The UK could also claim a treaty-bound right not to participate in Stage 3. In that case, the UK would not be a member state with a derogation but would be subject to more exemptions than those applied to the derogation member states.³

The following two years until the final ratification of the Maastricht Treaty by all member states were extremely turbulent. In 1992, the EMS boat began to rock, cf. Chapter 1, and it was uncertain whether the EMU plans would be realised or whether they would strand like previous EMU plans had done before them.

The Danish referendum on the Maastricht Treaty in June 1992 resulted in a small majority against the Treaty, and the referendum in France in September 1992 returned a small majority in favour. A Danish proposal for clarification of the situation with the Maastricht Treaty formed the

¹ Cf. p. 9 of Danmarks Nationalbank, *Report and Accounts*, 1991.

² Cf. p. 29 of Ministry of Economic Affairs, *Økonomisk og Monetær Union III*, September 1991.

³ Cf. p. 25 of Ministry of Economic Affairs, *Økonomisk og Monetær Union IV*, January 1992; and p. 83 of Danmarks Nationalbank, *Report and Accounts*, 1998.

basis, at the EC summit in Edinburgh in December 1992, for agreement on a solution with four Danish opt-outs from the Maastricht Treaty, including the single currency, cf. Chapter 8.

The Maastricht Treaty came into force on 1 November 1993. In addition to the provisions on EMU, the new Treaty contained provisions on common foreign and security policy and cooperation on justice and home affairs.

STAGE 2 OF EMU

Stage 2 of EMU commenced on 1 January 1994, after which EMU member states were no longer permitted to finance government deficits by borrowing from central banks.¹ Stage 2 also prohibited privileged access for the public sector to borrow from private financial institutions on more favourable conditions than market terms. In addition, member states were to avoid excessive budget deficits. Under normal circumstances, the budget deficit was not to exceed 3 per cent of GDP and efforts were to be made to keep the government debt within 60 per cent of GDP.

Stage 2 commenced with the establishment of the European Monetary Institute, EMI. The EMI was to continue the cooperation between the central banks of the EU member states that had previously been effected under the auspices of the Committee of Central Bank Governors and to prepare the basis for the single currency and the single monetary policy in Stage 3 of EMU, cf. Box 7.3. Moreover, the member states were under an obligation to hold consultations with the EMI in connection with the preparation of national legislation on issues falling within the competence of the EMI.

It became increasingly clear during 1995 that Stage 3 of EMU could not commence on 1 January 1997, which according to the Maastricht Treaty was the earliest possible date. A precondition for commencement in 1997 was that a majority of member states were able to meet the convergence criteria. That was not the case. For instance, only Denmark, Ireland and Luxembourg, assessed on the basis of 1995 data, complied with the convergence criterion stipulating that the government deficit was not to exceed 3 per cent of GDP, and Denmark had already declared its intention to opt out of Stage 3. At the Madrid summit in December 1995, it was confirmed that the new objective was for Stage 3 of EMU to

¹ The prohibition on monetary financing does not prevent intra-day credit to the public sector, but it must be settled by the close of the day. The prohibition also implies that the central banks may not purchase government paper directly from the central government, cf. pp. 58-61 of Danmarks Nationalbank, *Report and Accounts*, 1993.

THE EMI'S PREPARATORY WORK DURING STAGE 2 OF EMU

Box 7.3

The key elements of the preparatory work undertaken by the EMI in collaboration with the central banks of the member states during Stage 2 of EMU were as follows (cf. the Maastricht Treaty's protocol on the Statute of the European Monetary Institute):

- Analysis of potential strategies for the single monetary policy of Stage 3.¹
- Preparation of a set of monetary policy instruments and procedures to be used in the implementation of the single monetary policy in Stage 3.²
- Preparation of a payment system to facilitate the implementation of the single monetary policy of Stage 3 and promote fast and secure execution of cross-border payments in the single currency.³
- Preparation of technical and design specifications for physical banknotes to be introduced in Stage 3.⁴
- Preparation of the harmonised monetary and financial statistics to form the basis for the execution of the single monetary policy of Stage 3.⁵
- Development of a framework for the ECB's intervention in the foreign-exchange market in Stage 3 and for the management of the foreign-exchange reserves of the ECB and the member states participating in the single currency.⁶
- Preparation of a set of harmonised accounting rules and standards for the central banks of the euro area member states.
- Preparation of communication and information systems in relation to the ECB's execution of money and foreign-exchange market operations.
- Identification of areas in which the ECB could contribute to the supervisory work in the member states and further financial stability.

Moreover, the EMI, in collaboration with, particularly, the Commission and the Monetary Committee, was responsible for:

- Formulation of a transition scenario for the introduction of the single currency.⁷
- Development of a framework for exchange-rate cooperation between the member states of the single currency and other EU member states, cf. Chapter 2.
- Monitoring of the progress of the member states in terms of economic and legal convergence and of the technical preparations for the introduction of the single currency.
- Contributions for the preparation of the necessary EU legal basis for Stage 3.
- Assistance to the private financial sector in the development of structures and procedures to facilitate the integration of financial markets in the single currency area.

¹ Cf. Christian Thygesen, Monetary Policy Strategy in the Third Stage of EMU, *Monetary Review*, November 1996.

² Cf. Hugo Frey Jensen, The Monetary-Policy Instruments in Stage III of Economic and Monetary Union, Danmarks Nationalbank, *Monetary Review*, February 1996.

³ Cf. Publication of Report on TARGET, Danmarks Nationalbank, *Monetary Review*, August 1996.

⁴ Cf. Winnie Jakobsen, Sedler og mønter i ØMU'ens 3. fase (Banknotes and Coins in Stage 3 of EMU – in Danish only), Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 1997.

⁵ Cf. Kim Abildgren, Kommende EU-statistikker på det finansielle marked (Future EU Statistics on the Financial Market – in Danish only), Danmarks Nationalbank, *Monetary Review*, August 1996.

⁶ Cf. Kristian Kjeldsen, ECBs ejerforhold og reserver (ECB Ownership and Reserves – in Danish only), Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2000.

⁷ Cf. Per Bertram, The Transition to the Third Stage of Economic and Monetary Union, Danmarks Nationalbank, *Monetary Review*, November 1995; Majken Køhler, EU-landenes eventuelle overgang til euroområdet senere end 1. januar 1999 (EU member states' possible transition to euro after 1 January 1999 – in Danish only), Danmarks Nationalbank, *Monetary Review*, 1st Quarter 1997; and Winnie Jacobsen, Fastlåsning af valutakurserne, når ØMUen starter (Locking of Exchange Rates at the Start of EMU – in Danish only), Danmarks Nationalbank, *Monetary Review*, 4th Quarter 1997.

commence on 1 January 1999.¹ At the European Council in Dublin in 1996, it was formally confirmed that no majority of member states fulfilled the conditions for commencing the transition to the single currency already in 1997.²

However, with the establishment of the EMI, an institution had been set up specifically to prepare the next stages of EMU. In the spring of 1995, the Commission issued a green paper³ on the practical aspects of the introduction of the single currency, and at the Madrid summit in December 1995 significant specifications were adopted in terms of the further process. At the initiative of Germany, the name of the future single currency was changed from the ECU to the euro, and on the basis of an EMI proposal a plan was prepared for the introduction of the single currency in stages. It turned out later that the time schedule was close to the schedule that was finally realised. This time schedule stipulated the selection of participating member states and establishment of the ECB in 1998, the introduction of the euro as book money in 1999 and the introduction of euro banknotes and coins in 2002, cf. Boxes 7.4 and 7.5.

The euro area member states were selected in the spring of 1998.⁴ On 25 March the EMI and the European Commission each published a convergence report on the convergence position of the 15 EU member states.⁵ The convergence reports formed the basis of the selection procedure as described in the Maastricht Treaty. In addition to the requirement for an assessment of the member states' convergence with the four criteria set out in Box 7.2 on page 200, the Maastricht Treaty contained requirements to the effect that each member state was to ensure that its national legislation was compatible with the Treaty and the statute for the ECB. This also applied to the statutes for the central bank, and all euro area member states revised their central bank legislation to ensure compliance with these requirements.⁶

Following the assessments made of the convergence reports, the European Commission recommended that 11 member states (Belgium, Finland, France, the Netherlands, Ireland, Italy, Luxembourg, Portugal, Germany, Spain and Austria) participated in Stage 3 of EMU. Against this

¹ Cf. p. 73 of Danmarks Nationalbank, *Report and Accounts*, 1995.

² Cf. p. 71 of Danmarks Nationalbank, *Report and Accounts*, 1996.

³ A "green paper" is "... a communication from the Commission, analysing issues and indicating possible initiatives under the auspices of the EU. A green paper is the basis for discussion. The objective is to start a debate and a consultation procedure in the area." Source: The website of the EU Information Centre set up by the Folketing (Danish parliament).

⁴ Cf. pp. 88-89 and 137-138 of Danmarks Nationalbank, *Report and Accounts*, 1998.

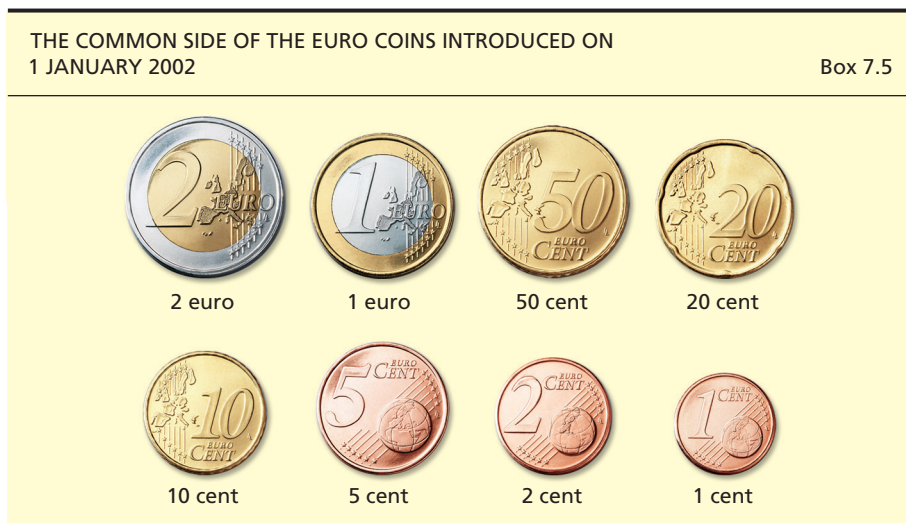
⁵ The European Monetary Institute, *Convergence Report. Prepared in accordance with Article 109j of the Treaty establishing the European Community*, March 1998; and Commission of the European Communities, *EURO 1999. Report on progress towards convergence and recommendation with a view to the transition to the third stage of economic and monetary union*, March 1998.

⁶ Cf. p.137 of Danmarks Nationalbank, *Report and Accounts*, 1998



background, on 1-3 May 1998, the EU Heads of State or Government adapted the recommendation of the Ecofin Council of the 11 member states to participate in Stage 3 from the start on 1 January 1999. The EMI was liquidated when the ECB was established on 1 June 1998.

The new momentum created by the establishment of the EMI turned out to be self-reinforcing. Even in 1996 not many would have guessed that the government budgets of 11 member states would meet the convergence criteria by 1998 when the member states were selected. Yet



Note.: Whereas the banknotes are identical in all member states, the coins have a national side and a common side. Irrespective of the national side, euro coins are legal tender in all euro area member states.

the widespread confidence in this process contributed to significant decreases in interest rates in member states with wide interest-rate spreads to Germany, which in itself led to significant budget consolidation until 1997. This consolidation was sufficient for all the member states that met the exchange-rate criterion and wished to participate from the start in 1999 to meet the convergence criteria. However, the provision on gross government debt was interpreted leniently as the government debts of Belgium and Italy exceeded 100 per cent of GDP and the debts of several other member states exceeded 60 per cent of GDP.

In retrospect, the guidelines of the Maastricht Treaty have turned out to be amazingly durable. As regards the actual process of implementing EMU, the specifications in the Madrid conclusions of 1995 proved to be adequate. No significant adjustments were required concerning the monetary aspect.

In 1997, at Germany's request, the Treaty provisions on general economic policy were supplemented with the Stability and Growth Pact. This dampened the internal resistance to the project in Germany and supported the growing confidence in the project.¹ However, this did not entail amendment of the Treaty provisions, but only a number of specifications of the provisions concerning government budgets, and the

¹ The Stability and Growth Pact provided for the imposition of sanctions on the euro area member states, in the first instance a requirement for a non-interest-bearing deposit, should such countries fail to take adequate measures to redress an excessive budget deficit. The countries outside the euro area, including Denmark, were subject to the objectives and requirements of the Pact on an equal footing with the participating countries, but would not be liable for sanctions in the event of non-compliance, cf. pp. 80-81 of Danmarks Nationalbank, *Report and Accounts*, 1997. A number of aspects of the Stability and Growth Pact are discussed in more detail in Anne Brunila, Marco Buti and Daniele Franco (eds.), *The Stability and Growth Pact*, Palgrave, 2001.

addition of not legally binding criteria regarding the government-budget balance in the medium term.

Moreover, the informal Eurogroup consisting of the Ecofin ministers of the euro area member states was established in 1998. This primarily reflected that the Treaty was not entirely clear as regards the interaction between euro area and non-euro area member states.¹

WHY WAS THE EMU PROJECT SUCCESSFUL THIS TIME?

The successful execution of this last EMU initiative, unlike e.g. the Werner plan, can be attributed to a number of factors:

- A particularly decisive factor was the stipulation of fixed dates, first for the commencement of the inter-governmental conference and the revision of the Treaty, then for the final date for commencement of Stage 3 of EMU, including the introduction of the euro.
- With the establishment of the EMI in 1994, an institution had been set up specifically to prepare the next stages of EMU.
- The Maastricht Treaty's specific guidelines for the implementation of the first stages of the transition process and the establishment of the new European Central Bank undoubtedly played a significant role.
- Furthermore, it was accepted that not all member states had to participate. The UK and Denmark were subject to opt-out clauses and could claim a treaty-bound right to opt out of the euro², and the convergence criteria implied that there could be member states that did not qualify. This was based on the experience from the snake in the tunnel and later the Exchange Rate Mechanism, ERM, of the EMS, where it was accepted that not all member states would participate, unlike in other parts of the EC system.
- Moreover, until the late 1980s and throughout the 1990s, the member states had undergone a "mental" convergence process concerning economic-policy priorities. This convergence was first evident among the central banks. They came to realise that the Bundesbank's focus on containing inflation was the best strategy, which they would do well

¹ At the meeting of the European Council on 17-18 June 2004, the EU Heads of State or Government adopted the Treaty establishing a Constitution for Europe in which the Eurogroup was incorporated, cf. Tina Winther Frandsen, *The EU Constitutional Treaty and EMU*, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2004. In May and June 2005, the electorate in France and the Netherlands voted "No" to the Treaty. After the referenda, the European Council in June 2005 declared the need for a period of reflection to review the Treaty and the ratification process, cf. p. 46 of the Danish Institute for International Studies, *De danske forbehold over for Den Europæiske Union (Danish Opt-Outs from the European Union – in Danish only)*, 2008. On 13 December 2007, the EU Heads of State or Government signed the Lisbon Treaty, in which the Eurogroup appears in a protocol, cf. pp. 17-18 of Danmarks Nationalbank, *Report and Accounts*, 2007. The Lisbon Treaty entered into force in December 2009.

² Other member states, such as Sweden, could not claim a treaty-bound right to opt out of the euro, but by not joining ERM a member state could ensure that it did not meet the exchange-rate criterion for participation in the single currency.

to follow. In the first instance, this was ensured via the fixed-exchange-rate policy vis-à-vis the D-mark, but the currency crisis in 1992-93 had shown that the ERM was not a permanent solution. The convergence subsequently became evident among the governments, with growing consensus on the advantages of stability-oriented economic policy based on such elements as responsible fiscal policy.

- Compared to previous initiatives the Delors Report's more realistic approach did not require centralisation of fiscal policy and a strongly increased EC budget. The central banks of the ERM member states, except the Bundesbank, had *de facto* surrendered their monetary-policy sovereignty, so from their point of view, the introduction of the single currency would first and foremost ensure them more influence. As the Delors Report was adopted unanimously, Jacques Delors had thus ensured "ownership" of the plan by the central-bank governors. The final Maastricht Treaty and the EMU now achieved accorded to a great extent with the proposals outlined in the Delors Report.
- German reunification commenced after the fall of the Berlin wall in November 1989, and was fully achieved in October 1990. This was no doubt a determining factor for the agreement between France and Germany on the central decisions concerning the EMU process.
- Another factor was the self-reinforcing momentum of the harmonised approach, emphasised by the adoption in 1995 of a detailed and exhaustive scenario for achievement of economic and monetary union which enhanced the confidence in the plans for EMU.
- Finally, the solid economic growth experienced in the second half of the 1990s probably also added momentum to the convergence process.

THE FIRST YEARS OF EMU¹

The idea behind EMU had been to anchor economic stability in Europe. A single monetary policy was to deliver price stability, and the single currency was to eliminate currency unrest. The aim was to create a framework for sustainable growth. The original group of 11 euro area member states was expanded several times in the years after 1999, cf. Box 7.6.

¹ Cf. Bodil Nyboe Andersen, Jens Thomsen and Hans Zeuthen, *Euroen, euroområdet og Danmark: Hvordan er det gået?*, (*The Euro, the Euro Area and Denmark: What is the Status? – in Danish only*) Chapter 13 of Michael Christensen and Anders Grosen (eds.), *Den finansielle sektor. Udvikling og perspektiver (The Financial Sector. Development and Perspectives – in Danish only)*, DJØF-Forlaget, 2006; ECB, *Monthly Bulletin. 10th Anniversary of the ECB*, 2008; The European Commission, EMU@10. Successes and challenges after 10 years of Economic and Monetary Union, *European Economy*, No. 2-2008; Philippe Aghion, Alan Ahearne, Marek Belka, Jürgen von Hagen, Lars Heikensten, Jean Pisani-Ferry and André Sapir, *Coming of Age: Report on the euro area*, Bruegel, 2008; and Bartosz MackoWiak, Francesco Paolo Mongelli, Gilles Noblet and Frank Smets (eds.), *The euro at ten – lessons and challenges*, European Central Bank, 2009.

NEW EURO AREA MEMBER STATES AFTER 1 JANUARY 1999		Box 7.6
Country	Adoption of the euro	
Greece	1 January 2001	
Slovenia	1 January 2007	
Cyprus	1 January 2008	
Malta	1 January 2008	
Slovakia	1 January 2009	
Estonia	1 January 2011 ¹	

¹ In July 2010, the Ecofin Council approved Estonia's entry into the euro area on 1 January 2011.
Source: European Commission and ECB.

The ECB defined price stability as consumer price inflation below but close to 2 per cent in the medium term¹, and in the period from 1999-2009 the annual average rate of inflation stood at just over 2 per cent, cf. Table 7.1. All things being equal, the global trend towards relatively low, stable inflation made it possible to achieve the objective of price stability at lower interest rates than would otherwise have been the case. However, the ECB gained respect and credibility in the financial markets and successfully anchored inflation expectations in the euro area. This also meant that the euro served as a useful anchor for Denmark's fixed-exchange-rate policy.

Inflation dispersion among the future euro area member states diminished considerably in the period up to the introduction of the euro. Subsequently, the dispersion was almost constant. The differentials in the member states' inflation rates were a natural consequence of the catching-up process, which also entailed gradual adjustment of price levels in less affluent member states to the levels in the more affluent member states. However, inflation dispersion could also be attributed to national structural rigidities in the product and labour markets in the form of sluggish adaptation of relative prices or diverging wage increases relative to productivity in some euro area member states.

In the planning phase of the European single currency, it was discussed academically whether the potential member states constituted an "optimum currency area". According to the theory of optimum currency areas, the countries needed to meet a number of conditions before the benefits of a single currency would exceed the costs of abandoning

¹ In 1998 the Governing Council of the ECB defined price stability as a year-on-year increase in the EU Harmonised Index of Consumer Prices, HICP, in the euro area of below 2 per cent in the medium term, cf. p. 87 of Denmark's Nationalbank, *Report and Accounts*, 1998. Following an evaluation of monetary-policy strategy in 2003, the definition of price stability was maintained, but the Governing Council emphasised that the implementation of monetary policy would be aimed at maintaining the inflation rate close to 2 per cent, cf. p. 30 of Denmark's Nationalbank, *Report and Accounts*, 2003.

ANNUAL AVERAGE INFLATION RATES FOR THE EURO AREA MEMBER STATES 1980-2009

Table 7.1

Per cent per annum	1980-1989	1990-1998	1999-2009
Belgium	4.9	2.1	2.0
Cyprus .....	...	...	2.5 ¹
Finland	7.3	2.5	1.8
France	7.4	2.1	1.8
Greece	19.5	11.8	3.1 ¹
Netherlands	2.9	2.2	2.3
Ireland	9.3	2.5	2.9
Italy	11.2	4.4	2.3
Luxembourg	4.8	2.4	2.6
Malta .....	...	...	2.5 ¹
Portugal	17.7	6.1	2.5
Slovakia .....	...	...	5.7 ¹
Slovenia .....	...	...	5.1 ¹
Spain	10.2	4.4	2.9
Germany	2.9	2.2	1.6
Austria	3.8	2.4	1.7
Euro area	7.6	3.0	2.0
Dispersion	5.5	2.8	1.2

¹ Did not participate in the euro from the start in 1999.

Note: The rate of Inflation for the euro area is calculated taking into account the changing composition of the group of participants over time.

Source: ECB and Eurostat.

monetary policy as a stabilisation instrument. The conditions were close economic integration, cyclical synchronisation and a high degree of economic flexibility. Other sources pointed out that the introduction of a single currency would in itself reinforce closer integration and cyclical synchronisation.

Average annual real-economic growth in the euro area was about 2 per cent in the first 10 years after the launch of the euro. Cyclical synchronisation among the euro area member states increased over time, but took place predominantly in the period up to the introduction of the euro. It subsequently remained at a relatively high level, cf. Chart 7.1.¹

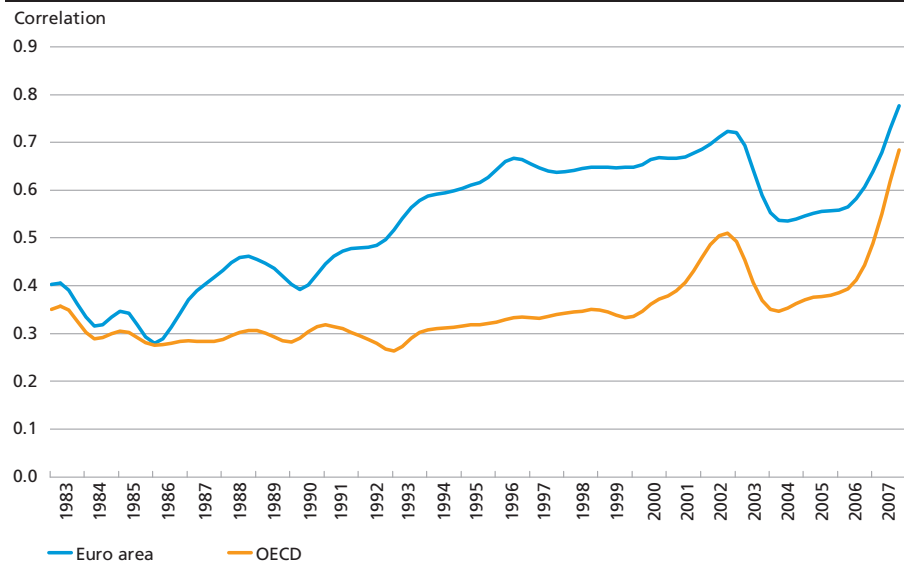
Financial integration, in particular, increased following the introduction of the euro. As regards the money market, the very high degree of integration was supported by the ECB's development of a single payment system for large-value payments (TARGET). Initially, a high level of integration was also achieved in the market for government bonds.

Studies indicate that trade integration advanced across the euro area member states after the launch of the euro. Calculations have shown

¹ Cf. Niels Bartholdy, Niels Arne Dam and Susanne Hougaard Thamsborg, The First 10 Years of EMU, Danmarks Nationalbank, *Monetary Review*, 3rd quarter 2008.

CYCLICAL SYNCHRONISATION WITHIN THE EURO AREA AND OECD

Chart 7.1



Note: Unweighted average of correlation coefficients for the cyclical component of GDP for periods of 10 years. The cyclical component is calculated using a Baxter-King filter with 3 years' observations on either side of the symmetric average.

Source: Niels Arne Dam, *Konjunkturcykler i Danmark og Europa* (Business Cycles in Denmark and Europe – in Danish only), *Nationaløkonomisk Tidsskrift*, Vol. 146 (2), 2008. Updated with new and revised figures from sources specified in Dam, *op. cit.*

that the trade in goods among the euro area member states increased following the introduction of the euro without any reduction in the trade with other countries.¹ However, so far the trade effects of the euro have fallen significantly short of the lofty expectations characterising the first few years after its introduction.²

Throughout the years, fiscal sustainability has been at the heart of the surveillance of the EU³ economies by the ECB and the European Commission and, at times, it has been a challenge to comply with the budget criterion of the Maastricht Treaty, cf. Table 7.2. A number of member states have demonstrated tendencies towards procyclical fiscal policies with inadequate consolidation during boom periods, and the political will to abide by the spirit of the Stability and Growth Pact has sometimes lacked.⁴

In 2003, Germany and France exceeded the reference value for the government budget deficit of 3 per cent of GDP for the second con-

¹ Cf. p. 90 of ECB, *Monthly Bulletin. 10th Anniversary of the ECB*, 2008.

² Cf. Anders Mølgaard Pedersen, *Currency Unions and Foreign Trade*, Danmarks Nationalbank, *Monetary Review*, 2nd quarter 2004; and Andrew K. Rose, *Is EMU Becoming an Optimum Currency Area? The Evidence on Trade and Business Cycle Synchronization*, unpublished Paper, October 2008.

³ Cf. ECB, *Ten Years of the Stability and Growth Pact*, *ECB Monthly Bulletin*, October 2008.

⁴ Cf. Thomas Haugaard Jensen and Jens Anton Kjærgaard Larsen, *The Stability and Growth Pact – Status in 2004*, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2004.

GENERAL GOVERNMENT BUDGET BALANCE 1999-2009											Table 7.2
Per cent of GDP	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Belgium	-0.5	0.1	0.4	0.0	0.0	0.0	-2.3	0.3	-0.2	-1.2	-6.0
Cyprus	-4.3	-2.3	-2.2	-4.4	-6.5	-4.4	-2.4	-1.2	3.4	0.9	-6.1
Finland	1.6	6.9	5.0	4.1	2.6	2.4	2.9	4.0	5.2	4.2	-2.2
France	-1.8	-1.5	-1.6	-3.2	-4.1	-3.6	-2.9	-2.3	-2.7	-3.3	-7.5
Greece	-3.1	-3.7	-5.0	-4.7	-5.6	-7.4	-5.1	-3.6	-5.1	-7.7	-13.6
Netherlands	0.4	1.3	-0.2	-2.1	-3.1	-1.7	-0.3	0.5	0.2	0.7	-5.3
Ireland	2.7	4.7	0.9	-0.6	0.4	1.4	1.6	3.0	0.1	-7.3	-14.3
Italy	-1.7	-2.0	-3.1	-2.9	-3.5	-3.5	-4.2	-3.3	-1.5	-2.7	-5.3
Luxembourg	3.4	6.0	6.1	2.1	0.5	-1.2	-0.1	1.4	3.6	2.9	-0.7
Malta	-7.7	-6.2	-6.4	-5.5	-9.8	-4.6	-3.2	-2.6	-2.2	-4.5	-3.8
Portugal	-2.8	-3.2	-4.3	-2.9	-2.9	-3.4	-6.1	-3.9	-2.6	-2.8	-9.4
Slovakia	-7.1	-12.2	-6.5	-8.2	-2.7	-2.4	-2.8	-3.5	-1.9	-2.3	-6.8
Slovenia	-2.0	-3.8	-4.6	-2.5	-2.7	-2.3	-1.5	-1.3	0.0	-1.7	-5.5
Spain	-1.4	-1.1	-0.6	-0.5	-0.2	-0.3	1.0	2.0	1.9	-4.1	-11.2
Germany	-1.5	-1.1	-2.8	-3.7	-4.0	-3.8	-3.4	-1.6	0.2	0.0	-3.3
Austria	-2.2	-2.1	0.0	-0.6	-1.4	-3.7	-1.5	-1.5	-0.4	-0.4	-3.4
Euro area	-1.4	-1.0	-1.9	-2.6	-3.1	-3.0	-2.6	-1.3	-0.6	-2.0	-6.3

Source: ECB.

secutive year. This prompted the European Commission, in the autumn of 2003, to recommend that the Ecofin Council order these two member states to tighten fiscal policy in order to correct their deficits. The Commission's recommendations to Germany and France failed to achieve the required majority in the Ecofin Council in November 2003. Instead, the Ecofin Council adopted a set of non-binding conclusions and decided to hold the excessive deficit procedure for the two member states in abeyance, including the option to impose sanctions on them. As a result, the Commission brought the matter before the Court of Justice and this sparked an intensive debate on the need to reform the Pact.¹

In 2005 the Ecofin Council adopted a reform of the Stability and Growth Pact. The reform was a compromise, mainly aimed at strengthening the preventive elements of the Pact and increasing flexibility in the corrective arm of the excessive deficit procedure, particularly in low-growth situations.² The reform provided for a more lenient interpretation of exceptional economic circumstances which could justify a member state temporarily exceeding the 3-per-cent budget deficit limit. Excess of the 3-per-cent limit can be regarded as "exceptional" if it is due to negative growth or output losses accumulated over a sustained period of very low growth relative to the development in potential output.

