Danmarks Nationalbank

# Monetary Review 3rd Quarter 2007

DANMARKS NATIONAL BANK 2007

# MONETARY REVIEW 3rd QUARTER 2007

The small picture on the front cover shows the "Bankers" clock, which was designed by Arne Jacobsen for the Danmarks Nationalbank building.



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# Contents

# Recent Economic and Monetary Trends

*This review covers the period from mid-May to mid-September 2007*

Global economic growth remained strong despite more moderate growth in the USA, and the recovery has been broadly based across the major industrialised and emerging market economies. In July, the problems in the US subprime mortgage market intensified, and the turmoil spread to the global financial markets. A reduced risk appetite in the market led to significant drops in stock prices and lower yields on gilt-edged securities such as government bonds, whereas higher-risk bonds saw higher yields. In the first part of September the markets were characterised by considerable turmoil. The cyclical situation has not changed materially in the last few months, but the situation in the USA seems more uncertain, with a less positive economic outlook.

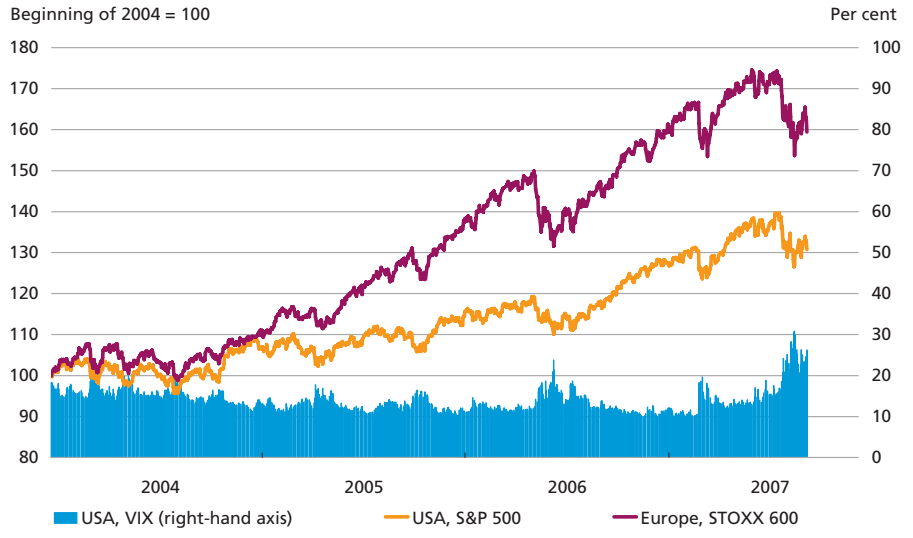
The strong boom in the Danish economy has now lasted for four years, and the labour market is under substantial pressure. Employment is high and rising, and unemployment is at the lowest level since the early 1970s. Capacity utilisation is at a very high level, and economic growth is being curbed by a shortage of labour. Accelerating wage increases and surging imports point to overheating of the economy. Growth in domestic demand, including private consumption, has declined, but remains robust and outperforms growth in production possibilities. Exports have increased against the background of rising demand from Denmark's trading partners.

## INTERNATIONAL COMMODITY AND FINANCIAL MARKETS

In July, prices of oil and other commodities rose to record-high levels in the wake of strong global demand and limited excess capacity. The oil price peaked at just under 80 dollars per barrel (Brent), but subsequently receded to around 76 dollars per barrel in early September. Food prices are rising due to short supply, bad weather and, to some extent, increasing use of crops for biofuel.