¹ Cf. Thomas Haugaard Jensen and Jens Anton Kjærgaard Larsen, The Stability and Growth Pact – Status in 2005, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2005.

² Cf. pp. 77-79 of Danmarks Nationalbank, *Report and Accounts*, 2005.

CHAPTER 8

Denmark and EMU

THE MAASTRICHT TREATY AND THE DANISH EMU OPT-OUT

The draft of the Maastricht Treaty was signed in Maastricht on 7 February 1992, and the new Treaty was to come into force after its approval by the member states, cf. Chapter 7.

Under the draft treaty, the third and final stage of EMU with a single monetary policy and introduction of a single currency was to be implemented by 1 January 1999 at the latest. In principle, all member states meeting the requirements for EMU participation in the form of convergence in price levels, exchange-rate and interest-rate conditions and public finances were to participate in Stage 3. Denmark had a special protocol under which the Danish government was to notify the Council of its position on participation prior to any decision on whether to proceed to Stage 3. If Denmark utilised the opportunity provided by the Danish protocol not to participate in Stage 3, Denmark would be subject to the same provisions as applied to member states that did not yet qualify for participation in the single currency.¹

In March 1992, the Ministry of Justice assessed that the Maastricht Treaty entailed a transfer of sovereignty and that Danish adoption of the Treaty would require utilisation of the procedure set out in section 20 of the Danish Constitution.² Accordingly, a referendum on the Maastricht Treaty was held on 2 June 1992. The issue of EMU did not take centre stage in the political debate, which also focused on the environment, social protection, defence policy, police cooperation and EU citizenship.³

In his speech at the Annual Meeting of the Danish Bankers Association on 4 December 1991⁴ Governor Erik Hoffmeyer, Danmarks Nationalbank, explained his position on EMU:

¹ Cf. p. 14 of Danmarks Nationalbank, *Report and Accounts*, 1991.

² Cf. the memorandum of 3 March 1992 from the Ministry of Justice on certain constitutional issues in connection with Denmark's adoption of the Treaty on The European Union (in Danish only).

³ Cf. pp. 31-32 of The Danish Institute for International Studies, *De danske forbehold over for Den Europæiske Union*, 2008; Karen Siune, The Danes said NO to the Maastricht Treaty. The Danish EC Referendum of June 1992, *Scandinavian Political Studies*, Vol. 16(1), 1993; and Karen Siune, Palle Svensson and Ole Tonsgaard, - *fra et nej til et ja (From No to Yes – in Danish only)*, Politica, 1994.

⁴ Printed on pp. 16-19 of Danmarks Nationalbank, *Monetary Review*, February 1992.

"I would like to underline my view that participation in economic and monetary union will be an advantage to Denmark. It will give us the opportunity, as has often been mentioned, to exert a certain, limited influence on the policies pursued, whereas in the present situation we have no influence, but must act according to the decisions made in other countries.

We can benefit from involvement in this cooperation, and in reality transition to economic and monetary union is no giant leap, since the actual convergence of economies and the resulting limitation of our decision-making scope are already far advanced."

Denmark's referendum on 2 June 1992 rejected the Maastricht Treaty by a narrow majority of 50.7 per cent. At a meeting in Oslo two days later, the EC foreign ministers declared that the ratification procedure would continue in the other 11 member states on the basis of the text of the Treaty. The issue of Denmark's participation in the Union would be left open. This conclusion was confirmed by the Heads of State or Government at the EC summit in June 1992.¹

After political negotiations a Danish proposal for clarification of Denmark's standpoint vis-à-vis the EC and the Maastricht Treaty was tabled at the end of October 1992 by way of the "national compromise" supported by seven of the eight parties in the Folketing (Danish parliament). The proposal set out a number of conditions for Danish accession to the Maastricht Treaty, and on the basis of this proposal, a solution was reached at the EC summit in Edinburgh on 11-12 December 1992. The Edinburgh Decision comprised special Danish arrangements in four areas of the Maastricht Treaty, including EMU, cf. Box 8.1. In relation to EMU the arrangement implied that Denmark immediately exercised its right as laid down in the protocol to notify the Council that it would not participate in Stage 3 of EMU.

A second Danish referendum on 18 May 1993 produced a majority of 56.7 per cent of the vote in favour the Maastricht Treaty and the Edinburgh Decision. Denmark ratified the Maastricht Treaty on 17 June 1993, and it came into force on 1 November 1993.

¹ Cf. p. 20 of Danmarks Nationalbank, *Report and Accounts*, 1992.

THE EDINBURGH DECISION'S FORMULATION OF THE DANISH OPT-OUTS TO THE EUROPEAN UNION

Box 8.1

Defence policy

"Denmark [does not participate] in the elaboration and the implementation of decisions and actions of the Union which have defence implications, but will not prevent the development of closer cooperation between member states in this area".

Economic and Monetary Union

"Denmark has given notification that it will not participate in the third stage [of Economic and Monetary Union(...)]. As a consequence, Denmark will not participate in the single currency, will not be bound by the rules concerning economic policy which apply only to the Member States participating in the third stage of Economic and Monetary Union, and will retain its existing powers in the field of monetary policy according to its national laws and regulations, including the powers of the National Bank of Denmark in the field of monetary policy. Denmark will participate fully in the second stage of Economic and Monetary Union and will continue to participate in exchange-rate cooperation within the EMS".

Citizenship

"The provisions of Part Two of the Treaty establishing the European Community relating to citizenship of the Union give nationals of the Member States additional rights and protection as specified in that Part. They do not in any way take the place of national citizenship. The question whether an individual possesses the nationality of a Member State will be settled solely by reference to national law of the Member State concerned".

This formulation did not exclude Denmark from union citizenship, but provided Denmark with an opt-out in case union citizenship would eventually replace national citizenship.

Justice and home affairs

"Denmark will participate fully in cooperation on Justice and Home Affairs on the basis of the provisions of Title VI of the Treaty on European Union". This provision implies that Denmark participates in the cooperation at the intergovernmental level. With the Treaty of Amsterdam, ratified by Denmark in 1998, elements of the cooperation on justice and home affairs became supranational rather than intergovernmental in nature, implying that the Danish opt-out became significant.

The national compromise

Item 3 of the explanatory notes to the Bill on Denmark's adoption of the Edinburgh Decision and the Maastricht Treaty states as follows: "In connection with the corpus of legislation, 7 parties in the Folketinget have entered into a political agreement. This agreement entails that Denmark's standpoint on four key elements of the Maastricht Treaty:

- Union citizenship,
- Economic and Monetary Union,
- Common defence policy and common defence,
- Justice and home affairs

shall be determined in the referendum on 18 May 1993, and the 7 parties agree that it can only be changed through a new referendum."

Note: Unofficial translation.

Source: Pp. 29-31 of The Danish Institute for International Studies, *De danske forbehold over for Den Europæiske Union*, 2008; and retsinformation.dk.

DENMARK'S PARTICIPATION IN THE PREPARATORY WORK DURING STAGE 2 OF EMU

In accordance with the Edinburgh Decision, Denmark participated fully in Stage 2 of EMU, which commenced on 1 January 1994. In Stage 2, the preparatory work for the introduction of the single currency was quite extensive – for Danmarks Nationalbank and for other EU central banks. This was without doubt the best prepared currency union in history – and the preparations paid off with a smooth transition to the single currency, cf. Chapter 7.

As far as Denmark was concerned, the prohibition against monetary financing did not imply in any changes to the existing practice, but in the autumn of 1993 the government and Danmarks Nationalbank concluded an agreement on a funding rule regarding the overall government borrowing requirement, cf. Chapter 1. However, in 1994 the European Monetary Institute found that the central-government guarantee for coins put into circulation prior to 1 January 1975 was in conflict with the prohibition against monetary financing, as Danmarks Nationalbank held a non-negotiable claim with an indefinite maturity on the central government. Consequently, the guarantee was dissolved.¹

Stage 2 also prohibited privileged access for the public sector to borrow from private financial institutions on more favourable conditions than market terms. At any rate, privileged access had not been the practice in Denmark.

Stage 2 commenced with the establishment of the European Monetary Institute, EMI. One of the primary tasks of the EMI was to prepare the basis for the single currency and the single monetary policy in Stage 3 of EMU. Although Denmark had notified the Council in advance that the country would exercise its right to opt out of the single currency from its introduction, Danmarks Nationalbank had a keen interest in the preparatory work during Stage 2. Firstly, it was important to create a solid framework for price stability in the euro area, making it an appropriate anchor for the Danish fixed-exchange-rate policy. Secondly, Denmark had an interest in developing an expedient framework for exchange-rate cooperation between the euro area and the non-euro area member states, cf. Chapter 2. Thirdly, Denmark had a general interest in the formulation of the ground rules for Stage 3 of EMU to ensure that Denmark would be able to adopt the single currency at a later stage on the same terms as those applying to the initial euro area member states.

¹ Cf. pp. 66 and 77 of Danmarks Nationalbank, *Report and Accounts*, 1994.

In some respects, the introduction of the single currency – even without Danish participation – would be of major direct significance for the Danish financial system.¹ Therefore, Danmarks Nationalbank engaged in ongoing discussions and exchange of information with representatives from the financial sector on the preparations for Stage 3 of EMU. The consensus of these discussions was that in two areas, in particular, a more thorough investigation of the implications for Denmark of the introduction of the euro as a new currency would be useful. These areas were, firstly, the Danish bond market and, secondly, the processing of euro in Danish payment systems. To this end, two working groups were appointed under the chairmanship of Danmarks Nationalbank with participants from the financial sector.

The reports of the working groups were published in June 1998.² In terms of the bond issue, the working group found that VP systems, stock-exchange systems, etc. should be designed to process foreign and possibly Danish euro-denominated securities. The working group also recommended that Denmark should consider harmonising market conventions in the Danish bond market to European standards. In relation to payment systems, the focus of the working group was on the framework for euro payment systems in Denmark, including DEBES (the Danish TARGET component), cf. Supplement A.

Another focus area was to harmonise Danmarks Nationalbank's statistics with the standards that would be laid down by the European Central Bank, ECB. Although Denmark has not adopted the euro, Danmarks Nationalbank participates in the ECB's statistical collaboration on an equal footing with other EU central banks, cf. Supplement C.³

In their convergence reports from March 1998, the EMI and the European Commission found that the Danish central bank statutes (the National Bank of Denmark Act) were compatible with the requirement for independence as stipulated in the Maastricht Treaty.⁴

¹ Cf. Bodil Nyboe Andersen, *Euroens betydning for Danmark* (The Significance of the Euro for Denmark – in Danish only), *Revision og regnskab*, No. 12, 1997.

² Cf. Danmarks Nationalbank, *ØMUens konsekvenser for det danske obligationsmarked og håndteringen af euro i dansk betalingsformidling* (Implications of EMU for the Danish Bond Market and the Processing of Euro in Danish Payment Systems – in Danish only), June 1998.

³ Cf. pp. 94-95 of Danmarks Nationalbank, *Report and Accounts*, 2000.

⁴ Cf. p. 138 of Danmarks Nationalbank, *Report and Accounts*, 1998; The European Monetary Institute, *Convergence Report. Prepared in accordance with Article 109j of the Treaty Establishing the European Community*, March 1998; and Commission of the European Communities, *EURO 1999. Report on progress towards convergence and recommendation with a view to the transition to the third stage of economic and monetary union*, March 1998.

THE DANISH REFERENDUM ON THE EURO IN 2000

In August 1999, Danish Prime Minister Poul Nyrup Rasmussen announced at the summer conference of the Social Democratic Party that Denmark would hold a referendum on adoption of the euro.¹ In response to a number of questions from the Folketing to the Minister for Economic Affairs, the Ministry of Economic Affairs submitted the "Outline National Changeover Plan, Changeover to the euro in case of Danish participation" in December 1999.² This changeover plan was prepared in cooperation with other ministries, Danmarks Nationalbank, stakeholder organisations and the financial sector. Its purpose was to provide an outline of the course of events as well as the applicable schedules in the event of endorsement of Denmark's adoption of the euro in the referendum.

The changes required of Danmarks Nationalbank for participation in the single monetary policy if Denmark decided to adopt the euro were described in Chapter 4 of the changeover plan of the Ministry of Economic Affairs.³ With regard to Danmarks Nationalbank the period outlined for the necessary adjustments prior to the introduction of the euro as "book money" was around one year calculated from the date of endorsement by referendum. An additional period of approximately one year was considered to be necessary for Danmarks Nationalbank to complete the preparations for the circulation of euro banknotes and coins.

According to the changeover plan of the Ministry of Economic Affairs, other sectors, not least the general-government sector (Danish tax authorities), would require somewhat longer periods of preparation.

In response to the changeover plan of the Ministry of Economic Affairs and following an appeal from the financial sector, Danmarks Nationalbank appointed two working groups to investigate the implications of Danish participation in the euro for the Danish clearing and settlement systems and the bond market. Both working groups were chaired by Danmarks Nationalbank and included representatives from the financial sector.⁴

¹ Cf. the newspaper *Aktuelt*, 14 August 1999. In a memorandum dated 25 April 2000 on certain administrative law aspects if Denmark were to join Stage 3 of Economic and Monetary Union and adopt the single currency, the Ministry of Justice assessed that Denmark's participation in Stage 3 of EMU would entail transfer of sovereignty, which necessitated utilisation of the procedure set out in section 20 of the Danish Constitution.

² Cf. Ministry of Economic Affairs, *Redegørelse for overgang til euroen i tilfælde af dansk deltagelse (Account of Transition to the Euro in the Event of Danish Participation – in Danish only)*, Schultz, 1999.

³ Also printed on pp. 151-159 of Danmarks Nationalbank, *Report and Accounts*, 1999.

⁴ Cf. Danmarks Nationalbank, *Konsekvenser for dansk betalingsformidling af en eventuel indførelse af euroen i Danmark (Implications for Danish Payment Systems of the Potential Adoption of the Euro in Denmark – in Danish only)*, August 2000; and Danmarks Nationalbank, *Consequences for the Danish bond market if Denmark decides to adopt the euro. Technical Consideration*, January 2000.



In March 2000 the Danish Prime Minister called a referendum for 28 September 2000 on Denmark's adoption of the euro. In May 2000 the government tabled the bill. According to the bill, if the outcome of the referendum was in favour of adoption of the euro, Denmark would be able to join the euro area as from 1 January 2002 with the euro as "book money". Euro banknotes and coins would be introduced as from 1 January 2004, after which krone banknotes and coins would be withdrawn.¹

In view of the short time available for preparation after a referendum result in favour of adoption of the euro, an internal EMU contingency plan was drawn up at Danmarks Nationalbank prior to the referendum. The plan identified the projects, especially in the IT area, that would be required. Some of these would have had to be carried out anyway – partly as a result of the ongoing work on international standards, and partly as an element of the general upgrading of the IT systems, but the timing of these projects was critically dependent on the outcome of the referendum. At the request of the government, Danmarks Nationalbank also prepared a preliminary design of Danish euro coins, cf. Box 8.2.²

In her speech to the British Import Union on 18 January 2000, Governor Bodil Nyboe Andersen outlined Danmarks Nationalbank's position on Danish participation in the euro³:

"... If Denmark decides to join, this will also result in major changes for Danmarks Nationalbank. This has led some people to believe that the bank's management is sceptical, or even negative towards possible Danish adoption of the

¹ Cf. p. 82 of Danmarks Nationalbank, *Report and Accounts*, 2000.

² Cf. pp. 74 and 114 of Danmarks Nationalbank, *Report and Accounts*, 2000.

³ Printed on pp. 61-69 of Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2000.

euro. It has been stated that we would probably not be in favour of losing influence and becoming "branch managers". However, this is not our view.

We will not consider Denmark's adoption of the single currency to be a reduction, but rather an expansion of our opportunities to gain information and influence. Except during currency crises, when we have to raise interest rates in order to stabilise the krone and then gradually bring interest rates back to normal, in the present situation we do not conduct a separate monetary policy.

By participating in the ECB Danmarks Nationalbank's management and employees will gain a share of influence not only on monetary policy, but also on many other decisions concerning the financial markets of Europe. ... We will also still have to manufacture and issue notes and coins, even though their appearance will be different.

We therefore do not feel that Danmarks Nationalbank will lose influence if Denmark adopts the euro, quite the contrary in fact. Within the ECB all participating countries' representatives are equal and all votes have the same weight.

The key argument in favour of Denmark adopting the euro within the not too distant future is, however, not the issue of the Nationalbank's role and influence. The Nationalbank's management considers this step to be important, since in our view it will provide the most stable external framework for the economic policy which Denmark embarked on in the 1980s, a policy which Danmarks Nationalbank has always supported. Especially in the 1990s this policy formed the basis for strong and well-balanced economic growth.

The Danish economy has benefited from our abandoning the devaluation policy at the beginning of the 1980s and from the fact that the fixed-exchange-rate policy has been maintained, despite a change in the external framework. But we must also recognise that minor currencies are becoming more and more vulnerable in a world characterised by greater internationalisation and more rapid dissemination of information.

So Danmarks Nationalbank considers that Denmark's adoption of the euro will be a natural continuation of the economic-policy stance introduced almost two decades ago – a policy which in our view has served Denmark well."

The bill was rejected by the referendum in September 2000, with 53.1 per cent of the votes against the adoption of the euro. The run-up to the referendum saw a significant weakening of the euro against the dollar, which had an impact on market sentiment. Moreover, the debate on the economic aspects of Denmark's proposed entry into the euro was coloured by the view that, on account of its fixed-exchange-rate policy, Denmark had already reaped some of the benefits of joining the euro area.

Immediately after the referendum, the Danish government and Danmarks Nationalbank issued a joint press release stating that Denmark would continue its fixed-exchange-rate policy within the framework of ERM II, cf. Chapter 2.

DENMARK AS AN "OUT" COUNTRY

On 1 January 1999, 11 EU member states adopted the euro as a single currency.¹ At the overall level, the adoption of the euro did not have any major impact on Denmark's monetary and foreign-exchange policies. Denmark had decided not to join the currency union, but to retain the Danish krone. Therefore, the fixed-exchange-rate policy was continued vis-à-vis the euro rather than the D-mark.

The first 10 years of the euro showed that the euro and the single monetary policy in the euro area were successful, cf. Chapter 7. The euro area was characterised by price stability, a marked decline in inflation dispersion and measurable gains in terms of financial and trade integration. Thanks to the Danish fixed-exchange-rate policy vis-à-vis the euro, Denmark benefited from these results, while this was not to the same extent the case for Sweden and the UK, which had opted for a flexible exchange-rate regime.²

Other things being equal, the initial cost for Denmark of being outside the euro was that the Danish monetary policy interest rate would be higher than that of the euro area. Given the credibility of the fixed-exchange-rate policy, interest rates were just marginally higher in Denmark in calm periods, whereas the interest-rate spread could be somewhat wider in turbulent periods.³

¹ The 11 euro area member states were: Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain. The euro was subsequently adopted by a number of other EU member states, cf. Box 7.6 of Chapter 7.

² Cf. The Economic Council, *Danish Economy*, Spring 2009.

³ Cf. Bodil Nyboe Andersen, *The Euro and Denmark*, speech to the British Import Union on 18 January 2000, printed on pp. 61-69 of Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2000.

Denmark's transition to the status of an "out" country also led to some degree of political marginalisation.¹ Denmark had been part of the inner circle of the Community's monetary cooperation virtually since the country's accession to the EC in 1973 – initially as one of the few countries to participate in the "snake" of the 1970s all the way through and subsequently as one of the core member states of the Exchange Rate Mechanism, ERM of the European Monetary System, EMS. Until mid-1998, Danmarks Nationalbank had participated fully in the preparations for Stage 3 of EMU under the auspices of the EMI. However, with the establishment of the ECB on 1 June 1998, the *de facto* influence of Danmarks Nationalbank was significantly reduced in virtually all respects.²

The central bank governors of the euro area member states convene every two weeks in the Governing Council (some meetings are held in the form of telephone conferences). The Governing Council comprises the six members of the ECB's Executive Board and the central bank governors of the EU member states having adopted the euro. The Governing Council decides the single monetary policy to be conducted in the euro area and each member of the Council has one vote.³

Being a central bank of an "out" country, Danmarks Nationalbank does not participate in the Governing Council, but only in the General Council, which consists of the President and the Vice President of the ECB, as well as the governors of the central banks of all EU member states. The General Council mainly performs the tasks which the ECB took over from the EMI – tasks which the ECB is to perform for as long as some EU member states have not adopted the euro. The primary responsibility of the General Council is to contribute to the preparations for participation in the euro area should one of the non-participating EU member states later decide to adopt the euro. The General Council also contributes to the ECB's advisory functions and to the collection of statistical information. Other tasks are issues relating to the functioning of ERM2.⁴ The General Council meets every three months.

Under the Maastricht Treaty, a Governing Council was established for the ECB for participating EU member states only, as the Governing Council is in charge of decisions relating to the single monetary policy in

¹ Cf. The Danish Institute for International Studies, *De danske forbehold over for Den Europæiske Union*, 2008.

² Cf. Jens Thomsen, *Livet uden for euroen (Life Outside the Euro Area – in Danish only)*, published in Peter Nedergaard, Erik Boel and Lars Barfoed (eds.), *Den europæiske nødvendighed (The European Necessity – in Danish only)*, DJØF Publishing, 2002.

³ In December 2008, the Governing Council decided, under the statute of the ECB, to introduce a rotation system for voting when the number of national central bank governors for the euro area exceeds 18, cf. p. 197-198 of European Central Bank, *Annual Report*, 2008.

⁴ Cf. p. 87 of Danmarks Nationalbank, *Report and Accounts*, 1999; and p. 84 of Danmarks Nationalbank, *Report and Accounts*, 2000.

the euro area. The participation of the "out" countries in the ECB's committee structure was left to the ECB to decide. Even issues under the remit of the General Council, such as statistics, are initially discussed among the members of the Governing Council. Only then are they included on the agenda of the General Council where wider discussions are rare. Danmarks Nationalbank has limited access to participate in the ECB's committees and the large number of related sub-committees and task forces. Danmarks Nationalbank has access to participate on an equal footing with the central banks of the euro area member states only in more technical respects.¹

As a result, Danmarks Nationalbank misses out on information that will be relevant to Denmark, should Denmark decide to join the euro at some later stage. Moreover, general international exchange of experience and information among European central banks extensively takes place within the ECB – also when it comes to issues that are not directly related to the euro and the single monetary policy in the euro area.

While the ECB separation was clear from the outset, the Treaty formally contained no exclusivity in terms of ministers where the Ecofin Council is the counterparty of the ECB. In this respect, the Treaty establishes only that, in a number of areas, voting rights are the prerogative of the ministers of the euro member states. But, as opposed to the ECB, the ministers of all EU member states participate in the Ecofin meetings.

When Germany submitted its proposal for a stability pact in 1995, they also proposed that a "stability council" be set up, comprising ministers from the euro area member states. The German proposal for a stability council, focusing exclusively on issues relating to budgetary discipline in the euro area member states, failed to win support. Later France proposed that a euro group be set up to further strengthen coordination of economic policies by the euro area member states. In December 1997, the European Council decided that, at informal meetings, the ministers of the euro area member states could discuss issues of relevance to their specific responsibility for the single currency, while issues of common interest were to be discussed by all ministers of the EU member states.² In reality, the euro area member states ("the Euro-group") regularly have informal discussions about issues of common

¹ Cf. p. 194 of The Danish Institute for International Studies, *De danske forbehold over for Den Europæiske Union*, 2008. The central bank governors of all EU member states will have voting rights on the General Board of the European Systemic Risk Board, ESRB, which is expected to be established on 1 January 2011. The tasks of the ESRB will be to monitor and assess risks to the financial system as such (macroprudential supervision), cf. p. 18 of Danmarks Nationalbank, *Report and Accounts*, 2009.

² Cf. p. 81 of Danmarks Nationalbank, *Report and Accounts*, 1997.

interest to all EU member states in connection with the Ecofin meetings.¹ As an "out" country, Denmark has *de facto* become more marginalised than previously in the areas of the ministers for economic affairs and finance.

Meetings of the Econfin Council are prepared by the Economic and Financial Committee, EFC, comprising civil servants from the economic ministries, national central banks, European Commission and ECB. The EFC meets with and without national central banks. In addition, the EFC holds meetings attended only by representatives of the economic ministries of the euro area member states, the Commission and the ECB. The latter forum – the Eurogroup Working Group, EWG – prepares the Eurogroup meetings.

¹ In the 2007 Lisbon Treaty, the Eurogroup is formally mentioned in a protocol. The Lisbon Treaty came into force in December 2009.

CHAPTER 9

The International Monetary Fund, IMF

IMF's CHANGING ROLES AND GRADUAL ADAPTION OVER TIME

The International Monetary Fund, IMF, was established in 1944 with the aim of promoting international monetary cooperation.¹ Denmark became a member of the IMF in March 1946.

For the first 25 years of membership, political responsibility for the Danish links to the IMF was placed with the Ministry of Finance. The responsibility was then placed with the Ministry of Economic Affairs from 1971 until 2001, when it returned to the Ministry of Finance. Throughout the entire period, the ongoing management of Denmark's link to IMF was undertaken by Danmarks Nationalbank, whose Governor by Royal Appointment was the Danish member of the IMF's Board of Governors.

1994 marked the 50th anniversary of the IMF, and in this connection its future role in the international monetary system was discussed.² Since the collapse of the international fixed-exchange-rate regime administered by the IMF (the Bretton Woods system) in the early 1970s, the focus of IMF's tasks had gradually moved away from foreign-exchange policy and macroeconomic involvement in the industrialised countries. As a result of the expansion and liberalisation of the private capital markets in the industrialised countries during the 1970s and the 1980s, the industrialised countries stopped raising loans from the IMF.³

In the 1980s, the Latin American debt crisis called for financial and other assistance from the IMF. Furthermore, the IMF came to play an important role in terms of structural economic adjustment in the poorest and most heavily indebted developing countries.⁴

Due to the collapse of the planned economies and a number of major international financial crises, the IMF obtained a new role in the increasingly globalised international financial system of the 1990s and the 2000s.

¹ Cf. p. 89 of Ministry of Economic Affairs, *Økonomiministeriet i 50 år (50 Years of the Danish Ministry of Economic Affairs – in Danish only)*, 1997.

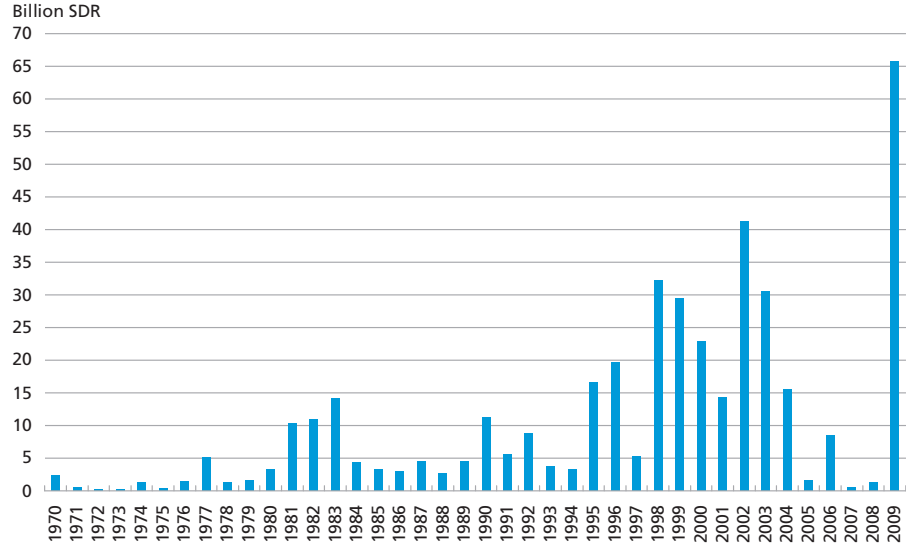
² Cf. pp. 66-67 of Danmarks Nationalbank, *Report and Accounts*, 1994.

³ Cf. p. 6 of The Ministry of Economic Affairs, *Det internationale finansielle system – Ny rolle for IMF (The International Financial System – A New Role for the IMF – in Danish only)*, August 2000.

⁴ Cf. Hugo Frey Jensen, *The Role of the International Monetary Fund in the Most Recent American Initiative to Solve the Debt Problems of the Developing Countries*, Danmarks Nationalbank, *Monetary Review*, August 1989.

IMF COMMITMENTS TO NEW LENDING 1970-2009

Chart 9.1



Note: Compiled according to fiscal year. For example, the 2009 figure covers the period from 1 May 2008 to 30 April 2009.

Source: IMF, *Annual Report*, various years.

COLLAPSE OF THE PLANNED ECONOMIES IN THE EARLY 1990s

In the early 1990s, the IMF's activities were extended to include a number of previously centrally planned economies in Central and Eastern Europe and the former Soviet Union. These countries needed technical and financial assistance and macroeconomic advice in connection with their transition to market economy and integration into the world economy.¹ During the period 1990-92, the IMF's lending activity once again approached the level seen after the onset of the Latin American debt crisis in 1982-83, cf. Chart 9.1.

The number of member countries grew substantially after the dissolution of the former Soviet Union and Yugoslavia and the partition of Czechoslovakia. In addition, Switzerland became a member in 1992 after a referendum.² By the end of 1993, the IMF had 178 members compared with around 150 in the late 1980s. This was the most substantial increase in the IMF's membership since the entry of the African countries in the 1960s.³

¹ Cf. p. 52 of Danmarks Nationalbank, *Report and Accounts*, 1991.

² Cf. p. 87 of Ministry of Economic Affairs, *Økonomisk Oversigt (Economic Review – in Danish only)*, August 1992.

³ Cf. "History" at the IMF website.

THE CRISIS IN MEXICO ("THE TEQUILA CRISIS") 1994-95

Following a period of domestic political unrest, growing current-account deficits and declining capital imports, a major financial crisis erupted in Mexico around the turn of the year 1994-95. At the end of 1994, Mexico was forced to abandon its fixed-exchange-rate policy, and the Mexican peso then depreciated strongly against the dollar.

The Mexican government requested the IMF to assist with an economic stabilisation programme. The programme accounted for almost 700 per cent of the Mexican quota¹, which was far higher than normally permitted under the IMF's lending rules. The programme was adopted under a special circumstances clause in the IMF Articles of Agreement on the grounds that Mexico's financial crisis was a threat to the international monetary system.

An independent investigation of the course of events was subsequently launched, revealing criticism of particularly the IMF and the Mexican authorities for not reacting sooner to the strong decline in Mexico's foreign-exchange reserves.²

In response to the criticism, the procedures, should a country come into acute balance-of-payments problems, were amended so as to involve the IMF's Executive Board at an earlier stage than before.

Furthermore, the IMF established the Special Data Dissemination Standard, SDDS, in 1996. The purpose of the SDDS was to keep the financial market participants and economic decision-makers better informed through up-to-date and adequate statistics. The SDDS imposed certain requirements on the participating countries' statistical practice and entailed an obligation to provide information about the production of statistics to the IMF information database, which was made publicly available on the Internet. Subscription to the standard was voluntary for the IMF members. Denmark supported the initiative and was among the first 38 countries to subscribe to the SDDS in November 1996.³

In January 1997, the IMF's Executive Board approved the establishment of New Arrangements to Borrow, NAB, with a view to improving the IMF's opportunities to strengthen its liquidity, should substantial IMF

¹ Each member country has an IMF quota, of which 25 per cent is paid in foreign currency, while the remainder can be paid in the countries' own currencies. Quota payments constitute the IMF's capital base, and the quotas determine the member countries' voting power in the IMF's Executive Board and Board of Governors, cf. Thomas Enevoldsen, IMF Quotas, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2000. The impact on Danmarks Nationalbank's balance of financial accounts with the IMF is described in Louise Mogensen, The IMF and Danmarks Nationalbank's Balance Sheet, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2003; and Thomas Krabbe and Søren Vester Sørensen, Danmarks Nationalbank's Financial Accounts with the International Monetary Fund, IMF, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2009.

² Cf. pp. 78-79 of Danmarks Nationalbank, *Report and Accounts*, 1995.

³ Cf. Jesper Wormstrup, IMF's datapubliceringsstandard (The IMF's Special Data Dissemination Standard – in Danish only), Danmarks Nationalbank, *Monetary Review*, November 1996.

loans be required to prevent international financial crises. Under the NAB, the IMF was able to borrow up to of SDR 34 billion from 25 of its members (including Denmark with a loan commitment of SDR 371 million).¹

THE CRISIS IN ASIA 1997-98

In 1997, most countries in South-East Asia were affected by a far-reaching economic crisis which had a decisive impact on the development of global capital markets.² The crisis began as a currency crisis, but soon spread to the affected countries' financial markets and financial institutions, and to output and employment.

In the preceding years, there had been a considerable influx of capital to the South-East Asian economies – primarily Thailand, Malaysia, Indonesia, the Philippines and Singapore – against the background of strong economic growth and large investments ("tiger economies"). In several of the countries, the strong growth gave rise to inflationary pressure and external imbalances.

Before the crisis, the general objective of the exchange-rate policies of these countries was to stabilise their currencies vis-à-vis a basket of currencies in which the dollar carried most weight. The strengthening of the dollar against the yen and the European currencies throughout 1996 and the 1st half of 1997 weakened these countries' competitiveness considerably. At the same time, competition from e.g. India and China intensified.

The current-account deficits had to a great extent been financed on a short-term basis via the foreign borrowing of private business enterprises and banks. Confidence in the countries' fixed-exchange-rate policies meant that loans were raised at low interest rates and that the exchange-rate risk was not hedged.

The collapse of the fixed-exchange-rate policy started a chain reaction as the private non-financial sector's foreign debt increased – measured in the domestic currency. A large proportion of this debt comprised short-term dollar loans, and it became increasingly difficult to refinance the short-term foreign debt. Liquidity conditions thus became very tight and as a consequence many business enterprises had difficulty meeting their obligations to the financial sector. The banks' solvency and credit

¹ Cf. pp. 80-81 of Danmarks Nationalbank, *Report and Accounts*, 1996; and IMF, *IMF Adopts a Decision on New Arrangements to Borrow*, *Press Release*, No. 5, January 1997.

² Cf. pp. 46-49 of Danmarks Nationalbank, *Report and Accounts*, 1997; Niels Peter Hahnemann and Lars Krogh Jessen, *The Currency Crisis in Southeast Asia*, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 1997; and Kai Aaen Hansen, *Spillet om Sydøstasien (The South-East Asian Gamble – in Danish only)*, feature article in the daily newspaper *Jyllands-Posten*, 25 February 1998.

ratings generally deteriorated as a result of the non-performing loans as well as higher expenditure on the banks' own foreign loans. The currency crisis soon had a negative impact on the stock markets of the affected countries, and to offset the weakening of the currencies the central banks allowed short-term interest rates to rise.

A particular problem faced by the economies of the crisis-stricken countries was the combination of strong economic growth and relatively underdeveloped financial sectors. Factors characterising the financial institutions included inadequate internal control and management of exposures. In addition, external supervision of financial institutions was relatively inefficient.

In an attempt to stem the crisis, the IMF within a short period of time granted three exceptionally large loans to Thailand, Indonesia and Korea. In addition, a loan to the Philippines was extended and increased. These loans were granted against the background of major economic-policy stabilisation programmes to redress imbalances and ensure sustainable economic development. The large IMF loans were part of more extensive international financial assistance packages, totalling 108 billion dollars in 1997, of which 35 billion dollars came from the IMF.¹

Restructuring the financial sector was one of the main elements of the countries' economic-policy programmes with the IMF. Many banks were closed, and compliance with capital adequacy standards established by the Bank for International Settlements, BIS, was required in future. In the case of Korea, special requirements were added with respect to legislation on central-bank independence, financial supervision, accounting and auditing. In Thailand, Indonesia and Korea, financing institutions were set up for containment of the non-performing loans of financial institutions. The financing was provided via government budgets and by government borrowing in the international capital markets. In Indonesia and Korea, government-owned banks were to be privatised.

The IMF programmes were also introduced to ensure that monetary-policy interest rates were raised, that intervention by the authorities in the foreign-exchange markets was minimised (flexible exchange-rate regimes) and that existing restrictions for capital inflows were relaxed. The purpose was to re-establish favourable conditions for inflows of capital to these countries. Moreover, fiscal-policy tightenings were required as a consequence of the effects on the budgets of the economic downturn and the costs of restructuring the financial sector. In addition, trade liberalisation measures played an important role in Indonesia.

¹ Cf. pp. 85-88 of Danmarks Nationalbank, *Report and Accounts*, 1997.

Following the Asian crisis, a debate was raised on whether the IMF's economic-policy requirements under the programmes contributed to exacerbating the crisis in the countries' economies. This applied to traditional economic-policy tightening (fiscal and monetary policies), but also to the very specific and detailed plans for structural reforms that were new important elements of the IMF programmes for Asia. Critics of the IMF's crisis response pointed out that the reforms should not have been implemented until the economies had stabilised as they would only apply in the longer term.¹

In response to the criticism of the Asian programmes and IMF's lack of foresight with regard to the crisis, the IMF launched an internal evaluation of the programmes for Thailand, Korea and Indonesia. In addition, the IMF launched an external evaluation of its supervisory and research activities that was published in September 1999. The external evaluation team was headed by John Crow from Canada, and Niels Thygesen, professor at the University of Copenhagen, was one of the team members.

The main message of the evaluation report was that while the IMF should concentrate its resources on supervising macroeconomic development (exchange-rate policy, monetary and fiscal policy), its supervisory activities should be extended to include the financial sector and capital inflows and outflows. With regard to the industrialised countries, the IMF should focus on the regions – i.e. the USA, Japan and the euro area – rather than on developments in individual countries. Furthermore, the IMF's focus should generally be on the weaker economies – i.e. emerging market economies – and countries that have concluded agreements with the IMF on programmes. Finally, the evaluation report recommended publication of all IMF reports on consultations with its member countries.²

THE CRISIS IN RUSSIA 1998

For a long period Russia had suffered economic problems. After the crisis in South-East Asia, the country was affected further by falling energy prices. In addition, a government crisis in Russia in the spring of 1998 resulted in the postponement of disbursements from the IMF to Russia.³

¹ Cf. Thomas Elkjær, The IMF and the International Financial Crisis, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 1998. Among the more outspoken and prominent critics of the IMF after the Asian crisis was Joseph E. Stiglitz, *Globalization and Its Discontents*, Penguin, 2002.

² Cf. pp. 50-51 of Ministry of Economic Affairs, *Det internationale finansielle system – Ny rolle for IMF*, August 2000.

³ Cf. pp. 51-52 and 90-91 of Danmarks Nationalbank, *Report and Accounts*, 1998.

In July 1998, the IMF programme was renewed in an attempt to stabilise the Russian economy and support a continued economic reform process in the country. It was agreed that Russia's government budget deficit would be reduced by half in 1999. Monetary and exchange-rate policies would remain unchanged.

In August 1998, the Russian authorities abandoned their efforts to stabilise the currency. Payments to service foreign debt were suspended, a mandatory restructuring of domestic government debt was introduced, and currency restrictions imposed.¹ All these measures were in conflict with the IMF programme and in practice cut off Russia's access to the international capital markets and prevented further drawing on the IMF loan.

The collapse in Russia led to renewed unrest on the international capital markets. The yield spreads between the benchmark government bonds of the major industrialised countries and bonds with a higher credit or liquidity risk increased substantially.² The widening of the yield spreads was especially pronounced for bonds issues from emerging market economies, and the Brazilian currency in particular came under pressure.

Brazil was granted an international assistance package in December 1998. In addition to loans from the IMF, the World Bank and the Inter-American Development Bank, it comprised bilateral loans from member countries (including Denmark), provided through the BIS. The associated stabilisation programme focused especially on solving Brazil's fiscal-policy problems.

THE CRISIS IN ARGENTINA 2001-03

The Russian crisis brought Argentina into a recession.³ One reason was the fact that Argentina pursued a fixed-exchange-rate policy within the framework of a currency board⁴, while the currencies of its major trading partners, particularly that of Brazil, had depreciated significantly. This had a strong negative impact on Argentina's competitiveness and

¹ Cf. p. 6 of Danmarks Nationalbank, Recent Monetary Trends, *Monetary Review*, 3rd Quarter 1998.

² Cf. Leif Lybecker Eskesen, Is Last Autumn's Financial Crisis Over?, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 1999.

³ Argentina's crisis in 2001 is discussed in detail in Morten Roed Sørensen, Argentina's Crises, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2001; Jens Thomsen, Flere årsager til Argentinas krise (Several Reasons for the Argentinian Crisis – in Danish only), *Udenrigs*, No. 3, 2002; and Michael Mussa, Argentina and the Fund: From Triumph to Tragedy, *Institute for International Economics Policy Analyses*, No. 67, July 2002.

⁴ A currency board is an extreme type of fixed-exchange-rate policy. In countries with currency boards a fundamental element of monetary policy is that domestic base money (i.e. banknotes and coins and the banks' deposits with the central bank) is fully covered by foreign exchange and gold. At the same time, anyone is free to exchange money to and from an anchor currency at a fixed exchange rate without limitations, cf. Ulrik Bie and Niels Peter Hahneemann, Currency Boards, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2000.

impeded an economic upswing. The protracted economic downturn led to growing government budget deficits and debt.

Towards the end of 2000, Argentina's ongoing economic problems led to increasing uncertainty as to the sustainability of its debt burden. Investors became more reluctant to invest in Argentinian government bonds for fear that Argentina would suspend its payments.

Argentina's problems resulted in a 14 billion dollar loan from the IMF in January 2001. This briefly restored stability in the financial markets. However, sustained poor key economic indicators for the Argentinian economy and political instability led to a new crisis of confidence in July, and a further 8 billion dollar loan from the IMF in September 2001.

The situation culminated towards the end of 2001. A disbursement of 1.2 billion dollars under the IMF borrowing programme was planned for December 2001, but the disbursement could not be made due to non-fulfilment of the programme conditions. The Argentinian bond yield spread vis-à-vis the USA was in the range of 40-50 percentage points. In early 2002, Argentina suspended its payments and abandoned its fixed-exchange-rate policy of the preceding 10 years.¹

Throughout 2002, Argentina conducted unsuccessful negotiations with the IMF on a new programme. At the beginning of 2003, the IMF's Executive Board approved a transitional programme of 3 billion dollars, thereby postponing Argentina's payments to service the current programme falling due. Immediately before the IMF's approval of the transitional programme, Argentina serviced overdue amounts to the World Bank and the Inter-American Development Bank, enabling the country to conclude new loan agreements with international organisations.²

The Argentinian government entered into an agreement with the IMF on a new 3-year loan programme of nearly SDR 9 billion in September 2003. One of the key conditions of the agreement was for Argentina to negotiate an agreement with private-sector creditors. Prior to concluding the agreement, Argentina had defaulted on a payment of SDR 2.1 billion to the IMF. This was the largest amount in arrears in the history of the IMF, and Argentina was also the first large country to default on its commitments to the IMF. During the discussions on the new credit programme in the Executive Board of the IMF, the Nordic-Baltic member abstained from voting in favour of the programme together with representatives of a number of other countries, as the programme failed to meet a number of key conditions normally applied to countries in economic crisis. For example, the programme only

¹ Cf. pp. 44-45 and pp. 83-84 of Danmarks Nationalbank, *Report and Accounts*, 2001.

² Cf. p. 84 of Danmarks Nationalbank, *Report and Accounts*, 2002.

included general statements of intent concerning the necessary reforms of the public finances and the banking sector. Furthermore, the Argentinian authorities had not concluded any agreement on the restructuring of government debt to private creditors. This debt had not been serviced since December 2001.¹

Argentina's economic recovery continued in 2004-05. Higher commodity prices and a competitive export sector contributed to increasing the foreign-exchange reserve. In 2005, the creditors were offered exchange of defaulted bonds for approximately 100 billion dollars², and Argentina chose to pay off its remaining debt to the IMF ahead of schedule.³

INCREASED TRANSPARENCY AND STRENGTHENING OF THE IMF'S SURVEILLANCE OF FINANCIAL STABILITY

The criticism and evaluation of the IMF after the crisis in Asia contributed to the launching of a number of initiatives to strengthen the IMF's crisis prevention work. Experience from countries affected by a financial crisis indicated a need for increased transparency in the formulation of their economic policies. Furthermore, it was necessary to ensure the implementation of international standards on the supervision of financial institutions in all member countries in order to reduce the vulnerability of their financial sectors to unforeseen shocks.⁴

At the end of 1998 and in the spring of 1999, the IMF's Executive Board adopted a number of measures to expand the SDDS of 1996, and the IMF generally increased its surveillance of the countries' compliance with the standard. According to the new guidelines, the foreign-exchange reserves were to be published on a far more detailed basis than before. For example, the compilation would include data on the liabilities related to the foreign-exchange reserve. The statistics would also include details of government assets and liabilities in foreign currency. Furthermore, it was announced that as from end-2001, the SDDS would include requirements concerning dissemination of data on the countries' total external assets and liabilities.⁵

The IMF also initiated efforts to improve the surveillance of the countries' external vulnerabilities via assistance to enhance debt man-

¹ Cf. pp. 83-84 of Danmarks Nationalbank, *Report and Accounts*, 2003.

² This restructuring entailed that creditors' claims were written down by approximately 75 per cent, cf. p. 40-41 of Jens Thomsen, Yield and Risk, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2005.

³ Cf. p. 84 of Danmarks Nationalbank, *Report and Accounts*, 2004; and p. 83 of Danmarks Nationalbank, *Report and Accounts*, 2005.

⁴ Cf. p. 93 of Danmarks Nationalbank, *Report and Accounts*, 1999.

⁵ Cf. pp. 94-95 of Danmarks Nationalbank, *Report and Accounts*, 1999.

agement as well as the management of the foreign-exchange reserves and analyses of capital-account issues.¹

Furthermore, the IMF launched a project to publish the reports prepared about the member countries, including general analyses of the economic development in the member countries (Article IV reports) and reports prepared when a country applied for a loan from the IMF. Publication of the reports was voluntary for the IMF member countries. Denmark supported the wish for increased transparency in the IMF's work and in 1999 approved the IMF's publication of reports on Denmark.² In 2004, Danmarks Nationalbank also started publishing biannual reports on Nordic-Baltic positions on IMF discussions and decisions at its website.³

In 1999, initiatives to strengthen the IMF's surveillance of the financial sector were implemented in cooperation with the World Bank in the form of a new Financial Sector Assessment Program, FSAP. Under the FSAP, the IMF (and, with regard to emerging market economies, the World Bank) was to review the financial systems of individual member countries with a view to evaluating their stability and identifying any weaknesses.

Preparing an overview of a country's compliance with current international standards and codes of conduct in respect of monetary policy, financial supervision, payment systems and securities trading was a key element of the FSAP. Participation in the FSAP was voluntary for the IMF member countries.

In general, the FSAP reports were to be published, but the authorities were given the opportunity to remove market-sensitive information from the reports before publication, subject to agreement with the IMF. Any information which made it possible to identify individuals or individual institutions could also be omitted from the published versions.⁴

Denmark was reviewed under the FSAP in 2005-06.⁵ The IMF subsequently completed a number of reports about Denmark, which were published in October 2006 after discussion by the IMF's Executive Board. In the IMF's overall assessment, Denmark's financial systems were resilient and well supervised. The IMF's evaluation of the payments and settlement systems was also predominantly positive. The financial infrastructure was thus described as highly developed and technologic-

¹ Cf. p. 91 of Danmarks Nationalbank, *Report and Accounts*, 2000.

² Cf. p. 13 of Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 1999.

³ Cf. p. 83 of Danmarks Nationalbank, *Report and Accounts*, 2004.

⁴ Cf. pp. 86-87 of Danmarks Nationalbank, *Report and Accounts*, 2001.

⁵ Cf. pp. 69-70 and 82-83 of Danmarks Nationalbank, *Report and Accounts*, 2006; Gitte Wallin Pedersen, *Review of the Financial System in Denmark*, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2005; and Gitte Wallin Pedersen, *IMF Review of the Financial Sector in Denmark*, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2006.

ally well advanced. The individual systems also complied to a large extent with international standards. However, the IMF review showed a few areas where it was possible to strengthen the settlement of payments in Denmark.¹

By April 2009, more than 140 of the 185 IMF members had been or were being reviewed under the FSAP.²

THE IMF'S CONDITIONALITY AND ACCESS LIMITS

After the Asian crisis in 1997-98, criticism of the IMF's conditionality led to a review of the rules in 2001. The purpose was to strike the right balance between reduction of the number of conditions and ensuring that required economic-policy measures were implemented.³

The access limit rules of the IMF were also taken up for consideration after the Asian crisis. According to those rules, countries could normally borrow up to 100 per cent of their quotas in a single year and 300 per cent on an accumulated basis over several years. However, it was possible to depart from the rules in special circumstances, and since the crisis in Mexico in 1994-95, making exemptions from the normal access limits became increasingly necessary to prevent acute balance-of-payments crises, cf. Table 9.1.

In practice, the large IMF loans enabled private creditors to call in their loans and withdraw without losses after having provided loans for a number of years at relatively high returns. It was therefore agreed in 2000 that the IMF should investigate how a country could involve private creditors in the resolution of its financial crisis if the country concerned applied for balance-of-payments support.⁴

In the spring of 2003, the IMF approved the following principles for waiving the IMF's access limits⁵:

- The borrowing country should face a balance-of-payment crisis due to capital outflows so extensive that IMF assistance beyond the normal access limits was required.
- There should be a high degree of probability that the country's debt would be manageable on completion of the economic-policy programme agreed with the IMF.

¹ Cf. Box 8, IMF's Assessment of the Danish Payment and Settlement Systems, in Danmarks Nationalbank, *Financial stability*, 2008.

² Cf. p. 41 and p. 69 of IMF, *Annual Report 2009*.

³ Cf. pp. 85-86 of Danmarks Nationalbank, *Report and Accounts*, 2001.

⁴ Cf. p. 91 of Danmarks Nationalbank, *Report and Accounts*, 2000; p. 84 of Danmarks Nationalbank, *Report and Accounts*, 2001; p. 84 of Danmarks Nationalbank, *Report and Accounts*, 2002; and Ole Hollensen, *New Mechanisms for Restructuring Public Debt in Crisis Countries*, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2003.

⁵ Cf. pp. 85-86 of Danmarks Nationalbank, *Report and Accounts*, 2003

LOAN ARRANGEMENTS WHERE EXEMPTIONS FROM NORMAL ACCESS LIMITS HAVE BEEN APPLIED, 1995-2002

Table 9.1

Country	Date	Per cent of quota
Mexico	01-02-1995	688
Thailand	20-08-1997	505
Indonesia I	05-11-1997	490
Korea I	04-12-1997	1,938
Korea II	18-12-1997	1,244
Russia	20-07-1998	197
Indonesia II	25-08-1998	312
Brazil I	02-12-1998	538
Indonesia III	25-03-1999	34
Indonesia IV	04-02-2000	175
Turkey I	21-12-2000	600
Argentina I	12-01-2001	245
Turkey II	15-05-2001	660
Argentina II	07-09-2001	301
Brazil II	14-09-2001	400
Turkey III	04-02-2002	1,330
Uruguay I	25-06-2002	378
Uruguay II	08-08-2002	123
Brazil III	06-09-2002	752

Note.: Under the IMF's normal access limits, a country can draw on other countries up to a maximum of 100 per cent of the country's capital subscription ("quota") in the IMF in a single year, and a maximum of 300 per cent over several years.

Source: P. 96 of Ole Hollensen, *New Mechanisms for Restructuring Public Debt in Crisis Countries*, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2003.

- The borrowing country should have a good chance of returning to normal borrowing in the private financial market.
- There should be a fair probability that the country had sufficient institutional capacity and political support to implement the programme.

ESTABLISHMENT OF AN INDEPENDENT EVALUATION OFFICE

In 2001, the IMF established an Independent Evaluation Office, IEO, reporting directly to the Executive Board. The office was independent of the IMF staff and management and was established to provide impartial evaluations. The IEO should have full access to the IMF's archives and decides for itself which areas to evaluate after consulting the Executive Board of the IMF and other stakeholders. The IEO's reports were to be published at the IMF website.¹

In 2004, the IEO published a report on IMF's loan programmes with Argentina during the 1990s. The report criticised the Argentinian

¹ Cf. p. 91 of Danmarks Nationalbank, *Report and Accounts*, 2000; and p. 85 of Danmarks Nationalbank, *Report and Accounts*, 2004.

authorities for not having implemented the agreed reforms and budget requirements, but it also criticised the IMF's acceptance of recurring deviations from the economic-policy programme requirements and the lack of discussion of the exchange-rate policy.¹

In 2006, the IEO published an evaluation of the FSAP programme². The IEO concluded that the FSAP initiative had deepened the IMF's understanding of the financial sectors of its member countries and improved the surveillance of their economies. But it also mentioned that there was room for improvement of the FSAP quality.

In 2007, the IEO presented an evaluation of the IMF's exchange-rate work. It recommended a strengthening of the IMF's work at the analytical and policy-oriented level, including in connection with assessments of whether a country's foreign-exchange policy created external imbalances.³ In response to the criticism, the IMF implemented a new framework for the bilateral surveillance of its member countries in 2007, increasing the focus on external stability, including the exchange-rate policies of the member countries.⁴

SDR ALLOCATIONS

At the IMF Annual Meeting in 1967, a resolution was adopted to establish a system of Special Drawing Rights, SDRs, to cover the need for higher international liquidity.⁵ SDRs were to be issued by the IMF and allocated to the central banks of the member countries for use in the same way as other foreign-exchange reserve assets. Countries that needed "hard" currency were to be allowed to exchange SDRs with countries with excess international liquidity.

The first SDR allocation took place in 1970-72. The value of an SDR was originally defined relative to gold, which is why SDRs were also referred to as "paper gold". In 1973, the value of an SDR was defined relative to the dollar, and from 1974 relative to a basket of 16 currencies. In 1981, the basket was reduced to comprise only the five internationally most frequently used currencies (dollar, D-mark, French franc, yen and pound

¹ Cf. p. 85 of Danmarks Nationalbank, *Report and Accounts*, 2004.

² Cf. IMF Independent Evaluation Office, *Report on the Evaluation of the Financial Sector Assessment Program*, January 2006.

³ Cf. Søren Vester Sørensen, Reale effektive ligevægtsvalutakurser for Danmark (Real Effective Equilibrium Exchange Rates for Denmark – in Danish only), *Danmarks Nationalbank Working Paper*, No. 58, 2008.

⁴ Cf. p. 79 of Helene Kronholm Bohn-Jespersen, *The IMF Undergoing Change*, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2008.

⁵ Cf. pp. 104-105 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990 (Monetary History of Denmark 1960-1990 – in Danish only)*, Danmarks Nationalbank, 1993.

sterling). With the introduction of the euro in 1999, the currencies changed to dollar, euro, yen and pound sterling.¹

Although the SDR system never had the intended impact on the global foreign-exchange reserves, it was decided at the IMF Annual Meeting in 1997 to make a one-off SDR allocation for the benefit of the member countries that had joined the IMF after 1981, when the last allocation had taken place. However, the one-off allocation could not enter into force until it was ratified by at least three fifths of the IMF members representing at least 85 per cent of the votes.

At the request of the G20² summit in April 2009, the IMF decided, in view of the financial crisis, to allocate SDRs in the amount of 291 billion dollars to the member countries. A minor share of this allocation (34 billion dollars) was execution of the decision of 1997. The SDR allocations increased Denmark's SDR allocation by around SDR 1.4 billion or around kr. 11 billion.³

THE IMF AS AN ORGANISATION

According to its Articles of Agreement of 1944, the purposes of the IMF are to promote international monetary cooperation, to facilitate international trade, high levels of employment and exchange stability, to assist in the establishment of an unrestricted multilateral system of payments between members, and to support members facing balance-of-payments problems.⁴

Although the purposes of the IMF were formulated in very different times when the world was still characterised by the protectionism and bilateralisation of world trade that were products of the crisis in the 1930s, they have proved to be sustainable over time. On the basis of its purposes, the IMF has been able to regularly renew itself over the years, thus ensuring that the organisation continues to create value for its members as an international cooperation organisation.⁵

¹ Cf. pp. 93-94 of Danmarks Nationalbank, *Report and Accounts*, 1998.

² The G20 was established in 1999 and comprises finance ministers and central bank governors from the following 19 countries: Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey, the UK and the USA. The EU is the 20th member and is represented by the European Commission and the European Central Bank, respectively.

³ Cf. p. 89 of Danmarks Nationalbank, *Report and Accounts*, 1997; and Thomas Krabbe and Søren Vester Sørensen, Danmarks Nationalbank's Financial Accounts with the International Monetary Fund, IMF, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2009.

⁴ Cf. "Articles of Agreement of the International Monetary Fund" at the IMF's website (www.imf.org).

⁵ Cf. Rodrigo de Rato, Is the IMF's Mandate Still Relevant?, *Global Agenda*, January 2005; James M. Boughton, The IMF and the Force of History: Ten Events and Ten Ideas That Have Shaped the Institution, *IMF Working Paper*, No. 04/75, May 2004; and Michael D. Bordo and Harold James, The International Monetary Fund: Its Present Role in Historical Perspective, *NBER Working Paper*, No. 7724, June 2000.

IMF STAFF NUMBERS 1990-2009			Table 9.2
	1990	2009	Change
	Number of persons		Per cent
Total	1,774	2,357	33
Of which number of economists	713	1,255	76

Source: IMF, *Annual Report 2010*. Webtable 5.3.

Throughout the 1990s and the first half of the 2000s, the IMF acquired a new central role for itself in preparing good governance and central banking standards, e.g. codes of good practices on public-sector budgeting, anti-corruption procedures, recommendations for transparency in monetary policy and effective financial supervision as well as standards for the preparation of credible economic statistics.¹

During its annual country consultations, the IMF now focused on whether there was potential for further improvements towards the "best practices" embodied in the above standards and codes. This was not only a good foundation in relation to the IMF's examinations of less developed countries. It also provided the basis for revitalising and focusing the IMF's bilateral dialogue with the industrialised countries, which, during the 1970s and the 1980s, had gradually been influenced by the fact that the industrialised countries no longer needed to raise loans from the IMF. This had limited the IMF's role to conducting surveillance of economic policy and development². In step with the growing number of other observers (such as interest groups, private banks and independent think tanks) analysing economic and political developments in the industrialised countries, the IMF's detailed and unfocused analyses of individual industrialised countries also created less separate value than before.