Concerns about who will ultimately bear the losses on the US subprime loans caused stock prices to fall from mid-July, after having risen constantly for almost four months, cf. Chart 1. Volatility in the financial markets also increased. Traded volatility in the stock market – calculated on the basis of the prices of stock options – was higher in July and August than during the periods of stock-market turmoil in February

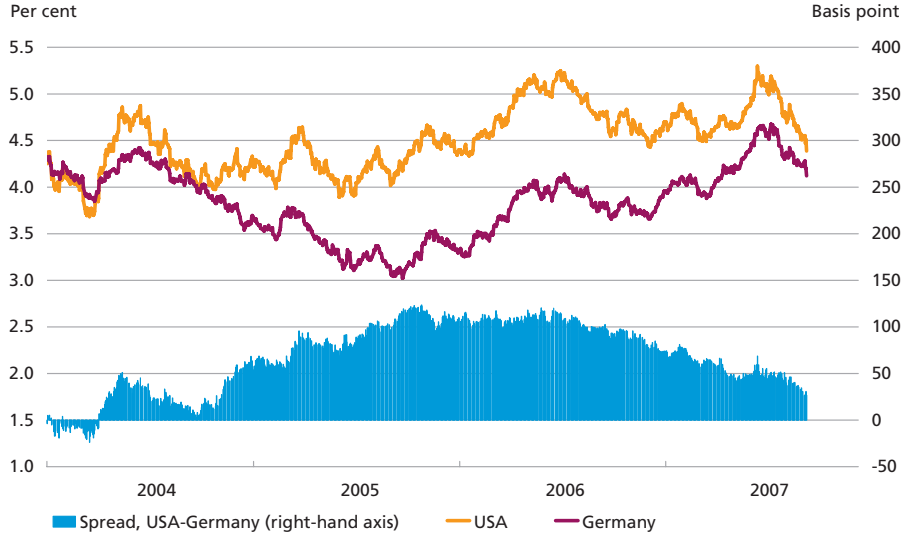
STOCK INDICES AND IMPLIED VOLATILITY — Chart 1




Note: The VIX index measures the implied volatility in the US S&P 500 index and is calculated on the basis of prices for options on the S&P 500 index. A high value of the VIX index indicates greater uncertainty concerning the future stock price development, and thus higher risk for investors. The most recent observation is from 7 September 2007.
Source: EcoWin.

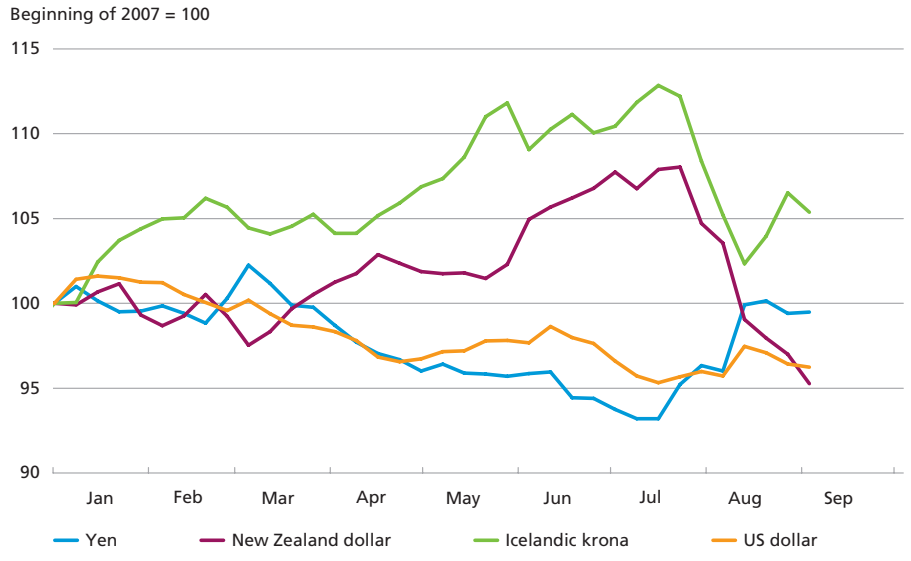
2007 and in May-June 2006. However, it was considerably lower than during the turmoil in 2001-02. The pricing of risk was subject to general revaluation, leading to a flight to safety. Consequently, yields on gilt-edged government securities fell, while yields and yield spreads on private bonds with low credit ratings increased substantially, cf. Box 1.