The many financial crises also led to a considerable effort to strengthen the IMF's analytical capacity as regards global financial markets and financial stability. This was reflected in the organisation's staffing requirements. The number of employees rose from 1,774 in 1990 to 2,357 in 2009, and the increased analytical work was particularly evident in the number of economists, cf. Table 9.2.

Finally, the development in the 1990s and 2000s was characterised by a much higher degree of transparency in the IMF's work, cf. above.

¹ Cf. p. 10 of Ministry of Economic Affairs, *Det internationale finansielle system – Ny rolle for IMF*, August 2000.

² Cf. p. 73 of Ministry of Economic Affairs, *Det internationale finansielle system – Ny rolle for IMF*, August 2000.

SUPPLEMENT A

Payment Systems and the Financial Infrastructure

DEVELOPMENTS WITHIN RETAIL PAYMENTS

The years after 1990 saw pronounced changes in the payment instruments used by the Danes for private consumption, cf. Chart A.1. The volume of cash, cheque and giro payments declined substantially, while the volume of electronic payments¹ increased.

The Dankort – a payment card (debit card²) linked to a bank account – was introduced in 1983.³ Initially, Dankort payments were based on vouchers used in manual imprinters ("zip-zap" machines). In 1984 the banks introduced high-street cash dispensers enabling cash withdrawal around the clock. The electronic Dankort system, whereby the Dankort could be used for online payments via EFTPOS (electronic funds transfer at point of sale) was tested in 1984 and launched throughout Denmark in 1985.⁴

Until 1986, Dankort payments were still mainly voucher-based, but from then on electronic card payments rapidly gained ground and became the dominant payment method. From 1998 it also became possible to use the Dankort for payments over the Internet, and the voucher-based zip-zap machines were phased out at end-2007⁵. In 1991 the value of Dankort payments exceeded 10 per cent of private consumption, and by 2009 it had reached 34 per cent, cf. Chart A.2.

Despite the rising volume of electronic payments, some increase was registered in the circulation of banknotes and coins relative to private consumption (the cash ratio). However, calculations indicate that the use of cash for actual retail payments declined during the period in question.⁶ The increase in the cash ratio is presumably attributable to falling

¹ Using electronic payment cards (e.g. Dankort and MasterCard) and direct debit, whereby the payment recipient debits the invoice amount directly from the buyer's account.

² I.e. a payment card that can be used to withdraw cash and to purchase goods and services, the amount being debited directly from the cardholder's bank account.

³ Cf. pp. 378-379 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990 (Monetary History of Denmark 1960-1990 – in Danish only)*, Danmarks Nationalbank, 1993.

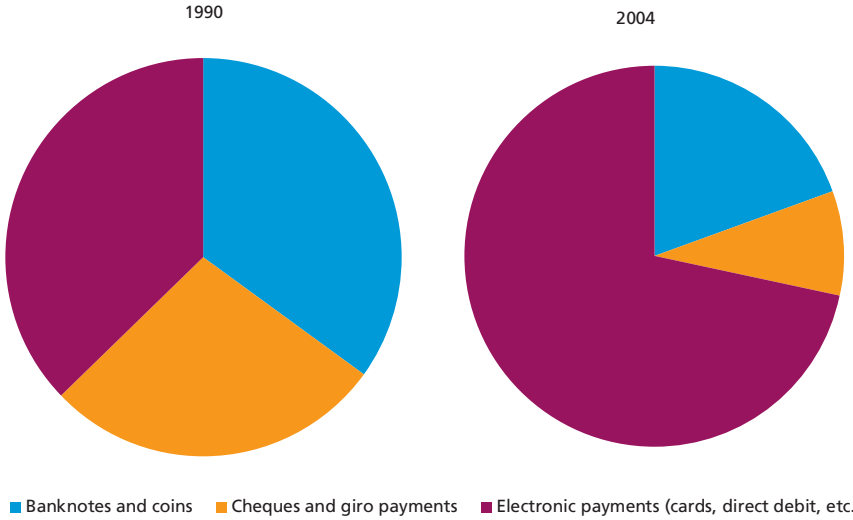
⁴ Cf. pp. 135-136 of Danmarks Nationalbank, *Payment Systems in Denmark*, 2005.

⁵ Cf. the press release from PBS, "Fluesmækkeren går på pension" (*The Zip-Zap Machine Retires – in Danish only*), dated 18 October 2007.

⁶ Cf. Maria Carlsen and Johanne Dinesen Riishøj, *Brug af kontanter i Danmark (Use of Cash in Denmark – in Danish only)*, Danmarks Nationalbank, *Working Paper*, No. 41, October 2006.

PAYMENT INSTRUMENTS USED IN CONNECTION WITH PRIVATE CONSUMPTION IN 1990 AND 2004

Chart A.1

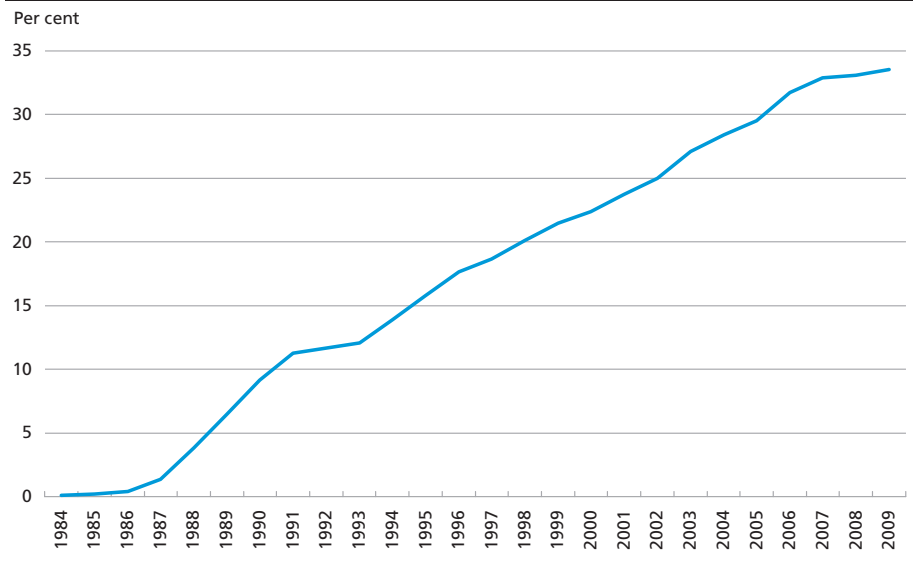


Source: Maria Carlsen and Johanne Dinesen Riishøj, Brug af kontanter i Danmark (Use of Cash in Denmark – in Danish only), Danmarks Nationalbank, Working Paper, No. 41, October 2006.

interest rates and lower inflation, which reduced the costs of holding cash rather than bank deposits or securities. Furthermore, surveys indicated growth in the black economy up through the 1980s and the first

VALUE OF DANKORT PAYMENTS AS A PERCENTAGE OF PRIVATE CONSUMPTION 1984-2009

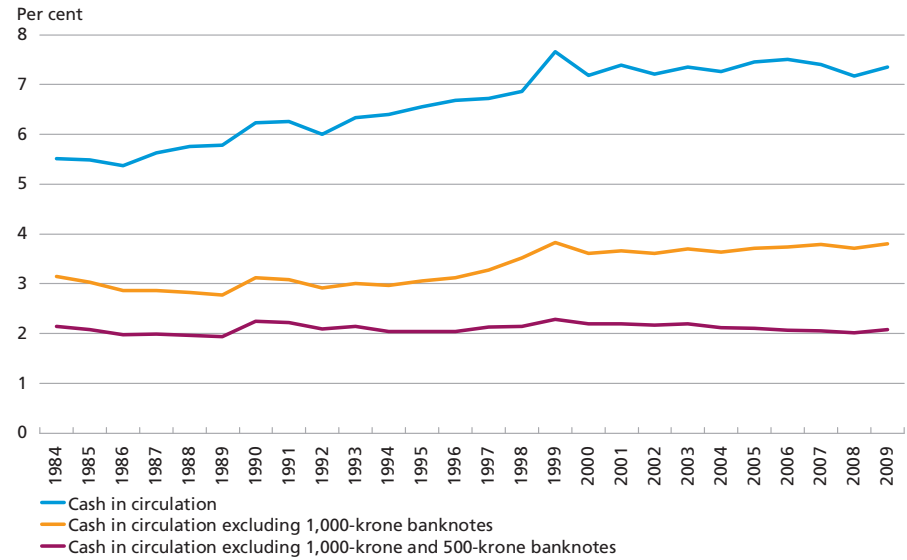
Chart A.2



Source: Statistics Denmark and PBS.

CASH IN CIRCULATION AS A PERCENTAGE OF PRIVATE CONSUMPTION
1984-2009

Chart A.3



Note: Cash in circulation stated as the circulation of banknotes and coins at year-end.
Source: Danmarks Nationalbank and Statistics Denmark.

half of the 1990s, which may have increased demand for banknotes with high denominations.¹ Towards the end of the period 500-kroner banknotes were also used more frequently in cash dispensers. Cash in circulation excluding 500- and 1,000-kroner banknotes remained stable as a percentage of private consumption in the years after 1990, cf. Chart A.3.

In 1993, the Danmønt card was introduced throughout Denmark following a pilot project in the town of Næstved from 1 September 1992. This was a prepaid non-rechargeable electronic card intended as an electronic alternative to cash in connection with payment of small amounts.² However, the Danmønt card was never a success, and in 2005 it was phased out. Its lack of success is presumably attributable to the widespread use of the Dankort as a means of payment that did not involve any fees.

In the years following the millennium rollover, various payment solutions were tested on a small scale whereby customers could buy products using their telephones/mobile phones and pay over their telephone bills.³

¹ Cf. p. 41-44 of Erik Haller Pedersen and Tom Wagener, *Circulation of Notes and Coins in Denmark*, Danmarks Nationalbank, *Monetary Review*, November 1996.
² Cf. Jan Thorndal, *Prepaid Cards*, Danmarks Nationalbank, *Monetary Review*, August 1994.
³ Cf. p. 143 of Danmarks Nationalbank, *Payment Systems in Denmark*, 2005; Jesper Bakkegaard, *Mobilbetaling (Mobile Payments – in Danish only)*, Danmarks Nationalbank, *Working Paper*, No. 63, October 2009; and Jesper Bakkegaard, *New Payment Instruments*, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2010.

THE DANKORT FEE SAGA

Right from the introduction of the Dankort in the mid-1980s, the issue of fees for using the card received much political attention.¹ Initially, the cardholder was charged a fee of kr. 0.50 per transaction. In addition, retailers joining the system incurred the expenses related to buying and operating the Dankort terminals. The banks covered the costs for establishment and operation of the Dankort system.

Consumers found it difficult to accept the fee of kr. 0.50 per transaction, and it was abolished from 1 January 1985. However, the individual bank was allowed to charge a special cardholder fee corresponding to the fee structure for using cheques.

In its start-up phase, the Dankort was, as mentioned earlier, a voucher-based system, and the processing of Dankort transactions was time-consuming. Therefore, the fee policy vis-à-vis retail enterprises was altered. Retailers that simply returned transaction vouchers were to pay a fee of kr. 2 per transaction, while retailers that entered and submitted their transactions on magnetic tape could reduce their transaction fee to as little as kr. 0.15. To induce the retail sector to support the launch of the electronic Dankort system, the transaction fee levied on the retail enterprises was suspended until 1 April 1985. After this date, the plan was to reintroduce the fee for retailers that had not signed an agreement to connect to the electronic Dankort system.

This fee was not reintroduced as planned, however, since the Folketing (Danish parliament) in 1985 decided that the card issuer's costs could not be passed on to the payment recipients.² When the Payment Card Act was amended in 1999, it was decided that this provision should apply to physical trading only; this was meant as an incentive for banks to invest in secure systems for Internet trading. In other words, the banks could charge a fee to Internet stores when customers paid by Dankort. At the same time, the explanatory notes to the bill to amend the Act operated with the possibility of eventually charging fees for retail trading in physical stores under certain conditions.

In its consultation response, Danmarks Nationalbank supported such liberalisation of the Payment Card Act as it would, in the opinion of Danmarks Nationalbank, help to prepare the Dankort system for the future:

¹ Cf. pp. 137-140 of Danmarks Nationalbank, *Payment Systems in Denmark*, 2005.

² At the time, statutory regulation of this area was unusual in an international context.

"... The bill entails the rescinding of Section 20 of the Payment Card Act which prohibits the banks from imposing fees on retail traders for their Dankort transactions. Initially this applies only to payments via the Internet. In three years' time the banks may also impose fees on the retail sector if real competition has been established in the area.

Further development of the payment technology will be of benefit to banks, the retail sector and consumers alike. However, Section 20 implies that some elements of the costs may not be imposed on the retail sector. To some extent this reduces the banks' incentive to develop the technology further.

The Nationalbank has traditionally supported the establishment of a common payment systems infrastructure. The common infrastructure must be regarded as a considerable advantage. The objective must therefore be a liberalisation of the Payment Card Act without at the same time destroying the core of the common infrastructure."¹

In April 2003, the Ministry of Economic and Business Affairs concluded a Dankort agreement with Danish Commerce & Services, the Danish Consumer Council and the Danish Bankers Association on new fee rules. From 1 January 2005 onwards, banks were allowed to charge a fee of up to kr. 0.50 from retailers when customers used a chip-based Dankort; this type of card was better protected against fraud than the old card with a magnetic strip. Retailers had the option of passing on the fee to consumers. In its consultation response to the bill to amend the Act on Certain Means of Payment, Danmarks Nationalbank expressed satisfaction that an agreement had been reached that could secure the future of the Dankort:

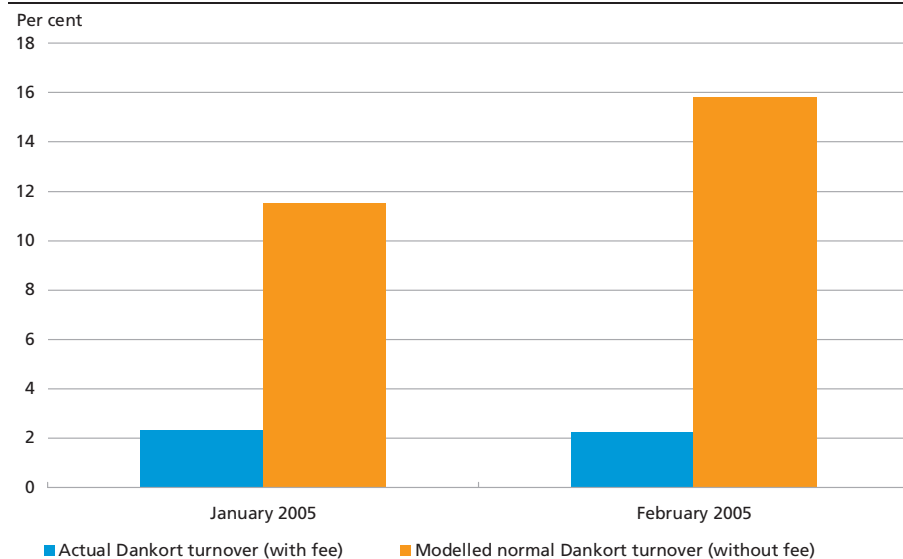
"The bill entails maintaining the existing common infrastructure, while also ensuring that there are no obstacles to its further development. Danmarks Nationalbank has on numerous occasions emphasised the significance of these aspects, while also attaching importance to ensuring competition in the field of payment cards. Danmarks Nationalbank is pleased to note that in spite of the difficulties in balancing opposing interests an agreement was reached on the future of the Dankort."²

¹ Quotation from p. 79 of Danmarks Nationalbank, *Report and Accounts*, 1998.

² Quotation from letter of 9 May 2003 from Danmarks Nationalbank to the Ministry of Economic and Business Affairs concerning the consultation on the bill to amend the Act on Certain Means of Payment (published at Danmarks Nationalbank's website – in Danish only).

IMPACT OF FEE ON YEAR-ON-YEAR GROWTH IN DANKORT TURNOVER

Chart A.4



Note: The modelled normal Dankort turnover – i.e. the turnover that would have been achieved, had there not been a fee on Dankort transactions – has been calculated on the basis of the retail turnover index using Danmarks Nationalbank's Dankort model, cf. Box 5, "Dankort transactions as an indicator of retail sales" in Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2005; Maria Carlsen and Peter E. Storgaard, Dankort Payments and Retail Sales, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2010; and Maria Carlsen and Peter E. Storgaard, Dankort payments as a timely indicator of retail sales in Denmark, *Danmarks Nationalbank Working Paper*, No. 66, March 2010.

Source: Danmarks Nationalbank, Statistics Denmark and PBS.

During 2004, all Dankort cards with magnetic strips were replaced by chip-based cards. In practice, the banks charged retailers the maximum fee of kr. 0.50 per transaction. Practically all retailers chose to pass on the kr. 0.50 to consumers, which was heavily criticised by consumers and was clearly reflected in the use of the card for payment purposes, cf. Chart A.4.

During the election campaign up to the general election in February 2005, an electoral pledge was made to relieve the consumers of the fee. Against this background, the Ministry of Economic and Business Affairs called a meeting of representatives from the Danish Bankers Association and Danish Commerce & Services to discuss the future of the Dankort. As a result of these negotiations, the consumer fee of kr. 0.50 was abolished as from 1 March 2005. Instead, retailers were to contribute to the infrastructure of the card via an annual subscription fee.

In connection with the Dankort fee discussions in 2005 it was suggested that Danmarks Nationalbank take over operation of the Dankort. In this context Danmarks Nationalbank issued a statement saying that operation of a system such as the Dankort was outside the remit of the central bank:

"Danmarks Nationalbank finds that it is completely outside our remit as a central bank to be responsible for the operation of a system such as the Dankort. The Dankort provides electronic access to an account with a bank and is therefore comparable to an electronic cheque, not to banknotes and coins."¹

CASH SUPPLY

Cash supply after the discontinuation of the remaining branches of Danmarks Nationalbank

Until the end of the 1980s, the cash supply on Funen and in Jutland was handled by Danmarks Nationalbank's branches, while distribution east of the Great Belt and in Greenland took place from the head office in Copenhagen. The branches had been established at a time when Danmarks Nationalbank to some extent conducted traditional banking activities, such as discounting bills of exchange, in addition to its tasks as central bank. In step with the discontinuation of these tasks the cash supply became the only remaining business area for the branches, making them unprofitable to operate.

In connection with the discontinuation of Danmarks Nationalbank's remaining branches in 1989, negotiations were initiated with the banks' organisations with a view to establishing a new cash supply system.² Danmarks Nationalbank held the basic view that the exchange of cash should be decentralised as far as possible in order to reduce the number of cash transports. Local cash exchange would save transport time and thus interest days for the banks. In addition, it would be more safe to avoid many and long transports.

The cash-supply model implemented in 1990 and the following years entailed that Danmarks Nationalbank still handled the distribution of banknotes on Zealand from its domicile in Copenhagen, whereas cash depots were established at banks west of the Great Belt and on the islands of Lolland-Falster and Bornholm, and in Greenland. These depots undertook an obligation to receive cash from and supply cash to all banks and post offices in their local areas, and were to stock all bank-note denominations. Banknotes that were unfit for circulation were to be collected at the depots and picked up by or sent by post to Danmarks Nationalbank. It would be possible for banknotes for recirculation to be

¹ Cf. Danmarks Nationalbank's statement concerning Danmarks Nationalbank and the Dankort of 22 February 2005 (published at Danmarks Nationalbank's website – in Danish only).

² Cf. Tom Wagener, Denmark's Cash Supply System, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 1998.

sent to and ordered from Danmarks Nationalbank free of charge to the depots. Furthermore, Danmarks Nationalbank undertook to receive and supply cash by post from and to the provincial banks which were unable to utilise the depot system due to inadequate transport facilities.

Following a pilot project, the first cash depot was established in Hjørring (North Jutland) on 1 January 1990. By the end of 1990, there were 16 cash depots. The following year another two were established in Jutland, bringing the total to 18.

Restructuring of the cash supply in 1998

From March 1998 a number of adjustments were made to the cash supply system. These adjustments reflected fundamental considerations relating to the distribution of tasks between Danmarks Nationalbank and the commercial banks in the area of cash supply, as well as the need to ensure effective and appropriate organisation of the cash supply at all times and to limit the number of cash transports.

Danmarks Nationalbank's sorting of banknotes for recirculation free of charge contributed to an excessive number of transports between Danmarks Nationalbank and the banks – particularly in the Greater Copenhagen area – with the costs and security risks this entailed. Furthermore, the banks' access to send and receive cash by post to and from Danmarks Nationalbank did nothing to further the objective of local exchanges. Finally, cash flows had changed considerably as a result of collection schemes whereby private retail chains for security reasons concluded agreements with CIT (cash in transit) companies on collection of cash and its subsequent transport to regional collection centres. There was no return system to take this cash back to the local areas, so Danmarks Nationalbank handled this task.

The cash supply model implemented in 1998 entailed that over a short period Danmarks Nationalbank withdrew from the handling of banknotes for recirculation. As the banks increasingly took over the supply of cash, Danmarks Nationalbank's sorting and recirculation of cash that was fit for circulation was phased out. The banks already to a great extent handled sorting and quality control of banknotes, and experience from other countries showed that delegating this task to the banks gave no deterioration in the quality of the banknotes in circulation. The banks had an interest in maintaining a high quality of banknotes in circulation, among other reasons to facilitate the use of banknotes in cash dispensers. However, Danmarks Nationalbank would still conduct more indirect quality control by regularly assessing the quality of incoming banknotes for scrapping and by taking random samples at the depots.

In practice the restructuring entailed discontinuation of Danmarks Nationalbank's direct banknote transactions with the banks, as transactions were channelled to the depot system. When the restructuring had been completed, Danmarks Nationalbank's services to the depots were limited to simply supplying them with new banknotes and receiving banknotes for scrapping. In order to promote circulation of banknotes in the local areas, it became possible for the cash depots to send and receive banknotes by post to and from the banks.

A number of depots were established to handle the cash supply on Zealand, the first four being commissioned in the Greater Copenhagen area in March 1998. Subsequently, more depots were established in other parts of Denmark.

Furthermore, the financing of the cash-depot system was restructured. Danmarks Nationalbank's annual subsidies for the depots, which were originally intended to be establishment subsidies, lapsed. From then on, the system was financed solely from fees on receipts and disbursements. These fees were based on full recovery of costs and were identical throughout the country.¹

The cash supply and Y2K

In the period up to the millennium rollover there were global concerns about potential computer problems in connection with the transition to the year 2000.² This also affected the cash supply. Danmarks Nationalbank stated on several occasions that there was no cause for concern since the financial sector had made exhaustive preparations for the millennium. At the same time, Danmarks Nationalbank warned against hoarding of cash.

In order to prevent concerns about a shortage of cash and a derived propensity for hoarding, Danmarks Nationalbank announced that for a prolonged period it would not destroy banknotes returned to Danmarks Nationalbank for scrapping. At year-end 1999 the reserve of banknotes amounted to approximately kr. 60 billion.

In December 1999, Danmarks Nationalbank implemented a series of special measures to guarantee an efficient cash supply should extraordinarily high demand for cash arise in the days immediately preceding the millennium rollover. These measures were related to the distribution

¹ In 2009 the first ideas for a new Danish cash supply model were presented. Danmarks Nationalbank and the Danish Bankers Association decided that a new, joint company – owned by Danmarks Nationalbank and the banks – was to take over the banks' cash depots. Moreover, a process was to be initiated whereby the number of cash depots could gradually be reduced to only two cash centres observing a security standard prepared by Danish Standards with input from all players and stakeholders involved in the supply of cash, cf. p. 31 of Danmarks Nationalbank, *Report and Accounts*, 2009.

² Cf. pp. 67-68 of Danmarks Nationalbank, *Report and Accounts*, 1999.

of banknotes and applied in the period from 6 December 1999 to mid-January 2000. Besides delivery to the cash depots, Danmarks Nationalbank also offered banknote delivery to all banks during this period. Furthermore, Danmarks Nationalbank's Cash Desk was open to serve all banks during extended opening hours. Danmarks Nationalbank thus temporarily acted as cash depot to the banks.

However, it turned out that private individuals withdrew only very limited amounts of extra cash in connection with the transition to the year 2000, and the dreaded IT problems neither materialised in Denmark nor internationally.¹

COUNTERFEIT BANKNOTES AND NEW BANKNOTE SERIES

Up through the 1990s the extent of counterfeiting rose significantly in Denmark, although the number of counterfeit banknotes was modest in comparison with other countries.² The number of counterfeit banknotes annually found in circulation rose from approximately 100 in the early 1990s to around 700 in the late 1990s and more than 1,000 in the years immediately after the millennium rollover. An equivalent increase was seen in the number of counterfeit banknotes seized by the police.

The reason for the increase was more widespread access to new reproduction technology, making it easier and cheaper to produce counterfeit banknotes. In the early 1990s photocopying was the primary technology used for counterfeiting banknotes. The counterfeit banknotes were not of particularly good quality, and few people had access to colour copiers. In the mid-1990s photocopying was replaced by the use of colour printers by counterfeiters. After the millennium rollover genuine-looking counterfeit banknotes produced in real printing presses were found.

Danmarks Nationalbank sought to counter this development by introducing a new banknote series in 1997-99, with more security features such as a window thread with colour change, strong colours, a hidden picture and microlettering in addition to the traditional security features, i.e. a hidden security thread and a watermark. These measures were supplemented with information about banknote security features in an attempt to increase public awareness of counterfeiting. The preventive effort was also stepped up by way of information campaigns about the consequences of counterfeiting (imprisonment for up to 12

¹ Cf. p. 7-8 of Danmarks Nationalbank, Recent Monetary Trends, *Monetary Review*, 1st Quarter 2000.

² Cf. Ulrik Bie and Johan Sebastian Gabel, Counterfeit Banknotes, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2002; and Maria Carlsen and Johanne Dinesen Riishøj, Counterfeit Banknotes, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2004.



Note: Johan Alkjær, illustrator at the Banknote Printing Works, was overall responsible for the artistic design of the banknote series.

years). In 2002-05 a further two security features were added to the 1997 banknote series – a hologram and fluorescent colours, cf. Box A.2.¹

Over time, Danmarks Nationalbank also became more restrictive as regards granting permission to reproduce banknotes as illustrations. Following an approach from Interpol and a surge in the use of banknotes in advertisements, etc., Danmarks Nationalbank in 1991 issued new, more stringent rules for the advertising industry. From 1992, it was

¹ In 2009 Danmarks Nationalbank began to issue a new banknote series (the "bridge series") with new, advanced security features, cf. p. 20 of Danmarks Nationalbank, *Report and Accounts*, 2009.

therefore no longer permitted to reproduce banknotes or parts thereof in advertisements, leaflets or similar.¹ These provisions were issued with reference to Danmarks Nationalbank's copyright to the banknotes. This practice was tried at the Danish Supreme Court, which delivered its ruling in 1997.² Danmarks Nationalbank's copyright to the banknotes was acknowledged, but at the same time it should be taken into account that banknotes are a symbol of financial value, and it must therefore be possible to use banknotes to illustrate this. Danmarks Nationalbank subsequently adjusted its practice in accordance with the ruling to the effect that banknotes may be used as illustrations provided that their size differs substantially from that of the real banknotes.

In 2005, only 442 counterfeit banknotes were found in circulation. This was a considerable reduction relative to the immediately preceding years, which could indicate that the initiatives to improve banknote security were successful. Only few attempts to copy the new security features were detected.³

DANMARKS NATIONALBANK'S PAYMENT SYSTEMS

In 1981 Danmarks Nationalbank introduced the payment system DN Inquiry and Transfer System. This was an electronic system that allowed banks and a few other players to settle large krone-denominated payments (wholesale payments) among themselves via their accounts at Danmarks Nationalbank. Initially, DN Inquiry and Transfer System was used for transactions in connection with trading in the Danish money market and the foreign-exchange market for Danish kroner, but later it also became possible for account holders to transfer liquidity to their settlement accounts for use in the Danish settlement systems.

DN Inquiry and Transfer System was an RTGS (Real-Time Gross Settlement) system, in which transactions were settled individually immediately after receipt of the transfer request. This entailed a high degree of security for timely settlement of payments. Via visual display units, the banks had direct access to their accounts at Danmarks Nationalbank so that they could transfer payments from their own accounts to those of other banks. Over time, DN Inquiry and Transfer System became known as the banks' "homebanking system" for krone-denominated payments.

¹ Cf. pp. 55-56 of Danmarks Nationalbank, *Report and Accounts*, 1991.

² Cf. p. 63 of Danmarks Nationalbank, *Report and Accounts*, 1997.

³ Cf. pp. 62-63 of Danmarks Nationalbank, *Report and Accounts*, 2005.

DN Inquiry and Transfer System was one of the first RTGS systems in the world. Not until the 1990s did RTGS systems come into widespread use in other countries.¹

In connection with the launch of the euro in 1999 the trans-European payment system, TARGET², was introduced in all 15 EU member states. The system was intended for settlement of large, time-critical payments in euro. Technically, TARGET was based on links between the national RTGS systems and the European Central Bank's system. The Danish TARGET component was named DEBES³. Like DN Inquiry and Transfer System, DEBES was an RTGS system and could be seen as the Danish banks' homebanking system for euro-denominated payments. When a cross-border euro payment was effected via DEBES, the payment order was sent directly to Danmarks Nationalbank via SWIFT⁴, the identity of the recipient being contained in the actual payment order. Danmarks Nationalbank then performed checks for adequate cover, entered the amounts and remitted payment to the recipient's national central bank, which credited the amount to the recipient. Cross-border payments received in DEBES were credited to the recipient's account at Danmarks Nationalbank.⁵

Although DN Inquiry and Transfer System was upgraded from time to time, it was unable to keep up with developments in the financial sector. For example, screen images were not updated on a continuous basis, and the banks had to enter data from DN Inquiry and Transfer System manually into their liquidity management systems. Consequently, Danmarks Nationalbank decided to develop a new RTGS system, Kronos⁶, for payments in both kroner and euro. In 1999 Danmarks Nationalbank began to analyse how the requirements for a modern RTGS system could be met. This task was accentuated by the forthcoming referendum on Danish participation in the euro, cf. Chapter 8. Kronos was developed in

¹ Cf. Morten L. Bech and Bart Hobijn, Technology Diffusion within Central Banking: The Case of Real-Time Gross Settlement, *International Journal of Central Banking*, Vol. 3(3), September 2007.

² Trans-European Automated Real-time Gross Express Settlement Transfer System.

³ Danmarks Euro Betalingssystem (Denmark's euro payment system).

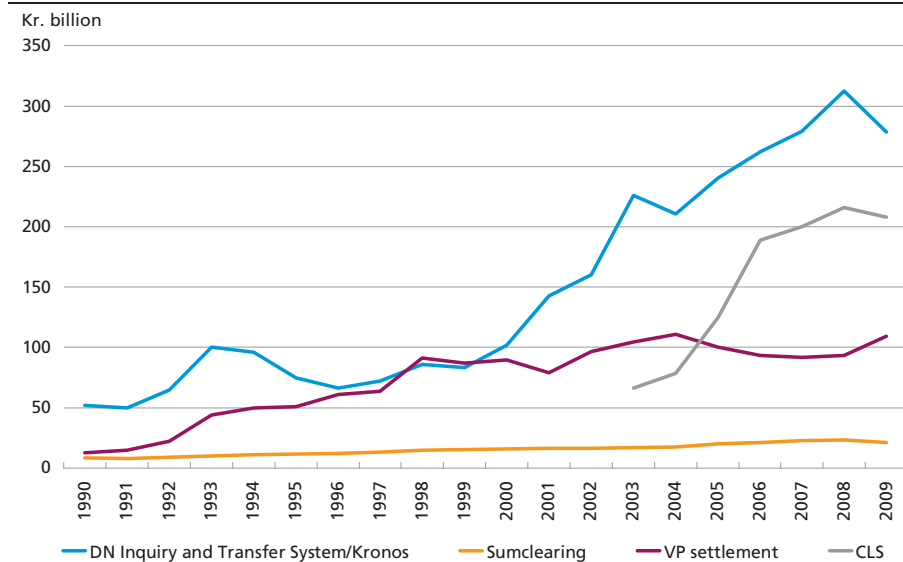
⁴ SWIFT is the name of a global communication network operated by a Belgian company by the same name (Society for Worldwide Interbank Financial Telecommunication). In 2007, this communication network was used for the exchange of messages relating to financial transactions by more than 8,000 banks, etc. in more than 200 countries. In Denmark, around 60 banks, including Danmarks Nationalbank, have joined the network. SWIFT is based on standardised message formats so that it supports automated processing of a large number of payments, financial transactions, etc. – often referred to as Straight-Through Processing, STP. More specifically, STP entails that banks can, via a fully automated process, use the information contained in the messages received for account entries, printing of customer messages, etc.

⁵ DEBES was described in more detail in Thomas Angelius, Søren Lundsby Hansen and Jesper Mærsk, DEBES – The Danish Part of TARGET, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 1998.

⁶ Cf. Thomas Angelius and Astrid Henneberg Pedersen, Danmarks Nationalbank's New Payment System, Kronos, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2002; Irene Madsen, The Financial Sector's Payments via Kronos, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2008; and Irene Madsen, Kronos – hjertet af dansk betalings- og værdipapirafvikling (Kronos – the Core of Danish Payment and Securities Settlement – in Danish only), *FinansInvest*, No. 6, 2008.

THE VALUE OF KRONE-DENOMINATED TRANSACTIONS PER BANKING DAY
IN PAYMENT AND SETTLEMENT SYSTEMS 1990-2009

Chart A.5



Note: Kronos replaced DN Inquiry and Transfer System on 19 November 2001. For CLS, the figure for 2003 covers the period from 8 September when the krone joined the system.

Source: Danmarks Nationalbank; various volumes of EMI, *Payment systems in the European Union*; ECB, *Payment systems in the European Union*.

close dialogue with Danmarks Nationalbank's account holders. Kronos was commissioned on 19 November 2001 and replaced both DN Inquiry and Transfer System and DEBES as Danmarks Nationalbank's payment system.¹

The number of participants in Danmarks Nationalbank's payment system had traditionally been slightly larger than the number of monetary-policy counterparties. When Kronos was introduced in 2001, participation in the system became compulsory for current-account holders at Danmarks Nationalbank. In that connection approximately 130 financial institutions chose to connect to Kronos, of which nearly 30 had not been connected to DN Inquiry and Transfer System. On the other hand, nearly 30 account holders chose to terminate their accounts at Danmarks Nationalbank.

In the 1990s daily payments via DN Inquiry and Transfer System totalled kr. 50-100 billion. After the introduction of Kronos in 2001, both the number and value of krone-denominated payments increased strongly, cf. Chart A.5. The primary reason was that some banks ceased to offset

¹ In May 2008, Denmark switched to the new version of the trans-European payment system, TARGET2, for settlement of payments in euro, cf. Morten Valentiner, Denmark Migrates to TARGET2, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2008; and Nikolaj Hesselholt Munk, Europæisk betalings- og værdipapirafvikling (European Payment and Securities Settlement – in Danish only), *FinansInvest*, No. 1, 2009.

mutual payments at regular intervals. Instead payments were settled individually. Among other factors, this reflected a change in fee policy. This ensured that large claims or debts did not accumulate between participants, with the related settlement risk.¹

DANMARKS NATIONALBANK'S ROLE AS SETTLEMENT BANK

The Sumclearing

Originally the Sumclearing was a system for manual cheque clearing, but over time virtually all retail payments, e.g. Dankort transactions and Betalingsservice (direct debit) transfers, were cleared in this system.² In the early 1980s the Sumclearing was fully automated, with settlement of the participants' net positions via their accounts at Danmarks Nationalbank.

In January 1998, the Danish Bankers Association took over responsibility for the Sumclearing from Danmarks Nationalbank³, thereby reducing the latter's role to that of settlement bank, as was the case for VP settlement.

In May 1999, the Sumclearing was expanded to include a separate clearing and settlement procedure in euro.

VP settlement

The Danish central securities depository, subsequently named VP Securities, was established in 1980 as a private, independent institution.⁴ In 1983 VP was the first central securities depository worldwide to introduce paperless registration (dematerialisation) of Danish krone-denominated listed bonds, and in 1988 VP also dematerialised equities.

In connection with the introduction of the euro in 1999, VP settlement in euro was established. On 1 January 2000, VP was converted into a limited liability company owned by the players in the Danish securities market, cf. Chapter 4.⁵

CLS

In the 2nd half of 2003, the Danish krone joined the international settlement system for foreign-exchange transactions, Continuous Linked

¹ Cf. p. 66 of Danmarks Nationalbank, *Report and Accounts*, 2003.

² Cf. pp. 135-136 of Danmarks Nationalbank, *Payment Systems in Denmark*, 2005.

³ Cf. p. 69 of Danmarks Nationalbank, *Report and Accounts*, 1997.

⁴ Cf. pp. 338-340 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993. For a more detailed description of VP settlement, see Peter Restelli-Nielsen, VP-afviklingen – det danske system for afvikling af værdipapirhandler (VP Settlement – the Danish System for Settlement of Securities Transactions – in Danish only), *FinansInvest*, No. 8, 2008.

⁵ In 2008 VP set up a central securities depository in Luxembourg (VP Lux). This made it possible for Danish issuers to issue euro-denominated bonds in the euro area so that the bonds were eligible as collateral within the Eurosystem, cf. p. 115 of Danmarks Nationalbank, *Financial stability*, 1st half 2009; and Danmarks Nationalbank, Establishment of VP Subsidiary in Luxembourg, *Monetary Review*, 2nd Quarter 2009.

Settlement, CLS¹. In CLS, the krone leg of foreign-exchange transactions involving kroner was settled via Kronos over accounts at Danmarks Nationalbank. CLS settlement rapidly became dominant in the foreign-exchange market for kroner, cf. Chapter 2.

FUTOP settlement

The Guarantee Fund for Danish Options and Futures, FUTOP, was set up in 1988² as a clearing centre and guarantor for trades in options and futures (derivatives) in Danish kroner listed on the Copenhagen Stock Exchange. Settlement of the cash leg of contracts took place via accounts at Danmarks Nationalbank, while settlement of the underlying assets took place via accounts at VP.

The underlying settlement system was restructured in November 2000 as a result of steadily falling turnover in the Danish derivatives market. Subsequently, derivatives trades were cleared via the Swedish derivatives system.³

In the 2nd half of 2005, trading and clearing of Danish futures and options gradually migrated to the Stockholm Stock Exchange following the merger of the Copenhagen Stock Exchange into the OMX Group, cf. Chapter 4.⁴ Danish participants' net positions in cash and securities, respectively, continued to be settled via accounts at Danmarks Nationalbank and VP.

PLEDGING OF COLLATERAL FOR INTRADAY CREDIT IN KRONER

Until the mid-1990s, Danmarks Nationalbank gave banks access to uncollateralised intraday credit in kroner. However, this practice was being discontinued in most other EU member states, and in March 1995 Danmarks Nationalbank decided to phase out access to uncollateralised intraday credit over a three-year period.⁵ At the same time, a system was established whereby banks were given access to intraday credit against Danmarks Nationalbank's certificates of deposit and a wide range of listed krone-denominated bonds as collateral. The relatively long transitional period gave the banks a good opportunity to gradually adapt to the new conditions. Moreover the transition was facilitated by the fact

¹ Cf. Tina Skotte Sørensen, CLS – den globale motorvej for afvikling af valutahandler (CLS – the Global Highway for Settlement of Foreign-Exchange Transactions – in Danish only), *FinansInvest*, No. 7, 2008.

² Cf. pp. 345-346 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993. In 1997, the Guarantee Fund for Danish Options and Futures merged with the Copenhagen Stock Exchange and formed the FUTOP Clearing Centre, a fully-owned subsidiary of the Copenhagen Stock Exchange.

³ Cf. p. 76 of Danmarks Nationalbank, *Report and Accounts*, 2000.

⁴ Cf. p. 69 of Danmarks Nationalbank, *Report and Accounts*, 2005.

⁵ Cf. p. 52 of Danmarks Nationalbank, *Report and Accounts*, 1995.

that the collateral base for intraday credit in kroner was somewhat broader at that time than the range of collateral eligible for monetary-policy loans, cf. Chapter 3.

As the volume of payments settled over the day increased, Danmarks Nationalbank further extended access to pledging of collateral for intraday credit in kroner¹:

- In 1996 the Nordic central banks concluded an agreement with a view to increasing the banks' opportunities to pledge cross-border collateral.² As part of the agreement, Danmarks Nationalbank accepted that a Danish branch of e.g. a Swedish bank could pledge Swedish government securities as collateral for credit from Danmarks Nationalbank. In return, Sveriges Riksbank accepted that Swedish branches of Danish banks could pledge Danish government securities as collateral for credit from Sveriges Riksbank.
- In 1998, VP's trading division was expanded with a new facility (automatic collateralisation) that enabled account holders at Danmarks Nationalbank to automatically pledge purchased securities as collateral for intraday credit in the settlement run in which the securities were received. This reduced the need for other collateral.³ In 2002-03 the scope of the automatic collateralisation arrangement was expanded to include the Sumclearing, settlement of interest, repayments and dividends in VP settlement and settlement of payments in CLS.⁴
- In March 2003 Scandinavian Cash Pool, SCP, was launched. SCP gave account holders at Danmarks Nationalbank, Sveriges Riksbank and Norges Bank access to intraday credit against deposits with another Scandinavian central bank as collateral.⁵

Furthermore, in 1999 the part of the collateral base for intraday credit that related to bonds was harmonised with the collateral base for monetary-policy loans.⁶ Consequently, in the years following 1999 the collateral base for intraday credit was extended in step with the extension of the collateral base for monetary-policy loans, cf. Chapter 3.

¹ Cf. Danmarks Nationalbank, Financial Institutions' Accounts at and Pledging of Collateral to Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2001, Anders Mølgaard Pedersen, Sikkerhedsstillelse ved lån i centralbanker (Pledging of Collateral for Loans from Central Banks – in Danish only), *FinansInvest*, No. 2, 2009; and Astrid Henneberg Poffet, Pledging of Collateral to Danmarks Nationalbank, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2010.

² Cf. pp. 64-65 of Danmarks Nationalbank, *Report and Accounts*, 1996.

³ Cf. pp. 73-74 of Danmarks Nationalbank, *Report and Accounts*, 1998.

⁴ Cf. p. 82 of Danmarks Nationalbank, *Payment Systems in Denmark*, 2005.

⁵ Cf. Danmarks Nationalbank, SCP – Scandinavian Cash Pool, *Monetary Review*, 4th Quarter 2003.

⁶ Cf. pp. 23-25 of Danmarks Nationalbank, Adjustment of the Monetary-Policy Instruments, *Monetary Review*, 2nd Quarter 1999.

INTRADAY CREDIT IN EURO

In connection with the introduction of DEBES in 1999, account holders at Danmarks Nationalbank were given access, within certain limits, to intraday credit in euro against Danish securities as collateral.¹

To facilitate pledging of collateral in TARGET, the EU central banks had developed a correspondent central bank model, CCBM. Via CCBM, an EU bank could obtain credit from its central bank against securities deposited with the central bank of another EU member state as collateral. Thus, from 1999 euro area branches of Danish banks could obtain credit in euro against Danish government and mortgage bonds as collateral, provided that the central bank of the member state in question accepted Danish securities as collateral. The central banks of Germany, France, the Netherlands, Luxembourg and Finland did. The euro area central banks jointly guaranteed the value of securities issued in the euro area if it became necessary to realise the collateral. For member states outside the euro area the rules were different, meaning that Danmarks Nationalbank alone had to guarantee the value of the Danish securities. In principle, Danish branches of foreign banks could obtain credit in Denmark against securities issued in the euro area, but in practice use of this arrangement was extremely limited.²

In June 2003, the ECB decided that access to the use of certain Danish krone- and euro-denominated bonds as collateral for intraday credit in euro at the above five euro area central banks was to cease as from 1 July 2003. This decision was based on limited demand among Euro-system counterparties, as well as a wish for a more uniform collateral base for credit within the euro area.³

OVERSIGHT OF PAYMENT AND SETTLEMENT SYSTEMS

From the late 1980s international organisations issued various standards in order to contribute to safe and efficient payment and settlement systems. In parallel with the preparation of standards, principles were also developed for the central banks' oversight of the systems' compliance with international standards.⁴

¹ Cf. pp. 74-75 of Danmarks Nationalbank, *Report and Accounts*, 1998. Demand for intraday credit in euro was around kr. 500-600 million in 1999, cf. p. 78 of Danmarks Nationalbank, *Report and Accounts*, 1999.

² Cf. pp. 74-75 of Danmarks Nationalbank, *Report and Accounts*, 1999.

³ Cf. p. 73 of Danmarks Nationalbank, *Report and Accounts*, 2003.

⁴ Cf. Tobias Thygesen, *International Standards for Payment Systems*, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2001; Danmarks Nationalbank, *Danmarks Nationalbank's Oversight of Payment and Securities Settlement Systems*, *Monetary Review*, 2nd Quarter 2001; Karsten Bilotto, *The objectives of oversight – what are they?*, Chapter 6 of Robert Pringle and Matthew Robinson (eds.), *E-money and Payment Systems Review*, Central Banking Publications, 2002; and pp. 55-69 of Danmarks Nationalbank, *Financial stability*, 2007.

Danmarks Nationalbank's oversight focused on three systems at the core of the Danish financial infrastructure: DN Inquiry and Transfer System/Kronos, the Sumclearing and VP settlement. Incidents in this part of the infrastructure were assessed to have a potential widespread economic impact that could ultimately jeopardise financial stability in Denmark. Danmarks Nationalbank also participated in the oversight of CLS and TARGET.

In the early summer of 2001, Danmarks Nationalbank and the Danish Financial Supervisory Authority concluded a Memorandum of Understanding concerning the systemically important systems not operated by Danmarks Nationalbank itself. The MoU¹ laid down a framework for cooperation and exchange of information and was aimed e.g. at eliminating, whenever possible, duplication of work by Danmarks Nationalbank and the Danish Financial Supervisory Authority as well as the relevant system owners.²

PAYMENT SYSTEMS AND 11 SEPTEMBER 2001

The US financial sector was severely affected by the terrorist attacks on 11 September 2001. Among the places hit was the World Trade Center in New York, where some of the USA's largest financial enterprises had offices.³

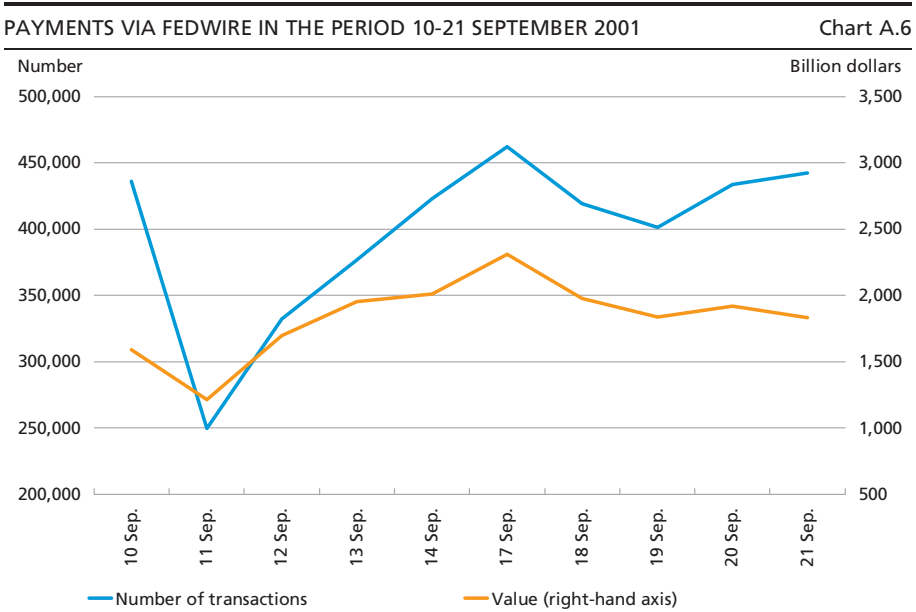
In the days just after 11 September, there was considerable focus on the functioning of the money markets. The havoc wrought in New York gave rise to considerable uncertainty, especially in the US money market.

The US payment systems were not directly affected by the attacks, but employees of several banks were reported missing, and documents and computers had been lost. There was also doubt as to how soon market participants would be able to execute the trades concluded via their back-up facilities. Immediately after the disaster, the Federal Reserve announced that its payment system, Fedwire, was fully functional, but the number and volume of payments executed fell far below the usual level due to problems experienced by participants, cf. Chart A.6. Several

¹ Printed on pp. 91-94 of Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2001.

² The MoU was revised in 2006 in view of the experience gained over the preceding years, as well as the incorporation of Danmarks Nationalbank's oversight of payment systems into the Danish Securities Trading Act by amendment in 2006. The latter entails that Danmarks Nationalbank must oversee the payment systems that it finds to be of major significance to settlement of payments in Denmark or to the implementation of Danmarks Nationalbank's monetary-policy transactions. Danmarks Nationalbank is empowered to impose fines on the persons responsible for a systemically important payment system in the event that an order issued in connection with oversight is not observed, cf. Danmarks Nationalbank, Danmarks Nationalbank's Policy for Oversight of the Danish Financial Infrastructure, *Financial stability*, 2007.

³ Cf. p. 10 of Danmarks Nationalbank, *Payment Systems in Denmark*, 2005, Danmarks Nationalbank, *Report and Accounts*, 2001; and Danmarks Nationalbank, Recent Monetary Trends, *Monetary Review*, 4th Quarter 2001.



Source: James J. McAndrews and Simon M. Potter, Liquidity Effects of the Events of September 11, 2001, *FRBNY Economic Policy Review*, November 2002

measures were introduced to mitigate the consequences of the terrorist attacks to the US infrastructure for gross payments. System opening hours were extended and the Fed made substantial extra liquidity available to participants.

Settlement of retail payments was also severely hit. Cheque clearing in the USA was affected because several banks were unable to honour cheques drawn on them. The Fed ensured that this did not have any liquidity impact by crediting the bank cashing the cheque even if the Fed was unable to debit the issuing bank in the days following the terrorist attacks. A surge in the demand for cash was also registered in New York, and many cash dispensers were depleted.

Securities trading was also severely affected. The US bond market shut down and was not reopened until 13 September. The New York Stock Exchange remained closed for almost one week. When the bond market reopened, the settlement period was temporarily extended from two to five days. Significant parts of the financial infrastructure, such as settlement systems, remained operational throughout the period, however.

The central banks of several other countries concluded temporary agreements with the Fed in order to be able to supply their own financial institutions with dollar liquidity.

Danmarks Nationalbank also made dollar liquidity available to banks and in that context provided (collateralised) loans of 400 million dollars for a period of one day at the prevailing market interest rate. In add-

ition, several central banks, including Danmarks Nationalbank, conducted liquidity-providing operations in order to facilitate the functioning of the money markets. In connection with the reopening of the US stock market on 17 September, both the Fed and several other central banks (including the ECB and Danmarks Nationalbank) announced reductions of their monetary-policy interest rates. As a result, the international money and foreign-exchange markets operated fairly smoothly in spite of the scale of destruction in New York.

The damage was extensive, but it was subsequently concluded that the events on 11 September 2001 did not in themselves jeopardise financial stability. All the same, the terrorist attacks clearly illustrated the vulnerability of the payment and settlement systems. In the years following 2001 there was extra focus on overseeing systemically important payment and settlement systems and analysing the risk of extreme events that could lead to major disruption of the settlement of payments, securities trades, etc.

All over the world, the terrorist attacks on the USA on 11 September 2001 highlighted the importance of combating terrorist financing. In May 2002 the Danish Folketing adopted an amendment to the Money Laundering Act as part of the government's anti-terrorist package. As a new element, Danmarks Nationalbank was comprised by the Act to the extent that it performs the same type of business as credit and financing institutions. Among other things, the amendment tightened information requirements regarding the identity of remitters for payment settlement without personal contact between the remitter and the agent, or if the agent is not an institution where the remitter holds an account.¹

OPERATIONAL INCIDENTS IN THE YEARS FOLLOWING 2001

On a few occasions, Danmarks Nationalbank had to conduct liquidity-supporting operations or other measures in connection with operational incidents in the banking sector or other events that could potentially jeopardise the functionality of the payment system.

On 10 March 2003, Danske Bank experienced considerable IT problems, which prevented the bank from participating fully in the settlement of payments. Danmarks Nationalbank had previously performed simulations showing that the Sumclearing and Kronos would be able to handle the removal of the largest participant for one day without

¹ Cf. p. 148 of Danmarks Nationalbank, *Report and Accounts*, 2002. The Money Laundering Act was revised in 2006 as part of the implementation of an EU directive in this area, cf. Helene Vinten, Measures to Prevent Money Laundering and Terrorist Financing, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2008.

significant problems, provided that there was access to ample liquidity.¹ In March 2003 the systems, including the Sumclearing and VP settlement, proved able to handle the partial non-participation of a major player for several days, but this period saw none of the large-value payments which e.g. occur at the turn of the month. On 12 March 2003 Danmarks Nationalbank gave access to repurchase certificates of deposit via a money-market broker in order to ensure sufficient liquidity in the sector. This provided kr. 5 billion in liquidity to the sector.²

On 23 September 2003, much of eastern Denmark experienced a power failure for a few hours during the day. This did not cause any major problems in the money market. In connection with the power failure, Danmarks Nationalbank contributed liquidity in the form of extraordinary repurchases of certificates of deposit.³ Furthermore, it was decided to postpone the closing time for Kronos by half an hour to give participants affected by the power failure an opportunity to settle their payments.⁴

In a few cases the payment and settlement systems themselves were affected by system failures or similar.⁵ In general, the systems were, however, characterised by a very high degree of operational stability. Moreover, in the experience of Danmarks Nationalbank, the monetary-policy instruments and the design of the infrastructure were sufficiently smooth to handle such operational incidents without major disruption of the settlement of payments.

¹ Cf. the chapter "Payment System Risks" in Danmarks Nationalbank, *Financial stability*, 2002.

² Cf. p. 16 of Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2003.

³ Cf. p. 15 of Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2003.

⁴ Cf. p. 72 of Danmarks Nationalbank, *Report and Accounts*, 2003.

⁵ Cf. letter to current-account holders on precautions in connection with settlement systems, dated 17 May 2005; p. 67 of Danmarks Nationalbank, *Report and Accounts*, 2006; p. 33 of IMF, Denmark: Financial Sector Assessment Program – Detailed Assessment of the Securities Clearance and Settlement Systems, *IMF Country Report*, No. 117, March, 2007; and p. 82 of Danmarks Nationalbank, *Financial stability*, 2010.

SUPPLEMENT B

Government Debt Management

TRANSFER OF GOVERNMENT DEBT MANAGEMENT TO DANMARKS NATIONALBANK IN 1991

In early 1991, Rigsrevisionen (the National Audit Office) noted that the institutional affiliation of government debt management should be reviewed in light of the relatively small resources made available for this function. In several other countries, overall strategic planning had been spun off into independent agencies. Moreover, it should be considered whether the Mortgage Bank of the Kingdom of Denmark could take over some of the tasks from the Government Debt Office of the Ministry of Finance:

"Against the backdrop of the development in the scope and nature of the tasks and in view of the relatively large economic impact of even small changes in the effective interest rate payable on government debt, the National Audit Office is, as previously stated, of the opinion that the staffing and technical resources for management of government debt are relatively small.

In the opinion of the National Audit Office it should be considered whether the current structure and distribution of tasks should be maintained, as there may be advantages linked to separating overall strategic planning and practical administrative work. The National Audit Office has been informed that many other countries have split up government debt management tasks so that a high-level unit works with targets, analyses and strategic planning, etc. while another unit carries out the specific tasks related to raising and restructuring loans, as well as administration in general.

In connection with such specialisation it should, in the opinion of the National Audit Office, be considered whether some of the tasks of Government Debt Office could be transferred to the Mortgage Bank..."¹.

¹ Cf. p. 17 of Rigsrevisionen's report (in Danish only) to the members of the Public Accounts Committee on government borrowing and debt, 9 January 1991. The report is discussed in Ministry of Finance, *Statens Låntagning og Gæld (Danish Government Borrowing and Debt – in Danish only), 1990*, Chapter 13: Rigsrevisionens beretning om statens låntagning og gæld (Rigsrevisionen's Report on Government Borrowing and Debt).

In the spring of 1991, the Ministry of Finance set up a working party to look into the future organisation of government debt management.¹ The working party was tasked with proposing alternative models for organisation of the tasks undertaken by the Government Debt Office of the Ministry of Finance and to assess the pros and cons of the various models.

The working party outlined three models for the future organisation of government debt management:

- a. Maintaining the existing structure without changes.
- b. Transferring some government debt management tasks to the Mortgage Bank.
- c. Transferring some government debt management tasks to Danmarks Nationalbank.

The working party found that model a would not provide for any immediate rationalisation gains, and model b might result in some duplication of work. In contrast, model c would, in the opinion of the working party, provide scope for rationalisation gains. Under this model, Danmarks Nationalbank would be responsible for the specific tasks relating to both domestic and foreign borrowing, as well as preparing proposals for borrowing strategies. The Ministry of Finance would still be overall responsible for government debt management and borrowing, including relations with the Folketing (Danish parliament). Danmarks Nationalbank already acted as agent to the central government in connection with domestic borrowing, and in its capacity as manager of the foreign-exchange reserve it also had profound knowledge of the international foreign-exchange markets. Transferring the strategic elements of domestic debt, foreign borrowing and portfolio management to Danmarks Nationalbank eliminated the need for both the Ministry of Finance and Danmarks Nationalbank to maintain expertise in relation to the international financial markets. Moreover, the transfer would make it easier and more natural to adopt a holistic approach to the government's foreign debt and Danmarks Nationalbank's foreign-exchange reserves, cf. below.

On the basis of the working party's report, the Minister for Finance in May 1991 asked Danmarks Nationalbank to take over tasks from the Government Debt Office of the Ministry of Finance as from 1 June 1991.² A key consideration for Danmarks Nationalbank was the strong interplay between the tasks of the Government Debt Office and those of

¹ Cf. pp. 57-58 of Danmarks Nationalbank, *Report and Accounts*, 1991.

² Cf. the press release from Henning Dyremose, Minister for Finance, on modernisation of the Budget Department, 24 May 1991 (in Danish only).

Danmarks Nationalbank. The transfer would thus save resources for the Ministry of Finance and Danmarks Nationalbank overall, providing a better way of performing these tasks for society as a whole. Danmarks Nationalbank agreed to the transfer, which also entailed taking over the tasks of preparing publications on Danish government borrowing and debt and forecasting the monthly distribution of government payments. As part of the transfer, employees of the Ministry of Finance were offered jobs at Danmarks Nationalbank, and around 20 employees were transferred as from 1 July 1991.