LONG-TERM GOVERNMENT-BOND YIELDS IN THE USA AND GERMANY — Chart 2




Note: 10-year benchmark government bond yields. The most recent observation is from 7 September 2007.
Source: EcoWin.

EXCHANGE RATES OF SELECTED CURRENCIES VIS-À-VIS THE EURO, 2007 Chart 3




Note: Bilateral spot rates. A decline indicates a weakening of the currency vis-à-vis the euro, an increase a strengthening against the euro. Weekly observations. The most recent observation is from 7 September 2007.
Source: EcoWin.

The lower yields on government bonds followed a period of increases, cf. Chart 2. Yields in the euro area had risen in response to improved growth prospects in Germany and expectations of further monetary-policy tightening. In the USA, inflation developments led to expectations of less expansionary monetary policy than previously assumed. When the yields subsequently fell, the spread between long-term yields in the USA and Germany narrowed only slightly, reflecting that investors have also turned to European government bonds during the turmoil in the financial markets. Particularly German government bonds have been in higher demand, and consequently yields have fallen more in Germany than in other European markets.

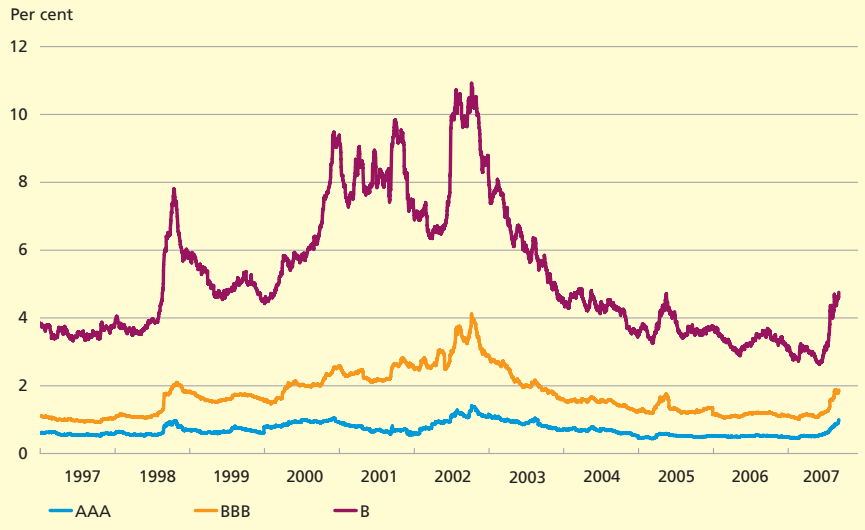
The turmoil in the financial markets over the summer also affected the foreign-exchange markets. The weakening of the dollar vis-à-vis the euro was briefly interrupted in July. By mid-September, the exchange rate was 1.38 dollars per euro, equivalent to the level in mid-July and approximately 5 per cent weaker than at the turn of the year. Other side-effects have been a strengthening of the Japanese yen and to some extent also the Swiss franc, combined with considerable weakening of high-interest currencies such as the Icelandic krona and the New Zealand and Australian dollars in connection with the unwinding of carry-trade positions, cf. Chart 3.[1]

[1] A carry trade is speculation based on the assumption that the interest-rate differential between two currencies is not set off by opposite fluctuations in the exchange rate. An investor borrows an amount in a currency with a low interest rate, e.g. the yen, and invests in a currency that pays a higher interest rate, e.g. the New Zealand dollar. Provided that there is no adjustment of the exchange rate via a depreciation of the high-interest currency, the strategy pays off.