The division of work in the area of government debt between the Ministry of Finance and Danmarks Nationalbank was laid down in an agreement from 1991.¹ Under the agreement, the overall strategy for government borrowing was still to be determined at quarterly meetings between the Ministry of Finance, the Ministry of Economic Affairs and Danmarks Nationalbank on the basis of proposals prepared by the latter. Danmarks Nationalbank was to undertake current borrowing and administration of the debt portfolio in accordance with the strategy adopted.

BORROWING REQUIREMENT AND BORROWING STRATEGY

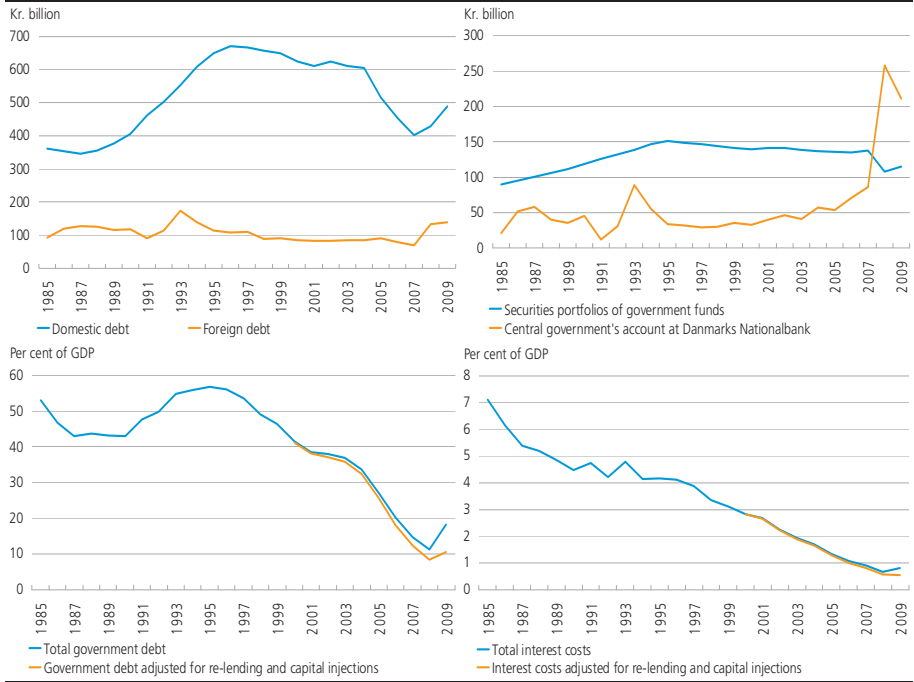
From the late 1980s to the mid-1990s the government budget showed a deficit and government debt increased, both in absolute terms and relative to the gross domestic product, GDP, cf. Chart B.1. In these years the domestic borrowing requirements were large. It was sought to minimise borrowing costs by rapidly building up a limited number of bond series (benchmark securities²) to a relatively large volume in the internationally most important maturity segments. This strategy was based on the perception that key investor groups were willing to pay a premium on benchmark issues by international standards, as they could be traded without significant price effects. In this way the central government achieved a liquidity premium and could, all other things being equal, cover its funding requirement at a lower rate of interest.³

¹ The agreement was amended in 1999 and 2006.

² This term is used about bonds that play a key role in the bond market and are used as references in pricing of other bonds in the market. In 1991 the government's 9-per-cent bullet loans maturing in 2000 became the benchmark bond in the Danish bond market, replacing the 9-per-cent mortgage bond maturing in 2006. Since then, government securities have been benchmarks in the Danish bond market.

³ Cf. Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1997, Chapter 8: Likviditetspræmien på danske statspapirer (The Liquidity Premium on Danish Government Securities – in Danish only); and Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 2002, Chapter 8: Liquidity in the Danish Government Securities Market.

CENTRAL GOVERNMENT DEBT AND INTEREST COSTS 1985-2009 Chart B.1



Note: Debt at year-end. Assets of government funds include the Social Pension Fund, the Financing Fund (2006-2007), the Danish National Advanced Technology Foundation (from 2006) and the Preventive Measures Fund (from 2007). Total government debt has been compiled as domestic and foreign government debt less the central government's balance in its account at Danmarks Nationalbank and the assets of the government funds. Capital injections comprise capital injections into banks and mortgage banks under the 2009 Credit Package. The "domestic ECU loan" from 1992 (cf. Chapter 4 of Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1991 – in Danish only) has been treated as foreign government debt throughout the period.

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

From 1997 the government began to post surpluses, and government debt fell from 56 per cent of GDP in 1996 to 11 per cent in 2008. The lower borrowing requirement led to regular adjustment of government debt policy in order to maintain the strategy of issuing liquid krone-denominated benchmark bonds¹:

- Issuance was concentrated on fewer bond series.
- The issuance period for each bond series was extended, and the maximum outstanding volume reduced. Moreover, securities in which sales had previously been discontinued were "reused" for new issuances in order to boost the volume in the series.
- From 1999, buy-back took place in a wider range of government securities than previously, where this was advantageous. By buying

¹ Cf. Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1996, Chapter 5: Strategi og perspektiver for låneviften (Strategy and Perspectives for the On-the-Run Issues – in Danish only); Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 2001, Chapter 7: Consequences of Budget Surpluses for Government Debt Policy; and Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 2006, Chapter 10: Experience with Falling Central-Government Debt.

back securities before their normal maturity date it was possible to shift the funding requirement to the year when buy-back took place. Buy-back thus contributed to buoying up issuance in large, liquid series. Furthermore, in 2001 switch auctions were introduced, in which buyers of new benchmark securities delivered previous benchmark securities as "payment". Interest in this type of auction proved to be relatively modest, however.

- Domestic interest-rate swaps were introduced in 1998. This enabled some degree of separation of the management of the duration of government debt and issuance policy. For example, issuance could be concentrated in the 10-year segment, while the duration could be managed independently by concluding interest-rate swaps¹.
- Currency swaps from kroner to euro were introduced in 2001. This made it possible to borrow in foreign exchange by issuing domestic debt and subsequently converting the proceeds into foreign exchange via swap transactions.
- Securities lending facilities were introduced in 1998 to support liquidity in newly-opened government securities. Under these facilities the government issued a certain volume of surplus bonds while the series were still small; the government held these securities itself, but subsequently they could be lent to market participants against a fee. This provided for an "artificial" increase in the circulating volume of newly opened government securities, which boosted liquidity in the series.² In 1999 the lending facilities were expanded to include all on-the-run Treasury notes and government bonds, i.e. the securities issued by the Danish government, and in 2000 T-bills were also included.
- In the years after 2002, several government-guaranteed entities gained access to borrowing directly from the government, which financed these loans by issuing bonds (re-lending).

Except in the years around the currency unrest in 1993, the central government's need to borrow abroad in the 1990s and the early years of the new millennium was relatively modest compared with the domestic borrowing requirement. Up through the 1990s, the government's medium- and long-term foreign borrowing was based on a strategy that entailed raising many small loans in the international loan markets. The

¹ An interest-rate swap is an agreement between two parties on future periodic exchange of interest payments over an agreed period on the basis of a notional principal. Often, payment of a fixed rate of interest (the swap rate for the maturity in question) is exchanged for payment of a variable rate. For example, the duration of the government debt can be reduced by concluding a 10-year interest-rate swap under which the central government receives a fixed 10-year interest rate against payment of a variable 6-month rate, cf. Chapter 8: Domestic Interest-Rate Swaps of Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1998.

² Cf. p. 31 of Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1998.

aim was to secure low borrowing costs by exploiting favourable borrowing opportunities. However, this strategy meant that the loan portfolio was relatively illiquid, which limited the scope for restructuring debt. In the late 1990s, the options for raising such small loans became fewer and less favourable than previously.¹ From 2001, the foreign borrowing strategy was therefore restructured to include fewer and slightly larger loans, supplemented by borrowing via currency swaps from kroner to euro.

THE SOCIAL PENSION FUND

The Social Pension Fund, SPF, was established by the Social Pension Fund Act in 1970, when a special national retirement pension contribution was introduced. The Act was to provide a financial basis for disbursing a supplementary pension from 1976 onwards to all recipients of social pensions. In addition, SPF was intended to increase savings and ensure more equilibrium in the capital market and the economy in general.

By Act of Parliament in 1975 initial payments from SPF were postponed until 1979, and by another Act from 1981 payments of the special national retirement pension contribution to SPF ceased with effect from 1 January 1982. SPF was continued as an asset of the central government. At the same time it was decided that SPF's regular income from interest (less real interest tax/pension yield tax) was partly to be transferred to the Ministry of Social Affairs for financing pension improvements, partly to be allocated to SPF. In the Finance Act, the amount to be used for financing pension improvements was fixed as an amount corresponding to the actual annual expenditure for the pension improvements implemented with reference to SPF.² With effect from 1 January 1999 the Act was amended to include a provision whereby SPF's core capital could be used for financing pension improvements if expenditure for such improvements exceeded interest income. This principle for transfers to the Ministry of Social Affairs had been laid down in notes to the Finance Acts since 1996.³

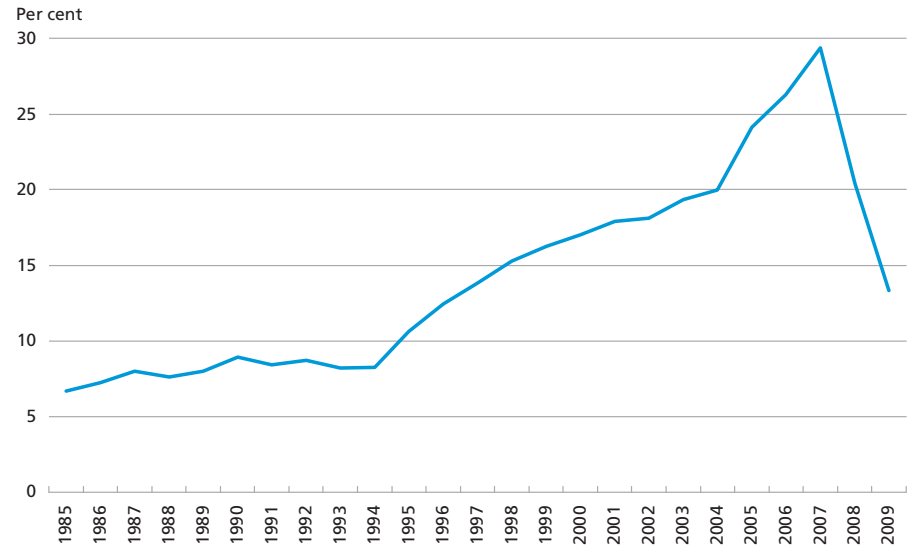
Stage 2 of Economic and Monetary Union, EMU, began on 1 January 1994, cf. Chapters 7 and 8. In a protocol to the Maastricht Treaty, the threshold value for general government debt, compiled on a gross basis, was set at 60 per cent of GDP. However, the general government sector could consolidate the debt with claims on itself, so that SPF's portfolio of

¹ Cf. p. 45 of Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 2000.

² Cf. p. 190-191 of Ministry of Finance, *Statens låntagning og gæld (Danish Government Borrowing and Debt – in Danish only)*, 1990 and p. 61 of Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1996 (in Danish only).

³ Cf. p. 57 of Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1999.

SPF's PORTFOLIO OF DANISH GOVERNMENT BONDS AS A SHARE OF THE TOTAL OUTSTANDING VOLUME OF DANISH GOVERNMENT BONDS 1985-2009 Chart B.2



Note: At year-end. The bonds have been stated at nominal value, except for index-linked bonds, which have been stated at indexed value.
 Source: Danmarks Nationalbank.

government securities could be deducted in the statement of general government debt. On the other hand, the balance of the central government's account at Danmarks Nationalbank and SPF's portfolio of mortgage bonds, etc. could not be consolidated in the statement of debt.¹

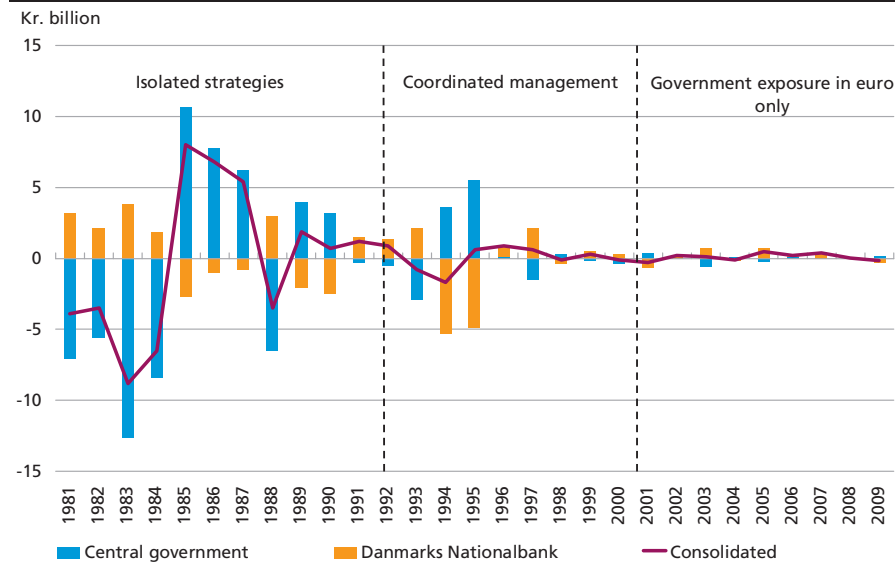
In October 1995, a process of restructuring SPF's portfolio of mortgage bonds, etc. to government bonds was initiated, cf. Chart B.2. Restructuring mainly took place in connection with drawings and redemptions, but sales of fixed-rate nominal mortgage bonds and index-linked bonds also took place. The aim was to restructure securities in SPF's bond portfolio so as to avoid any major impact on the yield spread between different bond types.² Viewed in isolation, the restructuring of SPF's bond portfolio in favour of more government bonds contributed to reducing the gross government debt somewhat.

¹ Cf. p. 51-52 of Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1994 (in Danish only) and p. 47-48 of Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1995 (in Danish only). Denmark had argued at EU level that it should also be possible to deduct certain easily tradable assets from the statement of EMU debt, e.g. the central government's deposit at Danmarks Nationalbank and SPF's portfolio of mortgage bonds, etc., but without success. However, it was included in the declarations in Council Regulation 3605/93 that, in Denmark's case, these assets were to be specified in footnotes on presentation of the general government debt. Experience from the following years showed that there was a tendency to "forget" the footnotes in such presentations and that little importance was attached to the footnotes when assessing Denmark's debt.

² Cf. p. 70 of Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1998.

THE CENTRAL GOVERNMENT'S AND DANMARKS NATIONALBANK'S EXCHANGE-RATE GAINS (+) AND LOSSES (-) 1981-2009

Chart B.3



Source: Danmarks Nationalbank.

COORDINATED CURRENCY MANAGEMENT OF DANMARKS NATIONALBANK'S FOREIGN-EXCHANGE RESERVE AND THE CENTRAL GOVERNMENT'S FOREIGN DEBT 1992-2000

After it had begun to raise foreign-exchange loans in the late 1970s and early 1980s, the Danish government acquired substantial foreign-exchange debt. At the same time, Danmarks Nationalbank had a claim in foreign exchange in the form of the foreign-exchange reserve. Up through the 1980s, the debt was managed by the Ministry of Finance and the reserve by Danmarks Nationalbank. This resulted in a large net exposure to unstable currencies for the government and Danmarks Nationalbank taken as one. For example, the government's debt in dollars, Japanese yen and Swiss francs by far exceeded Danmarks Nationalbank's claims in the same currencies. On the other hand, the net exposure to the D-mark was relatively small. Since the D-mark was the anchor currency in ERM, such exposure must be said to be less risky. Overall, the government and Danmarks Nationalbank therefore incurred considerable exchange-rate risk, cf. Chart B.3.¹

¹ Cf. Danmarks Nationalbank, *Danish Government Borrowing and Debt 1997*, Chapter 10: Erfaringer med samstyring af statens og Nationalbankens valutaeksponering (Experience with Coordinated Management of the Central Government's and Danmarks Nationalbank's Exchange-Rate Exposure – in Danish only).

In early 1991, Rigsrevisionen commented that:

"...apparently, the Government Debt Office's management of the foreign debt does not take into account the composition of Danmarks Nationalbank's foreign-exchange reserve."¹

The opportunity to manage the central government's and Danmarks Nationalbank's foreign-exchange risks had, however, been facilitated by the transfer of the Government Debt Office from the Ministry of Finance to Danmarks Nationalbank in 1991, and in early 1992 the first steps were taken to coordinate management of the foreign-exchange exposure of the government's foreign debt and Danmarks Nationalbank's foreign-exchange reserve.

The following three reasons were given for introducing coordinated management:²

1. The purpose of the central government's borrowing in foreign exchange was to manage the size of Danmarks Nationalbank's foreign-exchange reserve.
2. Danmarks Nationalbank's profit, which was to a large extent attributable to remuneration of the foreign-exchange reserve, was principally payable to the central government.
3. The assessments of the outlook for interest rates and foreign exchange, etc. on which the management of the debt and foreign-exchange reserve was based, were similar, so duplication of work in this respect should be avoided.

A more general objective of the coordinated management was to ensure that the government did not borrow in one currency, while Danmarks Nationalbank invested in another. In this way, the overall exchange-rate risk could be limited.

In practice, coordination took place at the quarterly meetings between the Ministries of Finance and Economic Affairs and Danmarks Nationalbank, at which the government's and Danmarks Nationalbank's aggregate net foreign-exchange exposure was determined. The point of departure for determining the currency distribution was a trade-off be-

¹ Cf. p. 9 of Rigsrevisionen's report to the members of the Public Accounts Committee on government borrowing and debt, 9 January 1991.

² Cf. Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1991, Chapter 6: Samordnet styring af statsgæld og valutareserve (Coordinated Management of Government Debt and Foreign-Exchange Reserve – in Danish only).

tween expected return and risk within the framework of a portfolio model.¹

In the period 1992-95, the currency distribution was characterised by a fixed relative distribution of net debt on currencies. This meant that the absolute exposure in all currencies changed when the net debt changed so that the central government's and Danmarks Nationalbank's overall exchange-rate risk depended on the size of the net debt. It was found that this automatism was neither logical nor appropriate. From early 1996, a fixed absolute net distribution was therefore introduced for all currencies except the ERM currencies². Since the net position in the ERM currencies was calculated residually, any changes to the net debt were fully reflected in these currencies. This model entailed that changes in the net debt only affected the exposure to the currencies that fluctuated the least vis-à-vis the Danish krone due to the fixed-exchange-rate policy. This meant that changes in the size of the net debt had only a relatively modest impact on the central government's and Danmarks Nationalbank's overall exchange-rate risk.³

The introduction of net management established a framework for management of the central government's and Danmarks Nationalbank's exchange-rate risk, provided greater certainty about the total exchange-rate risk and provided for the desired coordination of borrowing and investment. The net positions in non-ERM currencies were reduced so as to lower the level of risk.

All the same, experience from net management showed that in practice it was necessary to attach importance to gross distributions. The central government and Danmarks Nationalbank published separate accounts, and in Danmarks Nationalbank's accounts unrealised value adjustments of e.g. foreign-exchange positions were reflected directly in the profit. In 1994, both the government's and Danmarks Nationalbank's foreign-exchange positions were thus subject to considerable exchange-rate adjustments. In the course of 1994 the dollar depreciated by approximately 10 per cent vis-à-vis the Danish krone. This was the main reason why Danmarks Nationalbank suffered a large exchange-rate loss, while the government posted a large exchange-rate gain.

¹ Cf. Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1991, Chapter 7: Bestemmelse af neutral valutafordeling ved hjælp af porteføljemodel (Determination of Neutral Currency Distribution Using a Portfolio Model – in Danish only); and Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1993, Chapter 7: Porteføljemodel (Portfolio Model – in Danish only).

² In relation to the foreign-exchange reserve these were the D-mark, the French franc, the Dutch guilder, the Belgian franc and the ECU.

³ Cf. Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1995, Chapter 7: Ændrede styringsprincipper for nettovalutagælden (Amended Principles for Management of the Net Foreign-Exchange Debt – in Danish only).

Although the government's and Danmarks Nationalbank's overall exposure to the dollar was limited, it was difficult for Danmarks Nationalbank to accept gross distributions of debt and foreign-exchange reserves that entailed risk of large exchange-rate losses for Danmarks Nationalbank. Ultimately this could have a negative impact on Danmarks Nationalbank's credibility as a monetary-policy authority. Since neither the government nor Danmarks Nationalbank gained any particular benefit from a gross risk of this magnitude, it was decided in 1995 to reduce the foreign-exchange risk on the gross distributions. Subsequently, coordinated management of exchange-rate exposures took the form of coordinated gross management.¹

Over time, the government's and Danmarks Nationalbank's reduction of gross exchange-rate exposures in other currencies than the euro changed the conditions for management of the overall exchange-rate risk. From 2001 it was decided that the central government's foreign debt was to be in euro only. Since most of Danmarks Nationalbank's foreign-exchange reserve was also exposed to euro, formalised coordinated management was no longer required.²

MANAGEMENT OF INTEREST-RATE, CREDIT AND OPERATIONAL RISK

Besides exchange-rate risk, there were a number of other risks linked to the government debt portfolio, and management of these risks was adjusted on an ongoing basis.

Interest-rate risk

Since the 1980s, the interest-rate risk on the central government's domestic and foreign debt had been managed by means of targets for its duration and redemption profile. From 2000 onwards, duration management was formalised further so as to take an explicit duration target for the overall government debt as the point of departure (i.e. domestic and foreign debt less the balance of the central government's account at Danmarks Nationalbank and the assets of the government funds).³ At a later stage re-lending was included.

In 1997, the management of the interest-rate risk on the domestic government debt was supplemented with a target for Cost-at-Risk, CaR, with a view to quantifying the risk associated with the debt's exposure

¹ Cf. Danmarks Nationalbank, *Danish Government Borrowing and Debt 1997*, Chapter 10: Erfaringer med samstyring af statens og Nationalbankens valutaeksponering.

² Cf. Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 2000, Chapter 8: Coordinated Management of the Exchange-Rate Risk of the Central Government and Danmarks Nationalbank.

³ Cf. Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1999, Chapter 8: Management of the Duration of the Government Debt.

to future exchange-rate developments. CaR was calculated using a simulation model and illustrated the maximum interest cost to be expected over a given number of years with a given probability.¹ The CaR model was subsequently extended to cover other elements of debt too.²

Credit risk

The government introduced swaps as part of the management of government debt in the first part of the 1980s. The credit exposure was managed by laying down guidelines for eligible counterparties. As a main rule, counterparties with lower credit ratings than that of the central government could not be accepted. Moreover, it was important to spread credit exposure on a large number of counterparties. Before new swaps were concluded with a given counterparty, the volume of existing swaps with that counterparty was taken into account. But the total credit exposure was not monitored on a current basis, and there were no limits on the credit exposure vis-à-vis individual counterparties.

In 1994 a limit system was introduced for management of the credit exposure on the government's swap portfolio, corresponding to the system applied by Danmarks Nationalbank to the foreign-exchange reserve. The system provided for calculation of the credit exposure on all the government's swaps with a given counterparty on a daily basis and comparison with the limit allocated to that counterparty.³

In 1999, the central government initiated negotiations with its swap counterparties to establish agreements on unilateral pledging of collateral in order to further reduce the government's credit risk, and within a few years a large share of the government's swap portfolio was comprised by such agreements.⁴

Operational risk, etc.

It was sought to keep operational risk at a low by means of separation of functions, well-documented procedures and use of simple, well-known financial instruments.

¹ Cf. Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1997, Chapter 7: Omkostninger og risiko på statens indenlandske gæld (Costs and Risk on the Central Government's Domestic Debt – in Danish only).

² Cf. Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 2003, Chapter 11: Interest-Rate Risk Management – New Initiatives.

³ Cf. Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1994, Chapter 7: Krediteksponering på statens swaps (Credit Exposure on the Central Government's Swaps – in Danish only).

⁴ Cf. Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 2000, Chapter 11: Credit Risks on Swap Counterparties.

In connection with changes in the organisation of Danmarks Nationalbank in 1996, a clearer separation was implemented between trading, back-office functions and strategic considerations in relation to both government debt management and management of Danmarks Nationalbank's own portfolios.¹

Until 1997, structured loans² were included in the government's foreign borrowing. This was part of the strategy to raise smaller loans on favourable terms. Using swaps, these loans had been restructured to a variable rate of interest so that their combined structure affected the credit risk on the swap portfolio only, not the borrowing terms. In 1997, structured loans made up 7 per cent of total foreign loan proceeds, but previously their share had been higher.³

Structured loans were generally illiquid and difficult to redeem prematurely. In addition, structured loans entailed a certain "reputational risk" for both the government and Danmarks Nationalbank. On 29 May 1995, the Monday Morning Weekly had extensive coverage of the section on structured loans in Danmarks Nationalbank's publication Danish Government Borrowing and Debt, 1994. The Weekly said that Danmarks Nationalbank:

"frankly stated that some issuances are aimed at obtaining pronounced tax savings abroad",

while others could:

"be used for circumventing foreign rules on investment restrictions and disbursement of dividend".

It was therefore decided to change the guidelines for foreign borrowing in favour of simple loan constructions that were standard products in the market. Simple loan constructions were easy to price, and the legal, reputational and operational risks linked to the constructions could be reduced to a minimum.⁴

¹ Cf. pp. 83-84 of Danmarks Nationalbank, *Report and Accounts*, 1996.

² I.e. loans where the principal/coupon depended on a formula comprising e.g. a swap rate, an exchange rate, a stock index or the price of gold, cf. Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1994, Chapter 6: Strukturerede lån (Structured Loans – in Danish only).

³ Cf. pp. 57-60 of Niels Erik Sørensen, *Statens udenlandske låntagning og gæld fra 1959 til 1991 – en personlig beretning* (The Danish Government's Foreign Borrowing and Debt from 1959 to 1991 – a Personal Account – in Danish only), Danmarks Nationalbank, *Working Paper*, No. 19, July 2004.

⁴ Cf. p. 42-43 of Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1997 (in Danish only) and pp. 46-48 of Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1998.

THE CENTRAL GOVERNMENT'S PAYMENTS AND ITS ACCOUNT AT DANMARKS NATIONALBANK

Until the mid-1990s, the central government's deposit at Danmarks Nationalbank accrued interest at the discount rate less 2 percentage points for deposits exceeding kr. 3 billion under an agreement from 1976 between the Ministry of Finance and Danmarks Nationalbank. On 1 January 1996¹ the principles for remuneration of the government's account at Danmarks Nationalbank were amended so that the full deposit accrued interest at the discount rate.²

In connection with the restructuring of the National Post Giro as Girobank in 1991, the Post Giro's preferential position in relation to handling of government payments was changed so that handling would be on market terms from then on.³ Such payments were therefore to be handled by commercial banks (including Girobank) chosen in a tender process. Danmarks Nationalbank was still to undertake certain government payments.

In 1999, the Ministry of Finance decided to handle most government payments in one system under the Danish Agency for Governmental Management, called Statens Koncern Betalinger, SKB. Following a tender process, the task of building up the SKB system was assigned to a large commercial bank, and the system was established in 2000. After that, Danmarks Nationalbank was responsible for payments linked to government debt only. However, the government's excess liquidity was still placed in its account at Danmarks Nationalbank.⁴ This meant that fluctuations in government payments could still impact on the liquidity of monetary-policy counterparties, cf. Chapter 3.

GOVERNMENT LOAN GUARANTEES AND RE-LENDING

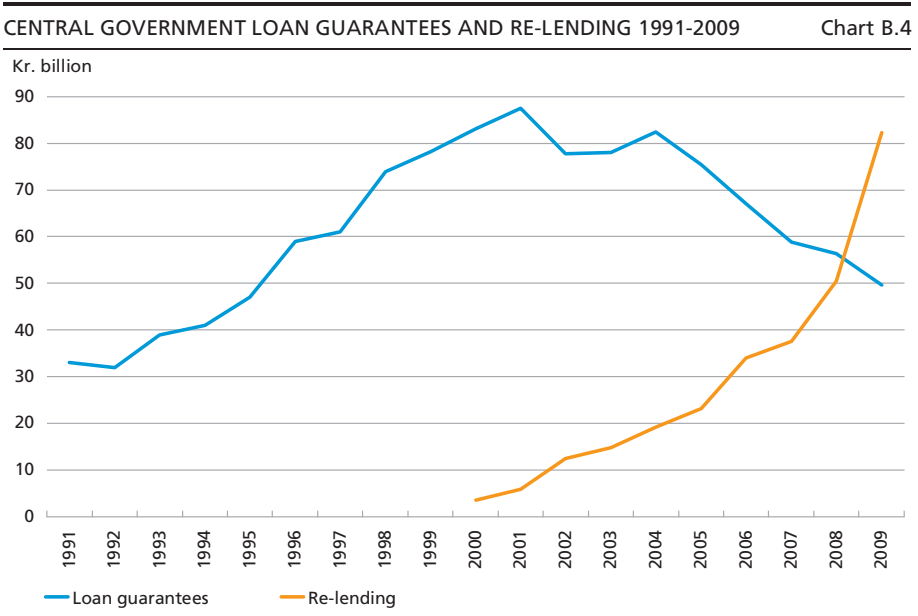
As part of its management of government debt, Danmarks Nationalbank administered a number of government loan guarantees and re-lending to various entities, mainly within infrastructure development, cf. Chart B.4. Under the 1991 agreement between the Ministry of Finance and Danmarks Nationalbank, the latter was to approve the commercial terms

¹ Cf. pp. 85-86 of Danmarks Nationalbank, *Report and Accounts*, 1995.