## US SUBPRIME MORTGAGES[1] Box 1

Recently there have been many reports of issuers and investors – in the USA and elsewhere – who have suffered losses due to the development in the market for US subprime mortgages. Yields on subprime bonds have soared, and in July rating agencies chose to lower the ratings of bonds issued to finance subprime mortgages. As the flow of news concerning losses to issuers and investors on US subprime mortgages intensified over the summer, the impact spread to more creditworthy securities issued on the basis of mortgages and other credit products. The credit spreads, i.e. the yield spreads between bonds entailing a certain credit risk and gilt-edged government bonds, have generally widened worldwide. The yield spreads between US corporate bonds at all rating levels and government securities have thus widened, but nonetheless remain lower than during most of the period since 1997, cf. Chart 4.

US CREDIT SPREADS FOR SELECTED RATINGS Chart 4




Note: The credit spread is calculated as the difference between the yield to maturity on corporate bonds with the relevant rating and the yield to maturity on government bonds. The most recent observations are from 7 September 2007.
Source: Bloomberg and Merrill Lynch.

The problem of subprime delinquency is most prevalent for adjustable-rate mortgages since homeowners have been affected by rising interest rates. The delinquency rate for adjustable-rate US subprime mortgages has recently risen to around 17 per cent. Credit institutions have tightened the conditions for subprime loans in response to the rising delinquency rate. For normal prime mortgages the delinquency rate has risen less, to just under 3 per cent. In 2006, the subprime market accounted for some 15 per cent of the total outstanding volume of US mortgages. Around half of the subprime mortgages were adjustable-rate mortgages, equivalent to an outstanding value of approximately 750 billion dollars or almost 6 per cent of GDP. Delinquent subprime loans total just over 125 billion dollars.

CONTINUED Box 1

Around half of the subprime mortgages are financed via the issuance of securities, and the losses in connection with delinquent subprime mortgages have mainly affected investors in these securities. The total potential losses to investors are estimated to be 100-200 billion dollars. Diversification of credit risk by issuing securities has, on the one hand, boosted the resilience of the US financial sector.[2] On the other hand, financing subprime mortgages via securities has made it more difficult to identify where the subprime risk is held. This has contributed to the increased uncertainty in the financial markets.

On 9 August 2007, the overnight money-market interest rate in the euro area rose to around 4.6 per cent during the day, i.e. considerably higher than the ECB's minimum bid rate of 4 per cent. The background to the increase was a greater restraint among banks in exchanging liquidity in the interbank money market due to the general uncertainty in the financial markets in the wake of the subprime crisis. In order to ensure a smoothly functioning money market, the ECB chose to conduct fine-tuning operations and provide liquidity to the banking system via overnight loans against securities as collateral on 9, 10, 13 and 14 August and 6 September. The ECB normally uses fine-tuning operations to smooth interest-rate fluctuations, especially those resulting from unexpected liquidity fluctuations. On 23 August and 12 September the ECB conducted supplementary longer-term refinancing operations, with a maturity of 3 months, with a view to normalising conditions in the money market. In connection with the extraordinary supply of liquidity, the ECB stated that in some respects the widening of credit spreads can be interpreted as a normalisation of the pricing of risk.[3]

On 10 August 2007, the Federal Reserve issued a press release stating that depository institutions could experience unusual funding needs, and against that background the Federal Reserve provided liquidity on a scale not seen since September 2001. To promote the restoration of orderly conditions in financial markets, the Federal Reserve on 17 August 2007 reduced the discount rate (primary credit rate) by 50 basis points to 5.75 per cent. This is the lending rate on the Federal Reserve's marginal credit facility, the discount window, a seldom used safety valve in the US money market to alleviate liquidity strains in the banking system. The Federal Reserve primarily provides liquidity via open market operations that influence the overnight interbank rate, the federal funds rate. The Federal Reserve's monetary policy is expressed as a federal funds target rate, currently 5.25 per cent.

A number of other central banks also provided extraordinary liquidity in connection with the money-market turmoil.

[1] For further elaboration, see the article Turmoil in the Financial Markets in this issue of the Monetary Review, as well as Box 1 in Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2007.

[2] Cf. IMF (2007), United States: Staff report for the 2007 Article IV consultation – Selected Issues, and John Kiff and Paul Mills (2007), Lessons from subprime turbulence, IMF Survey Magazine in IMF Research, 23 August.

[3] Cf. Statement by Jean-Claude Trichet, President of the European Central Bank, 14 August 2007.

## INTERNATIONAL ECONOMIC DEVELOPMENT

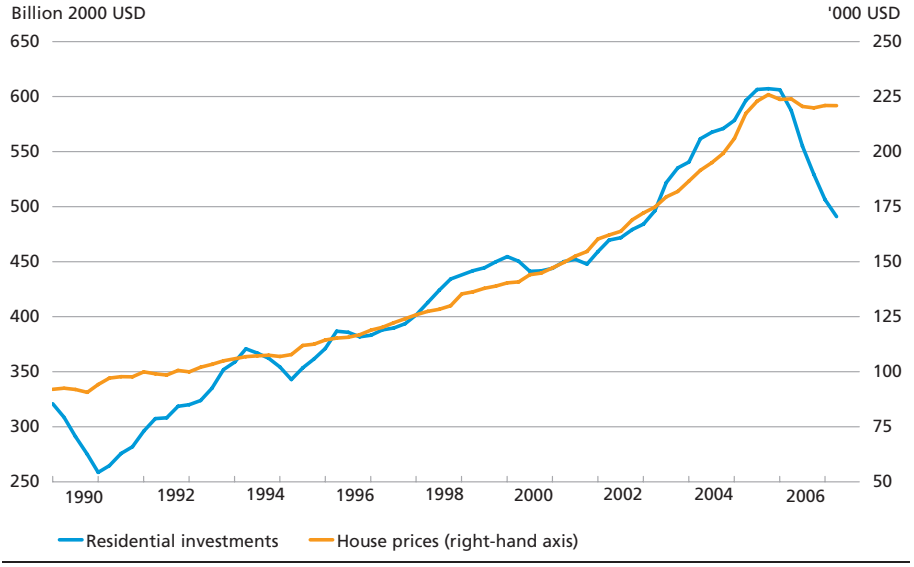
### USA

The housing market is increasingly responsible for the dampening of economic growth in the USA, cf. Chart 5, whereas the development outside the housing market has been robust. Overall GDP growth was moderate in the 1st half of 2007 with quarterly growth rates of 0.2 per cent and 1.0 per cent in the 1st and 2nd quarters, respectively. Growth was primarily driven by exports, non-residential construction and public consumption in the 2nd quarter, while growth in private consumption was more subdued, possibly due to stagnating house prices and the steadily rising energy prices in the spring. Private consumption has, however, been remarkably sound for some time in spite of the weak housing market.

Indicators of business and consumer confidence are still favourable. Both declined a little over the summer, but business confidence, expressed as ISM for the manufacturing sector, remains positive.

Employment has been rising at more or less the same rate as the labour force for some time, so that unemployment has remained unchanged at around 4.5 per cent. Recently employment growth has, however, declined somewhat, and in August employment fell a little. Unemployment was 4.6 per cent in July and August, i.e. slightly higher than

RESIDENTIAL INVESTMENTS AND HOUSE PRICES IN THE USA — Chart 5




Note: House prices are seasonally adjusted median sales prices for existing housing. Own seasonal adjustment.
Source: EcoWin.