² The central government's account accrued interest at the discount rate until 11 May 2009, when remuneration was reduced to the discount rate less 1 percentage point (but not less than 0 per cent), cf. p. 45 of Danmarks Nationalbank, *Report and Accounts*, 2009.

³ Cf. p. 379 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990 (Monetary History of Denmark 1960-1990 – in Danish only)*, Danmarks Nationalbank, 1993; and Circular No. 6820 of 25 October 1991 on settlement of government payments, including guidance on and conduct of tenders for certain government receipts and disbursements.

⁴ Cf. pp. 38-39 of Danmarks Nationalbank, *Report and Accounts*, 2000.



Note: Re-lending comprises re-lending to government-owned companies and Danish Ship Finance.
Source: Danmarks Nationalbank.

and conditions for individual financial transactions. In addition, Danmarks Nationalbank was to provide financial advice, legally approve the agreement documentation and provide government guarantees on behalf of the Minister for Finance.

Up through the 1990s, the government's influence on the government-owned companies gradually changed – from influencing their day-to-day operational decisions to laying down the overall framework for their operations. At the same time, the government-guaranteed entities gradually built up expertise in the form of in-house finance departments. Against this backdrop, the Ministry of Finance and Danmarks Nationalbank agreed that the time had come to update the guidelines for borrowing, etc. by a number of government-guaranteed entities. The aim was to clarify Danmarks Nationalbank's role. Another consideration was to make it clear that responsibility for borrowing, risk-taking, etc. rested with the supervisory and executive boards of the individual entity.

In late 1998 an agreement was therefore concluded between the Ministry of Finance and Danmarks Nationalbank on new guidelines for borrowing, etc. by government-guaranteed entities. Similar agreements were subsequently concluded between Danmarks Nationalbank and other relevant ministries. Under the new guidelines, the entities had a certain room for manoeuvre without prior permission for each individual transaction. In addition, biannual meetings were to be held with the

relevant ministry and Danmarks Nationalbank, at which the entity in question gave an account of loans raised and planned, as well as risk-taking. Legal approval of agreement documentation and granting of government guarantees was still the remit of Danmarks Nationalbank.¹

The set of agreements relating to government-guaranteed entities comprised three elements: an agreement between the relevant ministry and Danmarks Nationalbank; an agreement between the ministry and the individual entity; and finally a list of eligible loan types. Danmarks Nationalbank was responsible for preparing and maintaining the latter list, on the principle that the transactions should be standard products, i.e. known and used in the market by well-reputed borrowers and comprised of simple elements so as to make them transparent.

On revision of the list of eligible loan types in 2000 it was decided that the foreign-exchange exposure of the entities' loan portfolios was, as a general rule, to be limited to euro. If the government-guaranteed entity had future operational or investment revenue denominated in other currencies than the euro, the entity could, however, have foreign-exchange exposures to match this income.² From 2005, swaps could only be concluded with counterparties who had signed an agreement on unilateral pledging of collateral (CSA agreement).³

In 2003 Danish Ship Finance, DSF, gained access to a special re-lending facility in kroner and dollars in connection with the adoption by the Folketing of a temporary operating subsidy for Danish shipyards. The DSF facility was subject to a set of agreements equivalent to those applying to government-guaranteed entities.⁴

¹ Cf. Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 1999, Chapter 7: Government-Guaranteed Entities.

² Cf. p. 61 of Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 2000.

³ Cf. p. 66 of Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 2004.

⁴ Cf. Danmarks Nationalbank, *Danish Government Borrowing and Debt*, 2003, Chapter 10: Re-lending to Danish Ship Finance.

SUPPLEMENT C

Danmarks Nationalbank's Production of Statistics

DANMARKS NATIONALBANK STEPS UP ITS STATISTICAL PRODUCTION

Danmarks Nationalbank's statistical production was significantly expanded up through the 1990s and 2000s, cf. Table C.1.

In the early 1990s, the statistics produced mainly reflected the administrative requirements of earlier times. The statistics for the banks' balance sheets followed the Danish Financial Supervisory Authority's Executive Order on the Presentation of Accounts, and the statistics on payments to and from abroad (the external payments statistics/foreign-exchange statistics) were a product of the foreign-exchange regulation administered by Danmarks Nationalbank until 1988, when the last restrictions on capital inflows and outflows were lifted.

Over time, the statistical production was gradually adapted to international standards for economic statistics. Up through the 1990s, these were mainly standards from the Bank for International Settlements, BIS, and the International Monetary Fund, IMF, but after the millennium rollover the statistics were brought in line with the guidelines of the European Central Bank, ECB. The latter entailed e.g. strong expansion of statistics for the money stock and its counterparts since the new European monetary statistics formed the basis for monetary policy in the euro area. Although Denmark has not adopted the euro, Danmarks Nationalbank participates in the statistical collaboration with the ECB on an equal footing with the central banks of other EU member states, cf. Chapter 8.¹

COOPERATION WITH STATISTICS DENMARK

Danmarks Nationalbank's cooperation with Statistics Denmark was intensified during the 1990s. In the early 1990s, it was agreed that Danmarks Nationalbank should take over the compilation of Denmark's ex-

¹ Cf. p. 94 of Danmarks Nationalbank, *Report and Accounts*, 2000.

DANMARKS NATIONALBANK'S PUBLICATIONS OF NEW STATISTICS SINCE 1989 Table C.1

Year	New statistics	Publication frequency
1989	Statistics of turnover in the foreign-exchange market compiled according to BIS guidelines. ¹	Triennially
1990	Breakdown by country of the banks' external accounts, compiled according to BIS guidelines. ²	Quarterly
1991	New balance-sheet statistics for banks based on a new Executive Order on the Presentation of Accounts from the Danish Financial Supervisory Authority. ³	Monthly
1994	New compilation of Denmark's foreign debt according to IMF guidelines. ⁴	Annually (quarterly from 2002)
1994	Detailed compilation with breakdown by country and sector of Danish business enterprises' foreign direct investment. ⁵	Not periodically (annually from 2003)
1996	New statistics for net lending by the mortgage-credit institutes and their outstanding loans ⁶	Monthly
1996	The BIS statistics of turnover in the foreign-exchange market are expanded to include the derivatives market. ⁷	Triennially
1996	New statistics of the banks' average deposit and lending rates broken down by sector. ⁸	Quarterly
1998	Publication of the results of the Danish part of the IMF's internationally coordinated portfolio survey. ⁹	Not periodically
1998	New payments statistics based on electronic rather than paper-based reporting. These statistics observed the IMF guidelines. ¹⁰	Monthly
2001	New balance-sheet statistics for MFIs (banks, mortgage-credit institutes, etc.), compiled according to ECB standards. ¹¹	Monthly
2001	Statistics for investment associations compiled according to ECB standards. ¹²	Quarterly
2003	New average interest-rate statistics for MFIs, compiled according to ECB standards. ¹³	Monthly
2003	New securities statistics compiled according to ECB standards. ¹⁴	Monthly
2004	Financial accounts compiled according to ECB standards. ¹⁵	Quarterly
2005	New compilation of the financial account of the balance of payments based on a new collection system. ¹⁶	Monthly
2009	Lending survey based on questionnaires sent to credit managers in large banks and mortgage-credit institutes. ¹⁷	Quarterly

¹ Cf. Helge Fosgaard, Turnover on the Foreign-Exchange Market, Danmarks Nationalbank, *Monetary Review*, November 1989.

² Cf. Jens Erik Larsen, The International Activities of Danish Banks, Danmarks Nationalbank, *Monetary Review*, November 1990.

³ Cf. Danmarks Nationalbank, The Money Stock and Domestic Money Creation, *Monetary Review*, May 1991.

⁴ Cf. Danmarks Nationalbank, Revised Compilation of Denmark's Foreign Debt, *Monetary Review*, May 1994.

⁵ Cf. Danmarks Nationalbank, Direct Investment at the End of 1991, *Monetary Review*, August 1994.

⁶ Cf. Danmarks Nationalbank, Lending by the Mortgage-Credit Institutes, *Monetary Review*, February 1996.

⁷ Cf. Danmarks Nationalbank, Survey of Foreign-Exchange and Derivatives Market Activity in April 1995, *Monetary Review*, February 1996.

⁸ Cf. Danmarks Nationalbank, The Banks' Average Lending and Deposit Rates, *Monetary Review*, May 1996.

⁹ Cf. Lill Thanning Hansen, Residents' Holdings of Debt Securities and Equity Securities Issued by Non-Residents, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 1998.

¹⁰ Cf. Lasse Tryde, The Nationalbank's New Reporting System for Payments Statistics, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 1999.

¹¹ Cf. Kjeld Ole Nielsen and Anders Mølgaard Pedersen, New Balance-Sheet Statistics for Monetary Financial Institutions, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 1999.

¹² Cf. Gitte Wallin Pedersen and Faisal Sethi, New Statistics for Investment Associations, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2001.

¹³ Cf. Tina Christoffersen and Marie Jakobsen, New Interest-Rate Statistics, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2003.

¹⁴ Cf. Katrine Skjærbaek and Birgitte Søgaard Holm, Danish Securities Statistics in an International Perspective, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2003.

¹⁵ Cf. Jan Overgaard Olesen and Jens Jakob Svanholt, Quarterly Financial Accounts for Denmark, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2004.

¹⁶ Cf. Jens Hald, *Denmark's balance of payments and international investment position – An overall presentation of the collection and compilation of data*, Danmarks Nationalbank, January 2007.

¹⁷ Cf. Carina Moselund Jensen and Tania Al-Zagheer Sass, Danmarks Nationalbank's Lending Survey – New Statistics for Changes in Banks' and Mortgage-Credit Institutes' Credit Policies, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2009; and Torben Nielsen, Nationalbankens udlånsundersøgelse – de første resultater (Danmarks Nationalbank's Lending Survey – the First Results – in Danish only), *Finans/Invest*, No. 2, 2010.

ternal debt from Statistics Denmark. Since Danmarks Nationalbank was producing external payments statistics anyway, it was already in possession of much of the information required in connection with the compilation of the external debt.¹

The collaboration between Danmarks Nationalbank and Statistics Denmark on compilation of Denmark's balance of payments was also increased. As previously mentioned, Danmarks Nationalbank had compiled external payments statistics for a long time. These statistics were first compiled in the period before the liberalisation of capital flows, when capital transactions with abroad were to a high degree subject to approval by Danmarks Nationalbank. Statistics Denmark compiled Denmark's balance of payments, using Danmarks Nationalbank's external payments statistics as a primary source.

In the mid-1990s, there were substantial differences between the balance of the current account compiled by Statistics Denmark and the balance of the current external payments statistics compiled by Danmarks Nationalbank. Consequently, the two institutions worked together to identify the factors behind the divergence and to improve the statistics.² The difference between the two sets of statistics reflected that the balance of payments statistics recorded the value of external transactions irrespective of payment, while the external payments statistics recorded payments. In 2000, the publication of Statistics Denmark's balance of payments statistics was moved forward approximately one month. Consequently, there was no longer the same need to use Danmarks Nationalbank's external payments statistics as an indicator of the development in the balance of payments. As a result, Danmarks Nationalbank ceased to compile statistics of current external payments and was able to focus on financial external payments.³

At the end of the 1990s, Danmarks Nationalbank embarked on major expansion of its statistical production with the aim of compliance with the ECB's relevant standards. Against this background, in the autumn of 1999 Statistics Denmark and Danmarks Nationalbank concluded an agreement in principle on the division of the responsibilities related to the preparation of statistics. Under the agreement, Statistics Denmark had the primary responsibility for economic statistics, while Danmarks Nationalbank had the main responsibility for compiling financial stat-

¹ Cf. Danmarks Nationalbank, Revised Compilation of Denmark's Foreign Debt, *Monetary Review*, May 1994.

² Cf. the press release "Uncertainty concerning the compilation of the balance of payments" from Statistics Denmark and Danmarks Nationalbank of 14 August 1998 (printed on pp. 135-136 of Danmarks Nationalbank, *Report and Accounts*, 1998); and Danmarks Nationalbank, Comparison of Goods Trade and Goods Payments, *Monetary Review*, 3rd Quarter 2000.

³ Cf. Danmarks Nationalbank, Betalinger fra og til udlandet. Oktober 2000 (Payments to and from Abroad. October 2000 – in Danish only), *Nyt*, No. 123, 14 December 2000.

istics. This mirrored the division of responsibilities between the ECB and Eurostat. In 2000, the agreement in principle was followed up by an actual cooperation agreement.¹

AUTHORITY TO COLLECT STATISTICS

Danmarks Nationalbank's expansion of its production of financial statistics created a need for strengthening its authority to collect statistics. The Executive Order on Foreign-Exchange Regulations provided the formal authority for Danmarks Nationalbank to collect the information required for compilation of statistics on cross-border payments and the international investment position ("external debt"). The collection of financial statistics was governed by the authority of the Danish Financial Supervisory Affairs.

In 2000, Danmarks Nationalbank received the mandate to compile financial statistics by amendment of the Statistics Denmark Act, providing for Statistics Denmark to assign the collection, processing and publication of financial statistics to Danmarks Nationalbank.²

In 2010, the National Bank of Denmark Act was amended to include a statistical provision, cf. Box C.1. At the same time, Danmarks Nationalbank's authority to collect statistics under the Statistics Denmark Act was repealed.

¹ Cf. p. 100 of Danmarks Nationalbank, *Report and Accounts*, 1999.

² Cf. p. 101 of Danmarks Nationalbank, *Report and Accounts*, 1999; and p. 17 of Danmarks Nationalbank, *Report and Accounts*, 2000.

AMENDMENT OF THE NATIONAL BANK OF DENMARK ACT, 2010

Box C.1

At the end of May 2010, the Folketing (parliament) adopted an amendment of Act No. 116 of 7 April 1936 on the National Bank of Denmark, as amended by Act No. 166 of 13 April 1938, s. 44 of Act No. 88 of 15 March 1939, Act No. 67 of 15 March 1967 and s. 90 of Act No. 174 of 30 April 1969. The amendment, which entered into force on 1 July 2010, introduced a new s. 14a with the following wording:

"1. The Bank collects, compiles and disseminates statistical information within its competence and is allowed to use this information when necessary in order for the Bank's fulfilment of its tasks, cf. s. 1.

2. The Bank can request that the following legal persons and individuals pass on information they possess to the Bank, within a certain period, if it is necessary for the Bank to receive the information for the fulfilment of its tasks mentioned in subsection 1:

- a) Legal persons and individuals domiciled in Denmark who conduct financial business subject to the Financial Business Act or other financial legislation.
- b) Legal persons and individuals domiciled in Denmark who have outstanding debts and/or assets abroad.
- c) Legal persons and individuals domiciled in Denmark who have either issued or own securities, or carry out trading or clearing and settlement of financial products.
- d) Branches etc. situated in Denmark that are not legal persons or individuals, but apart from that fall within the definitions in paragraphs a-c.

3. The persons mentioned in subsection 2 will be fined if they fail to pass on the information requested by the Bank in due time, or if they intentionally or with gross negligence pass on false information. Companies etc. (legal persons) can be held criminally liable according to Part 5 of the Danish Criminal Code.

4. The Bank is allowed to pass on confidential statistical information to the extent and with the amount of detail that is deemed necessary in order to fulfil its tasks in relation to:

- a) The European System of Central Banks (ESCB),
- b) The European Systemic Risk Board (ESRB).

5. Information that can be passed on according to subsection 4 consists of information which is not in summary or collective form and which makes it possible either directly or indirectly to identify the persons mentioned in subsection 2."

SUPPLEMENT D

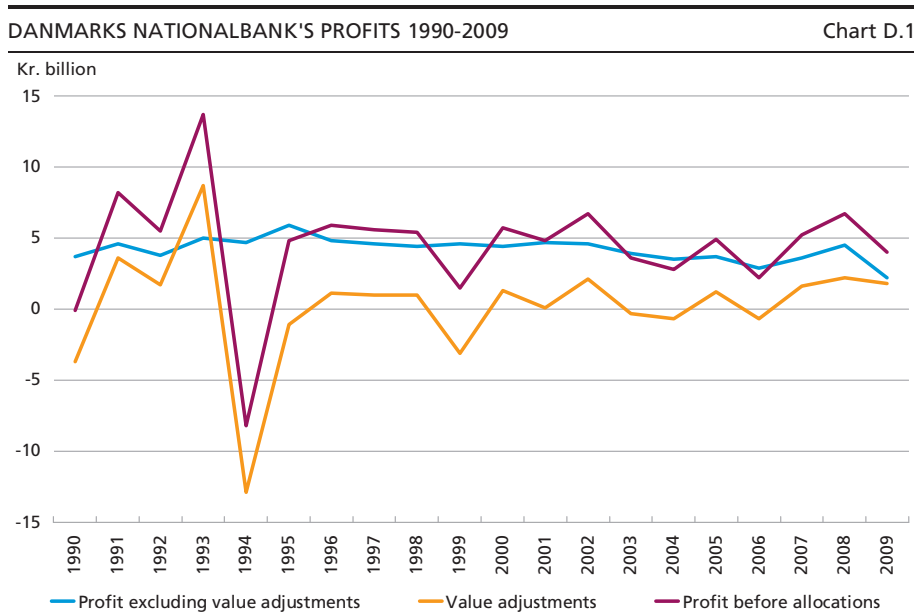
Danmarks Nationalbank's Financial Performance and Information Activities

FINANCIAL PERFORMANCE AND RISK MANAGEMENT

On average, Danmarks Nationalbank posted an annual profit of kr. 4.4 billion in the period 1990-2009, cf. Chart D.1. In all years, the financial result was positive and relatively stable before value adjustments. This primarily reflected Danmarks Nationalbank's core income from seigniorage and remuneration of the counterpart of its net capital less the costs of maintaining the foreign-exchange reserve, cf. Box D.1.¹

Value adjustments tend to cancel out each other over time. The very large capital gains and losses seen in the early 1990s to a large extent reflected coordinated management of Danmarks Nationalbank's foreign-exchange reserve and the central government's foreign-exchange debt, cf. Supplement B. Taken as one, Danmarks Nationalbank and the central government had a low exchange-rate risk, but on the other hand the coordinated management also meant that the central government's debt in dollars was offset by dollar assets in Danmarks Nationalbank's foreign-exchange reserve. Due to the large fluctuations in the value of the dollar from year to year, this could result in large exchange-rate gains or losses for Danmarks Nationalbank. Following the decision in 1995 to reduce both the government's and Danmarks Nationalbank's gross exposures in dollars, the exchange-rate adjustments in Danmarks Nationalbank's accounts decreased considerably.

¹ Cf. p. 17-20 of Danmarks Nationalbank, *Financial Management at Danmarks Nationalbank*, 2003; and Ib Hansen and Christian Ølgaard, Danmarks Nationalbank's Risk Management, Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2000.



FACTORS BEHIND DANMARKS NATIONALBANK'S PROFIT	Box D.1
<p>Table D.1 illustrates how Danmarks Nationalbank's profit for 2002, kr. 7.1 billion, was distributed on its "business areas".</p>	
DANMARKS NATIONALBANK'S PROFIT, 2002	Table D.1
	Kr. billion
<i>Core income</i>	
Seigniorage	1.5
Counterpart of net capital	1.7
Foreign-exchange reserve and its financing	-0.5
Exchange-rate risk	0.4
Core income, total	3.1
<i>Profit from additional risk</i>	
Interest-rate risk, direct yield ("carry"), etc.	0.9
Interest-rate risk, interest-rate-driven capital gains	3.1
Total profit from additional risk	4.0
Total profit	7.1

Core income is the part of the income that reflects Danmarks Nationalbank's role as monetary authority. There are four sources of core income:

CONTINUED

Box D.1

- Seigniorage is the profit made by Danmarks Nationalbank from issuing banknotes and coins. When the banks receive cash, their net deposits at Danmarks Nationalbank are reduced. In this way, Danmarks Nationalbank saves having to pay interest to the banks. Banknotes and coins can be seen as an interest-free loan to Danmarks Nationalbank. Danmarks Nationalbank thus earns the difference between the monetary-policy interest rate and zero on banknotes and coins in circulation. In 2002, seigniorage amounted to kr. 1.5 billion.
- Danmarks Nationalbank makes a profit from investing the counterpart of its net capital. If it is assumed that the counterpart is invested in short-term krone-denominated assets at a rate of interest corresponding to the monetary-policy rates, this item contributed kr. 1.7 billion to core income in 2002.
- The foreign-exchange reserve is, in principle, an expense to Danmarks Nationalbank. The reason is that the foreign-exchange reserve is offset by interest-bearing loans in Danish kroner – either from banks or from the central government – while most of the foreign-exchange reserve is remunerated at the euro rate, which is lower than the rate of interest applying in Denmark. Viewed in isolation, this entailed an expense of kr. 0.5 billion to Danmarks Nationalbank in 2002.
- Finally, Danmarks Nationalbank's role as monetary authority inevitably involves exposure to exchange-rate risk as it is necessary to maintain a foreign-exchange rate in the interest of the fixed-exchange-rate policy. The foreign-exchange reserve is primarily exposed in euro, for which the exchange-rate risk is low on account of the fixed-exchange-rate policy. In addition, part of the foreign-exchange reserve is exposed to dollars and gold. In 2002, this unavoidable exchange-rate risk contributed kr. 0.4 billion to core income.

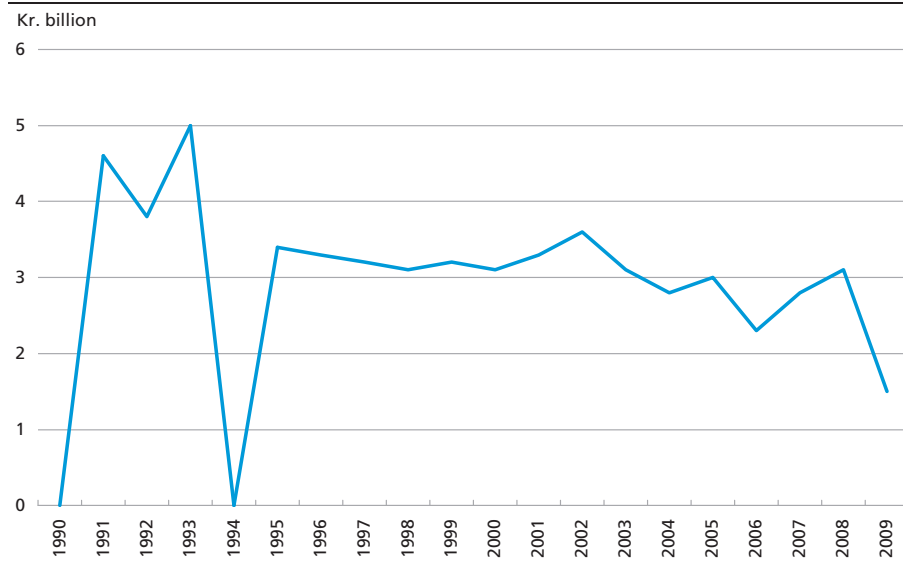
Through its role as monetary authority, Danmarks Nationalbank is exposed not only to basic risk, but also to additional risk. The reason is that Danmarks Nationalbank as a financial enterprise seeks to achieve a sound return by incurring additional risk within acceptable limits. So Danmarks Nationalbank does not purely invest at the secure short-term interest rate, but also in Danish and foreign bonds. Experience shows that such investments yield a certain excess return ("carry"), but they also affect Danmarks Nationalbank's financial result via interest-rate-driven capital gains and losses as a result of developments in the interest-rate curve in Denmark and abroad. The total profit from additional risk was kr. 4.0 billion in 2002. However, it should be noted that interest-rate-driven capital gains and losses may vary considerably from year to year.

TRANSFER OF PROFITS TO THE CENTRAL GOVERNMENT

Under section 19 of the National Bank of Denmark Act, profit after allocations to reserves is payable to the Treasury. Under article 4, item 6 of Danmarks Nationalbank's by-laws, the Board of Directors goes through the annual accounts on the basis of the report of the Board of Governors and the Committee of Directors and decides upon writings-off and allocations etc. as well as application of the annual profit and

PROFIT ALLOCATION TO THE TREASURY 1990-2009

Chart D.2



Source: Danmarks Nationalbank.

submits the annual accounts to the Royal Bank Commissioner for approval.

In 1990-94 it was decided in connection with the closing of the accounts that positive value adjustments were to be allocated to reserves, while negative value adjustments were to be deducted from the operating profit before transfer to the central government. This entailed large year-on-year fluctuations in the profit transferred to the central government, cf. Chart D.2.

With the implementation of Stage 2 of Economic and Monetary Union in the EU in 1994, member states were to seek to counter excessive budget deficits, cf. Chapters 7 and 8. Among other things, this meant that the government deficit was not allowed to exceed 3 per cent of the gross domestic product, GDP. Viewed in isolation, the large fluctuations in the profits transferred from Danmarks Nationalbank to the central government contributed to making part of the government deficit volatile and thus unpredictable. Another consequence of the previous decisions was that Danmarks Nationalbank's consolidation depended on whether value adjustments were positive in individual years.¹

In 1995-2001, the following principle was applied to the annual decisions on allocation of profits: Positive value adjustments were allocated to a Value Adjustment Reserve. Negative value adjustments were

¹ Cf. p. 85 of Danmarks Nationalbank, *Report and Accounts*, 1995.

from the Value Adjustment Reserve as far as possible. After transfer to/from the Value Adjustment Reserve, 30 per cent of the available amount was allocated to the General Reserves for consolidation of Danmarks Nationalbank. The remaining 70 per cent was transferred to the central government. This provided for much greater stability in profit transfers to the central government than previously, cf. Chart D.2. In 2002-07 the share of the profit to be allocated to the General Reserves was set at 20 per cent. After transfer to/from the Value Adjustment Reserves, 80 per cent of the remaining profit was thus transferred to the government.¹ In 2008-09, it was decided to allocate 30 per cent of the profit to the General Reserves for consolidation of Danmarks Nationalbank.²

In March 2003, Rigsrevisionen (the National Audit Office) submitted a report to the members of the Public Accounts Committee on the practice for allocation of Danmarks Nationalbank's profits.³ However, the report was withdrawn in April 2003 as the issues raised needed to be investigated further.⁴

Throughout the period from 1990, Danmarks Nationalbank's net capital constituted a relatively constant share of GDP, cf. Chart D.3.

Danmarks Nationalbank developed its principles for management of financial risk on an ongoing basis. In addition, it was found to be important, in order to ensure the credibility of Danmarks Nationalbank, that the principles for and results of financial management were known to the public. Danmarks Nationalbank therefore began to publish information about the interest-rate sensitivity of the foreign-exchange reserve and the securities portfolio in its Report and Accounts in 1997, information about the value-at-risk⁵ for Danmarks Nationalbank's market risk in the Report and Accounts in 1999 and results of stress tests⁶ in the Report and Accounts in 2001.

¹ Cf. e.g. p. 117 of Danmarks Nationalbank, *Report and Accounts*, 2002.

² Cf. e.g. p. 47 of Danmarks Nationalbank, *Report and Accounts*, 2008.

³ Cf. Rigsrevisionen's report to the members of the Public Accounts Committee on rules and practice for allocation of Danmarks Nationalbank's profits (RB JUR01/03 – March 2003 – in Danish only), submitted on 26 March 2003 and published on 1 April 2003.

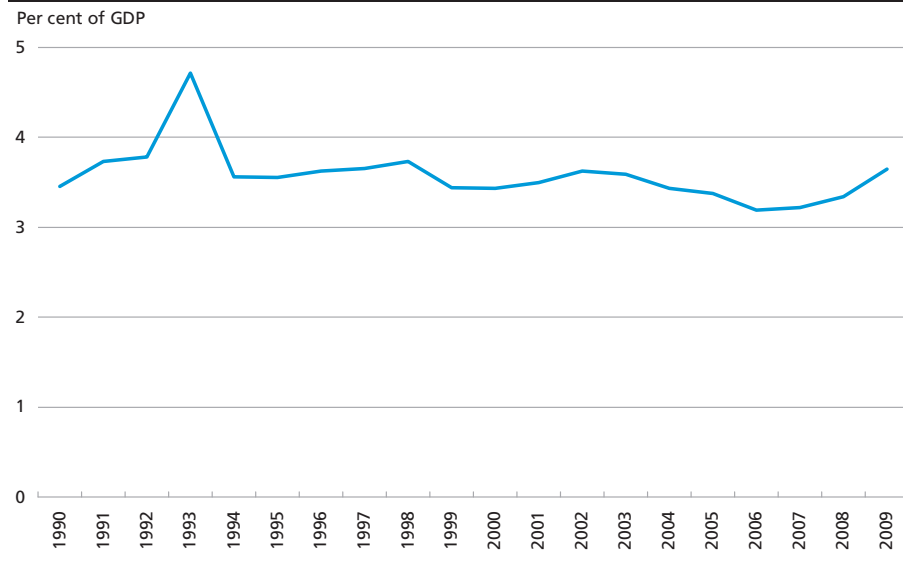
⁴ Cf. press release from Rigsrevisionen of 9 April 2003 (in Danish only).

⁵ An expression of the maximum decline in the market value of a portfolio over a given horizon with a given probability.

⁶ Calculations to illustrate how the value of Danmarks Nationalbank's portfolio would be affected under extreme, but not completely improbable scenarios for market developments.

DANMARKS NATIONALBANK'S NET CAPITAL 1990-2009

Chart D.3



Source: Danmarks Nationalbank and Statistics Denmark.

THE DANISH EXPORT FINANCE CORPORATION¹

In the first part of the 1970s, export credits could be refinanced at Danmarks Nationalbank. Since Danmarks Nationalbank wished to do away with special arrangements entailing refinancing at Danmarks Nationalbank, it took the first steps towards establishing an independent corporation for financing export credits in 1974. Following lengthy negotiations with the Danish government, the industrial sector and the banks, agreement was reached on the establishment of the Danish Export Finance Corporation, DEFC, for financing long-term export credits (but not for ships).

DEFC was founded as an independent corporation in March 1975 with a guarantee capital of kr. 100 million, of which kr. 40 million came from Danmarks Nationalbank, kr. 40 million from the banks and kr. 20 million from the savings banks. The guarantee capital was never paid up, but on the other hand no commission was ever paid to the guarantors.

Danmarks Nationalbank provided loans to DEFC at a rate of interest that was 0.5 per cent below the Corporation's lending rate. For DEFC it was, however, even more favourable to raise loans abroad. For many years Danmarks Nationalbank thus guaranteed DEFC that in any finan-

¹ Cf. pp. 306-310 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990 (Monetary History of Denmark 1960-1990 - in Danish only)*, Danmarks Nationalbank, 1993; and Henning Dalgaard, *The Danish Export Finance Corporation 1975-2000*, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2000.

cial year it would not be worse off than if the amount had been borrowed from Danmarks Nationalbank, while DEFC would benefit from any savings. As DEFC normally raised loans in currencies where the rate of interest was low, its interest-rate margin was often high. Since these currencies were often also the strongest ones, substantial exchange-rate losses were frequently realised, which were covered by Danmarks Nationalbank.

DEFC was most active at the end of the 1970s and in the beginning of the 1980s. During the 1980s it gradually became less favourable to raise loans from DEFC, partly because market interest rates in Denmark fell strongly, partly due to changes in the OECD's rules on government subsidies in this area.

Over time, DEFC's capital grew so rapidly that further build-up of capital was unnecessary. In 1984, DEFC's interest-rate margin on refinancing at Danmarks Nationalbank was therefore lowered from 0.5 per cent to 0.3 per cent. In 1987 it was eliminated, and it was decided that the remuneration of DEFC's capital, which was deposited in an account at Danmarks Nationalbank, was to be limited to what was necessary in order to ensure a small profit for DEFC.

Having set down a task force to look into the issues in the 1st half of 1995, the Ministry of Business and Industry tabled a proposal for a new system for financing export credits, which made DEFC redundant. When the new system took effect in 1997, DEFC ceased to issue new loan commitments. At that time, DEFC had considerable outstandings. Since some loans ran for up to 12 years, passive discontinuation of DEFC could be a lengthy process. Rapid liquidation of DEFC would therefore require divestment of DEFC's commitments.

In the course of 1997 and early 1998, many loans were in fact divested, but as divestment of the remaining commitments gradually stagnated, the Board of DEFC decided to file for voluntary liquidation of the Corporation in June 1998. The founders of DEFC (the Danish Bankers Association and Danmarks Nationalbank) gave their consent to this decision, which was also approved by the Danish Directorate of Civil Law. Over the next 18 months, the liquidators divested virtually all remaining loans and loan commitments in the market. By December 1999, loans totalling only just under kr. 150 million had not been sold. These loans were acquired by Eksport Kredit Fonden (an institution under the Ministry of Business and Industry) in December 1999.

DEFC was finally liquidated in May 2000 and its net assets of kr. 406 million were transferred to the Treasury for allocation to a number of export-promotion measures. At the same time, the guarantors were relieved of their guarantee commitments.

DANMARKS NATIONALBANK'S INVOLVEMENT IN SUPPORTING SHIP FINANCE¹ AND DANMARKS NATIONALBANK'S PORTFOLIO OF SHARES

In June 1961, Danish Ship Finance, DSF, was established as an independent institution by Danmarks Nationalbank, the Danish Bankers Association, the Danish Shipowners' Association, the Association of Danish Shipbuilders and the Danish Insurance Association. The objective of DSF was to provide loans secured by mortgages in ships. Originally its financial base comprised guarantee capital of kr. 40 million, of which Danmarks Nationalbank contributed kr. 10 million. The guarantee capital was subsequently augmented as a result of increasing lending activity.

DSF financed its lending by issuing bonds. In the autumn of 1963, at the initiative of the Danish government, new bonds were introduced with a nominal yield below the market yield. These bonds could be purchased by banks at par. The banks could then use the bonds as collateral for loans with the same low rate of interest from Danmarks Nationalbank, which thus bore the costs. In the autumn of 1965 the system was changed, so that Danmarks Nationalbank acquired DSF's bonds on special terms, the acquisition price (par) typically being higher than the market price. Danmarks Nationalbank suffered a capital loss, and since Danmarks Nationalbank's profit after allocations was payable to the Treasury, government revenue was reduced by the amount of Danmarks Nationalbank's costs.

As a consequence of a sustained weak order intake for Danish shipyards, a package of supplementary support measures was implemented in 1986 (the shipyard package). This enabled DSF to issue index-linked bonds for financing index-linked loans, with a ceiling on the indexation premium payable by the borrower. Any indexation premium exceeding the ceiling was payable by the central government. Like other index-linked bonds, these bonds were exempt from real-interest-rate tax, and Danmarks Nationalbank acquired the bonds at par. The nature of the shipping subsidies thereby changed from capital losses for Danmarks Nationalbank – and thus indirect losses for the central government via lower profit allocations – to lower tax revenue, as well as unknown indexation costs for the central government during the term of the loan. In 1986, DSF was also empowered to offer loans in certain currencies determined by Danmarks Nationalbank on the same interest and amortisation terms as the loans in kroner (the forward scheme).

¹ Cf. pp. 51-53 and 302-306 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993; and Peter Jayaswal, Danmarks Nationalbank's Costs of Supporting Ship Finance, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2004.

In 1993 the existing subsidies for ship financing were replaced by direct government subsidies equivalent to the level permitted within the EU. Originally the scheme applied to contracts concluded in 1993 and 1994, but it did not cease until the end of 2000. In order to enable DSF to offer loans in dollars, Danmarks Nationalbank committed itself to acquiring DSF's krone-denominated bonds at market price with a view to resale in the market, and to contributing to DSF's lending in dollars by concluding foreign-exchange swaps. DSF was thus able to finance dollar-denominated loans by issuing krone-denominated bonds without incurring any exchange-rate risk. The commitment was temporary and applied to contracts concluded in 1993 and 1994 with delivery of the ship within three years. As planned, it ceased for contracts concluded after 1994. With the transition to direct government subsidies the indexation scheme was discontinued, and the last loan disbursements under that scheme took place in 1995.

From the mid-1980s, Danmarks Nationalbank was not involved in any new subsidy schemes for ship financing. However, premature redemption of loans under the indexation scheme was still an option for some years¹. The last commitment vis-à-vis DSF (concerning swaps) expires in 2012 at the latest.

It is difficult to quantify the exact costs to Danmarks Nationalbank of participating in these subsidy schemes as the costs were not specified in Danmarks Nationalbank's accounts for all years. A precise calculation would require historical data on prices and volumes – and typically such data no longer exists. On the basis of accounting data and information about historical interest rates and the volume of lending it has been estimated that the costs to Danmarks Nationalbank of acquiring ship finance bonds at par in the period 1964-95 was in the range of kr. 12.3 billion at current prices. To this should be added costs related to other subsidy schemes, which are more difficult to quantify.²

On 17 January 2005, DSF, the Danish Ministry of Economic and Business Affairs and Danmarks Nationalbank concluded an agreement on the restructuring of DSF as a limited liability company. Until 1984, DSF made a profit in connection with borrowers' prepayments of interest-subsidised loans. This profit would have accrued to the central govern-

¹ On acquisition of the index-linked bonds, Danmarks Nationalbank made the commitment that they could be redeemed prematurely at par. In the event of premature redemption, Danmarks Nationalbank must deliver the underlying bonds. If it was not possible to deliver the bonds, a book debt could be created whereby Danmarks Nationalbank took over the debtor's and the central government's total obligations vis-à-vis the bond owners and covered the future payments on the bond. If, at a later time, it became advantageous to purchase the underlying bonds in the market, the book debt could be cancelled.

² Cf. Peter Jayaswal, Danmarks Nationalbank's Costs of Supporting Ship Finance, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2004.

ment if the latter itself had handled these lending activities. Consequently, the parties agreed that Danmarks Nationalbank and the Danish government would receive a total of kr. 1,610 million in connection with the restructuring of DSF as a limited liability company. The necessary legislative amendment was subsequently adopted by the Folketing (Danish parliament), and Danmarks Nationalbank purchased shares in the company for nominally kr. 63 million at a market value of kr. 231 million.¹

Danmarks Nationalbank's portfolio of shares reflects not only its role as central bank, but also its historical involvement in the establishment of a number of companies. In the period 1998-2005, Danmarks Nationalbank divested its shares in FIH², DLR Kredit³, Grønlandsbanken⁴ and Bella Center A/S. Furthermore, the value of Danmarks Nationalbank's shares in Det Danske Stålvalseværk was written down to zero in 2002, when compulsory winding-up proceedings were initiated against the company. At end-2005, Danmarks Nationalbank's portfolio of shares, etc. had an estimated market value of kr. 748 million and comprised its capital subscription to the ECB, shares in the BIS, SWIFT, PBS, SAS and Messecenter Herning and capital investments in VP Securities and Danish Ship Finance.⁵

STAFFING AND OPERATIONAL COSTS

The total number of full-time employees at Danmarks Nationalbank fell from around 700 in the early 1980s to around 500 at the end of 2009, cf. Chart D.4.

¹ Cf. pp. 100-101 of Danmarks Nationalbank, *Report and Accounts*, 2004; and p. 99 of Danmarks Nationalbank, *Report and Accounts*, 2005.

² Finance for Danish Industry (FIH) was established in 1958 as a public limited company by Danmarks Nationalbank, the Danish Bankers Association, Danmarks Sparekasseforening, the Danish Insurance Association and the Federation of Danish Industries with a view to promoting industrialisation by extending medium-term loans for industrial and small trades. cf. pp. 48-49 of Richard Mikkelsen, *Dansk pengehistorie 1960-1990*, Danmarks Nationalbank, 1993.

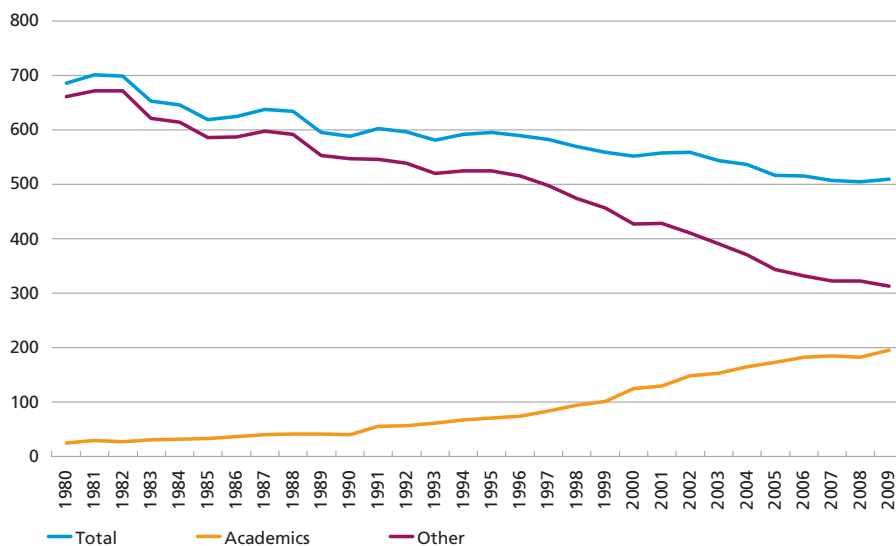
³ Dansk Landbrugs Realkreditfond, DLR, was founded in 1960 by Danmarks Nationalbank, the Danish Bankers Association and Danmarks Sparekasseforening in cooperation with De samvirkende danske Landboforeninger and De samvirkende danske husmandsforeninger. Its objective was to provide secondary loans against property, livestock and equipment as collateral, primarily loans for modernising buildings and for other investments in land, buildings, machinery and livestock and for facilitating generational succession, cf. p. 313 of Erik Hoffmeyer and Erling Olsen, *Dansk pengehistorie 1914-1960 (Monetary History of Denmark 1914-1960 – in Danish only)*, Danmarks Nationalbank, 1968.

⁴ Grønlandsbanken was founded in 1967 by Danmarks Nationalbank, De danske Provinsbankers Forening, Københavnske Bankers Forening, Privatbanken, Den danske Landmandsbank, Handelsbanken and Andelsbanken with a view to establishing a bank in Greenland to act as authorised foreign-exchange dealer, among other tasks, cf. p. 58 of Danmarks Nationalbank, *Report and Accounts*, 1967 (in Danish only).

⁵ Cf. p. 103 of Danmarks Nationalbank, *Report and Accounts*, 1999; p. 116 of Danmarks Nationalbank, *Report and Accounts*, 2002; and pp. 121-130 of Danmarks Nationalbank, *Report and Accounts*, 2005.

NUMBER OF EMPLOYEES AT DANMARKS NATIONALBANK 1980-2009

Chart D.4



Note: Number of full-time employees at year-end, including employees at the Royal Danish Mint.

Source: Danmarks Nationalbank

Developments in the years after 1990 reflected ongoing rationalisation of the performance of tasks, but large fluctuations in individual years were also attributable to more specific circumstances¹:

- The reduction of the number of employees by 7 in 1990 reflected ongoing rationalisation of banknote handling following the establishment of cash depots in 1990, cf. Supplement A. In addition, reporting of payments to and from abroad to Danmarks Nationalbank was simplified; this reporting formed the basis for compilation of foreign-exchange statistics, cf. Supplement C. The simplification reflected liberalisation of capital flows in 1988.
- In 1991, the number of employees rose by 14, mainly as a result of the transfer of Government Debt Management tasks from the Ministry of Finance, cf. Supplement B.
- From 1991 to 1993 the number of employees declined by 21 full-time equivalents. This was primarily attributable to the completion in 1993 of the coin reform that began in 1989.
- In 1994 the number of employees increased by 11, one reason being that participation in international cooperation required more work after implementation of Stage 2 of Economic and Monetary Union and

¹ Cf. Jens Erik Larsen, *Udviklingen i Nationalbanken (Developments at Danmarks Nationalbank)*, published in Janne Albertsen, Lars Goldschmidt and Henrik Holt Larsen (eds.), *Hvor svært kan det være? – dilemmaer i vidensledelse (Surely It Can't Be That Difficult? – Knowledge Management Dilemmas – in Danish only)*, Nyt fra Samfundsvidenskaberne, 2005.

Danmarks Nationalbank's resultant participation in the European Monetary Institute, cf. Chapter 8.

- The reduction of the number of employees by 13 in 1998 was mainly attributable to changes in the cash-supply system, entailing that over a short period Danmarks Nationalbank withdrew from the handling of banknotes for recirculation and to some extent from the handling of coins, cf. Supplement A.
- The reduction of the number of employees by 28 in 2004 and 2005 primarily reflected reorganisation of procedures at Danmarks Nationalbank's Banknote Printing Works.

Overall developments in the number of employees from the late 1980s onwards reflected a number of resource reallocations in various areas. The most notable trend was a shift in the staffing structure in favour of more academic staff. This reflected Danmarks Nationalbank's increased participation in international cooperation between central banks, as well as the need for more analytical skills as a result of developments in the financial markets. Danmarks Nationalbank's collection and processing of financial statistics and maintenance and upgrading of its IT systems also required more employees with an academic background.¹ Finally, the complexity of the tasks generally increased. Overall, developments during the period under review reflected transformation of Danmarks Nationalbank into more of a knowledge-based organisation.

OBJECTIVES AND VALUES

In 1998 a number of objectives were formulated for Danmarks Nationalbank, as well as a set of values that were to serve as guidelines for its day-to-day activities, as was also the trend in many other organisations, cf. Box D.2. Both objectives and values were formulated by the Board of Governors and adjusted after consultation of all employees.²

The objectives were condensed a little in 2007³ after renewed debate within the organisation, while the 1998 values remained unchanged.

¹ In 2006, Danmarks Nationalbank decided to look into the possibilities of outsourcing the IT operations and development tasks performed by its in-house IT department. As a result, a restricted EU tender was conducted. However, in 2007 Danmarks Nationalbank had to abandon the idea of outsourcing IT tasks; instead recruitment of internal IT operations staff was stepped up, cf. p. 97 of Danmarks Nationalbank, *Report and Accounts*, 2006; and p. 25 of Danmarks Nationalbank, *Report and Accounts*, 2008.

² Cf. pp. 100-101 of Danmarks Nationalbank, *Report and Accounts*, 2000.

³ Cf. Danmarks Nationalbank, *The tasks of Danmarks Nationalbank*, May 2008.

DANMARKS NATIONALBANK'S OBJECTIVES AND VALUES

Box D.2

Objectives (1998)

The overall objectives of Danmarks Nationalbank as an independent and credible institution are:

- To ensure a stable krone.
- To ensure efficient and secure production and distribution of banknotes and coins of high quality.
- To contribute to efficiency and stability in the payment and clearing systems and in the financial markets.
- To act as banker to the central government.
- To prepare reliable and relevant financial statistics.
- To prepare and communicate credible standpoints on economic and financial issues with relation to Danmarks Nationalbank's objectives.
- To maintain its financial strength by means of consolidation and risk management.

Values (1998)

- While safeguarding its traditions, Danmarks Nationalbank shall actively renew itself and adapt to trends in society and to the requirements of the surrounding world. Danmarks Nationalbank shall protect its credibility by not only displaying professional competence, managerial skills and sound judgement, but also by maintaining an organisation which lives up to the principles Danmarks Nationalbank considers to be significant to society's development: efficiency, cost awareness and readiness for change. Focusing on its primary tasks, on an ongoing basis Danmarks Nationalbank shall set priorities for its work.
- Danmarks Nationalbank shall be an attractive workplace capable of attracting, motivating and retaining well-qualified employees and offering them working conditions which ensure balance between work and leisure. Key qualifications are initiative, commitment, adaptability and a willingness and ability to cooperate across professional barriers, and with other areas of the organisation. All employees must have the necessary training and/or education to handle their tasks. It is a joint responsibility to ensure that everyone is trained and developed in preparation for new tasks.
- Danmarks Nationalbank shall be service-oriented in terms of both the external relations of line functions, and the internal relations of staff functions with the rest of the bank. Teamwork and project work within each unit and between offices and departments is encouraged. In cooperation with the employees, managers shall set priorities for tasks, define targets and ensure the necessary responsibility sharing and communication, thereby limiting the need for detailed supervision. This gives employees the widest possible scope to define their own working methods, solve tasks and take decisions themselves to the greatest extent possible.
- Danmarks Nationalbank's relations with the financial sector are based on market-oriented solutions, and the costs to the sector and to Danmarks Nationalbank must be weighed against the value to society of the system or requirement. The underlying principle for systems and requirements relating to the credit institutions shall be equal treatment irrespective of size, geographical location and national affiliation.

CONTINUED

Box D.2

- In relations with public authorities and players in the financial system, and in international cooperation, Danmarks Nationalbank shall seek influence and express attitudes which are in line with Danmarks Nationalbank's objectives. In relations with the public Danmarks Nationalbank shall, via the media and otherwise, ensure an understanding of the decisions relating to Danmarks Nationalbank's own tasks. With regard to financial conditions or economic policy in general, Danmarks Nationalbank shall comment on these issues if they are of material importance to its implementation of monetary and foreign-exchange policy, or to the efficiency and stability of the financial markets.

Objectives (2007)

Under the law, 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 monitoring financial stability, overseeing payment systems, compiling financial statistics and managing the central government's debt.

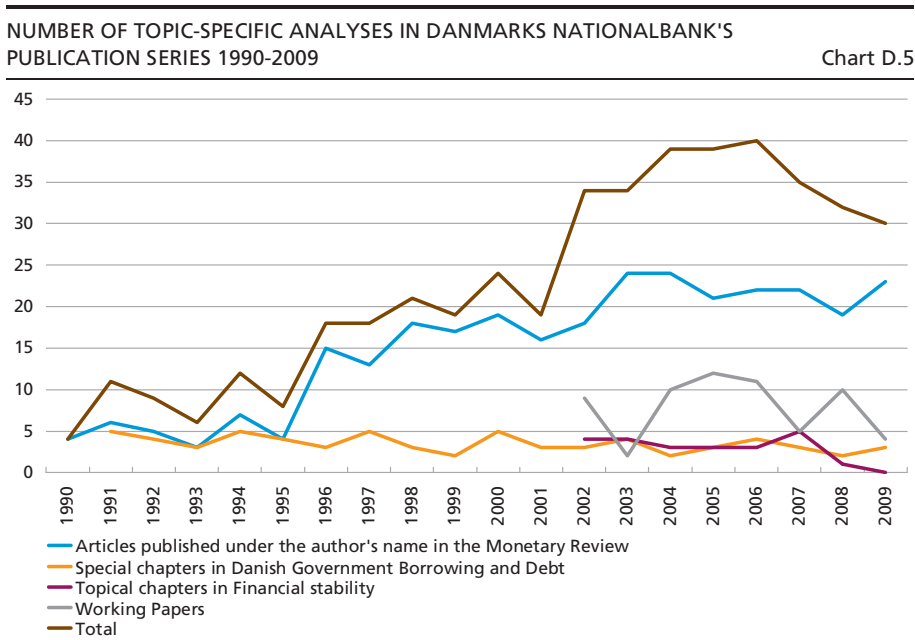
INFORMATION ACTIVITIES

Developments from 1990 onwards were characterised by a considerable increase in the volume of information published by Danmarks Nationalbank. Most of the analyses previously prepared for internal use were now increasingly disseminated to the public as articles in Danmarks Nationalbank's Monetary Review or other publications, cf. Chart D.5.

The articles in the Monetary Review were originally introduced in 1986 with a view to meeting a wish for further information from Danmarks Nationalbank that was put forward in an account of Denmark's monetary policy prepared by the Danish Economic Council in 1985 at the request of the Economic and Political Affairs Committee of the Folketing.¹

In 1991 Danmarks Nationalbank took over a number of tasks from Government Debt Management at the Ministry of Finance, including preparation of the annual publication Danish Government Borrowing

¹ Cf. The Economic Council, Chairmanship, *Dansk pengepolitik under forvandling – En strukturrapport udarbejdet efter anmodning fra folketingets politisk-økonomiske udvalg (Danish Monetary Policy in Transition – A Structural Report Prepared at the Request of the Economic and Political Affairs Committee of the Folketing – in Danish only)*, Akademisk Forlag, 1985; and p. 5 of Danmarks Nationalbank, *Oversigt over informationsmateriale fra Nationalbanken (Overview of Information Material from Danmarks Nationalbank – in Danish only)*, 1986.



Note: The number of articles in the Monetary Review published under the author's name includes articles by external contributors, but does not include speeches or reproduction of articles published elsewhere.

Source: Danmarks Nationalbank.

and Debt with analyses of the impact on lending and the bond market in general, cf. Supplement B.

From 2002 Danmarks Nationalbank also issued a new regular publication, *Financial stability*, which contained analyses of general risks to the financial system, cf. Chapter 6. In 2000 and 2001 similar analyses had been published in the *Monetary Review* for the 2nd quarter.

Also in 2002, Danmarks Nationalbank began to publish a *Working Paper* series describing research and development activities relating to macroeconomics, banking or finance, often of a provisional nature.

Besides these serial publications, Danmarks Nationalbank from time to time issued one-off publications on various topics within its areas of activity, cf. Box D.3. The volume of financial statistics published also increased.

In May 1998, Danmarks Nationalbank went online. The new website provided an overview of Danmarks Nationalbank's tasks, as well as the option to download press releases, publications, data, etc.¹ Surveys showed that the website was mainly visited by professional users within the financial sector, but others also sourced information from Danmarks

¹ Cf. p. 79-80 of Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 1998.

OTHER PUBLICATIONS BY DANMARKS NATIONALBANK SINCE 1990

Box D.3

1993: In connection with Danmarks Nationalbank's 175th anniversary, volumes 4 and 5 of Monetary History of Denmark were published (in Danish only). The two volumes had been prepared by former Governors Richard Mikkelsen and Erik Hoffmeyer, respectively.

1998: Danmarks Nationalbank extended its publication of statistics to include a new publication series, "Nyt", which regularly described new statistical data published by Danmarks Nationalbank. In addition, the Monthly Financial Statistics were increased considerably.

1999: Danmarks Nationalbank published "Monetary Policy in Denmark", which provided a comprehensive account of Denmark's approach to monetary policy and the link between monetary policy in theory and practice. The 2nd edition was published in 2002 and the 3rd edition in 2009.

1999: Danmarks Nationalbank published "Nationalbankens opgaver" (the Tasks of Danmarks Nationalbank – in Danish only), which was to give the public better insight into Danmarks Nationalbank's tasks as a central bank and to describe concepts such as inflation, fixed-exchange-rate policy, interest rates, prices and exchange rates. The 2nd edition, which was also translated into English, was published in 2008.

1999: Danmarks Nationalbank published "Marshall-hjælpen og samarbejdet i Europa og Den Europæiske Betalingsunion, EPU 1950-1958" (The Marshall Aid and Cooperation in Europe and the European Payments Union, EPU 1950-1958 – in Danish only), prepared by Richard Mikkelsen.

1999: Danmarks Nationalbank published "The Coins and Banknotes of Denmark", which provided a comprehensive account of how banknotes and coins are manufactured, from sketch to finished product. An updated version was published in 2005.

2001: Danmarks Nationalbank began to issue a new series of publications, "Memoranda on economic and financial-market issues".

2003: Danmarks Nationalbank published "MONA – a quarterly model of the Danish economy", which described the quarterly econometric model, MONA, that is used for forecasts of the Danish economy and other economic calculations. In 2007 Danmarks Nationalbank began to publish economic forecasts in its Monetary Review.

2003: Danmarks Nationalbank published "Danmarks Nationalbank" about the Danmarks Nationalbank building and its interior. In text and pictures, the publication told the story of the building and its architect, Arne Jacobsen.

2004: Danmarks Nationalbank published "Financial Management at Danmarks Nationalbank", describing the principles and methods applied by Danmarks Nationalbank in connection with the management of the foreign-exchange reserve and other portfolios.

CONTINUED

Box D.3

2005: Danmarks Nationalbank published "Payment Systems in Denmark", which provided a general description of Danmarks Nationalbank's role in relation to payment systems and the Danish payments infrastructure.

2005: Danmarks Nationalbank started publishing a new series of PhD Theses prepared in connection with PhD scholarships in economics offered by Danmarks Nationalbank.

2006: In cooperation with the central banks of Finland, Iceland, Norway and Sweden, Danmarks Nationalbank published "Nordic Banking Structures".

2006: In cooperation with the Ministry of Economic and Business Affairs, Danmarks Nationalbank published "Analyse vedrørende særligt dækkede obligationer" (Analysis concerning Covered Bonds – in Danish only), containing analyses of the consequences of a Bill on covered bonds (*særligt dækkede obligationer*, SDOs).

2006: In cooperation with the Ministry of Economic and Business Affairs, Danmarks Nationalbank published "Aktiemarkedet og globaliseringen" (The Stock Market and Globalisation – in Danish only), analysing developments in the Danish stock market compared with developments in other countries.

2010: Danmarks Nationalbank published "Rapport om nationale betalingsoverførsler" (Report on domestic payment transfers in Denmark – in Danish with an English summary), containing analyses from a working group on settlement times for payment transfers in Denmark. The working group was set up at the request of the Minister for Economic and Business Affairs and comprised representatives of the Danish Consumer Council, the Danish Chamber of Commerce, the Confederation of Danish Industry, the Danish Federation of Small and Medium-Sized Enterprises, the Ministry of Finance, the Ministry of Economic and Business Affairs, the Danish Agency for Governmental Management, the National IT and Telecom Agency, the Danish Financial Supervisory Authority, the Danish Bankers Association, PBS¹ and Danmarks Nationalbank.

2010: Danmarks Nationalbank published "Stress Tests" describing both Danmarks Nationalbank's own stress tests of the resilience of the largest Danish banks to negative economic shocks and stress testing performed in cooperation with the largest Danish banks on the basis of calculations using the banks' own models.

¹ Renamed "nets" in 2010 following a merger between Danish PBS Holding A/S and Norwegian Nordito AS.

Nationalbank's website, primarily about banknotes and coins.¹ The number of visitors increased from approximately 5,500 in July 1998 to around 20,000 a month in the 1st half of 1999. A new, updated version of the website was launched in 2003, supplemented with a database of time series for financial statistics. In the first part of 2004, the average

¹ Cf. Liselotte Perch Lind, More Information Available on the Nationalbank's Web Site, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 1999.

monthly visitor rate was around 75-100,000, rising to around 200,000 in the 1st quarter of 2009.

On 1 January 1998, Danmarks Nationalbank also set up an Information Desk with a view to providing better services to people who contacted Danmarks Nationalbank with queries. Some 7,000 queries were received in 1998.¹

As part of a targeted effort to provide information about its policies and tasks, Danmarks Nationalbank also established a team of young economists who gave lectures, mainly to students in upper secondary school and at commercial colleges with some knowledge of economics. Over time the number of lectures increased steadily, to 112 in 2006, with a total of some 4,000 people attending the lectures.²

¹ Cf. p. 96 of Danmarks Nationalbank, *Report and Accounts*, 1998.

² Cf. pp. 98-99 of Danmarks Nationalbank, *Report and Accounts*, 2006.