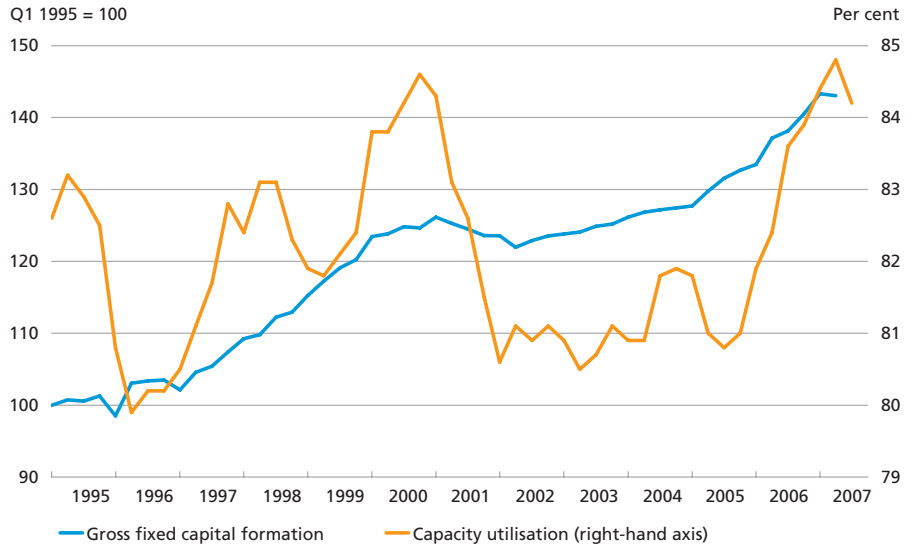
in the preceding months. Wages are still rising by about 4 per cent p.a., but the immediate inflationary pressure has subsided. Consumer prices were 2.4 per cent higher in July than in the same month of 2006; if energy and food are excluded the increase was 2.2 per cent.

At its meetings in June and August the Federal Reserve maintained the fed funds target rate at 5.25 per cent, which has been the level since June 2006. The press releases referred to a trade-off between sustained high inflation, e.g. due to high capacity utilisation, and moderate growth prospects. In the weeks after the FOMC meeting in August, turmoil in the financial markets increased, and on 17 August the Federal Reserve Board approved a reduction of the primary credit rate by 50 basis points to 5.75 per cent, cf. also Box 1. This is an interest rate on a marginal credit facility that is seldom exercised.

**Europe**

The euro area is enjoying a robust upswing. Quarterly GDP growth was 0.3 per cent in the 2nd quarter, compared with growth rates of between 0.5 and 1 per cent in the preceding quarters. The slowdown in growth in the 2nd quarter is primarily driven by investments, but should also be viewed in the context of the extraordinarily high investment growth in the 1st quarter, reflecting factors such as a high level of building activity during the mild winter. Investments are generally supported by high capacity utilisation, cf. Chart 6. Following a weak development at the

INVESTMENTS AND CAPACITY UTILISATION IN THE EURO AREA — Chart 6




Note: Capacity utilisation in the manufacturing sector. Investments (capital formation) at constant prices. Seasonally adjusted.
Source: EcoWin.

beginning of the year, private consumption picked up in the 2nd quarter, indicating that the German VAT increase at the turn of the year had only a temporary dampening effect on consumption. Foreign trade also made a positive contribution to growth in the 2nd quarter.

The German economy continues to strengthen, giving business enterprises a greater incentive to invest and employ more people. This is mainly reflected in an improved labour market, with unemployment falling to 9 per cent in August, the lowest level since the summer of 1993.

The euro area labour markets are generally showing positive trends. In July, unemployment was down to 6.9 per cent of the labour force, and wage increases remained subdued. Inflation, represented by the Harmonised Index of Consumer Prices, HICP, was 1.8 per cent in August (flash estimate), and has thus met the ECB's medium-term target of inflation "below, but close to 2 per cent" since the autumn of 2006.

In the euro area – not least Germany – confidence indicators point to optimism among consumers and in the business sector. During the spring and summer many indicators fell back a little, but the level remains high. The Purchasing Managers' Index, PMI, for the euro area manufacturing sector was just over 54 in August, compared with 56.5 at the turn of the year, and thus still on the positive side of the neutral level of 50. The order intake in manufacturing industry decreased a little for the euro area overall in the 2nd quarter, following two years' strong increase, but continued to rise in Germany over the summer.

Citing a favourable economic outlook and continued upside risks to price stability, the ECB in June raised its minimum bid rate by 25 basis points, to 4 per cent. Subsequently the ECB kept its interest rates unchanged. At the press conference after the meeting of the Governing Council on 6 September, the ECB stated that its monetary policy stance was still on the accommodative side, but given the uncertainty in the financial markets it was appropriate to gather additional information and to examine new data before drawing further conclusions for monetary policy.

The economies of the UK, Sweden and Norway are still booming, with increasing capacity pressures in manufacturing industry and on the labour market. Inflation rates in Sweden and Norway remain somewhat below target, but mounting inflationary pressures call for a tightening of monetary policy.

**Asia**

The Japanese economy is still in an upswing, even though GDP grew by only 0.1 per cent in the 2nd quarter of 2007, compared with 0.8 per cent in the 1st quarter. Unemployment is low, but wage increases remain

moderate, and inflation is negative. Consequently, the Bank of Japan is cautious in its endeavours to normalise its expansionary monetary policy. The official interest rate has remained at 0.5 per cent since the increase in February.

According to recent IMF estimates, China will be the greatest contributor to growth in the global economy in 2007. GDP growth in the 2nd quarter was close to 12 per cent compared with the same quarter of 2006, primarily reflecting strong growth in exports and investments. The gradual liberalisation of the financial markets continues, and since August Chinese investors have been able to purchase Hong Kong stocks. In the same month, the People's Bank of China raised its official interest rates in response to mounting inflationary pressure. Inflation, which has otherwise been moderate, rose to 6.5 per cent in August, primarily due to higher food prices. Effective 21 May, the daily fluctuation band of the renminbi vis-à-vis the dollar was widened from ± 0.3 to ± 0.5 per cent.[1]

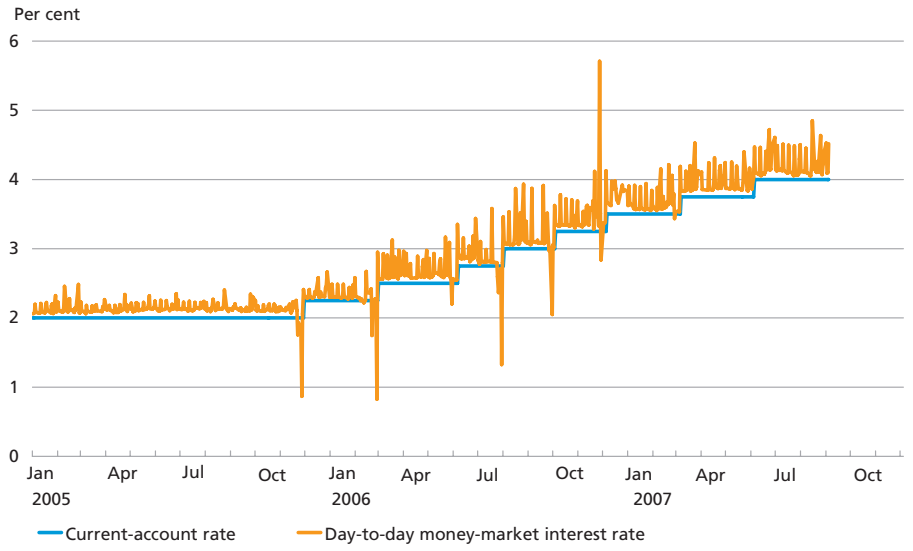
In India, economic growth is also high with annual rates of just under 10 per cent. The upswing is fuelled by domestic demand, and both investments and consumption have boomed. Imports are also increasing strongly and exceed exports. Unlike China, India has seen growing trade and current-account deficits in recent years. High inflation and strong credit growth also indicate that the Indian economy is reaching its capacity limit. Against this background, the Reserve Bank of India has gradually raised its official interest rates so that the repo rate was 7.75 per cent in early September. In the year to September, the rupee appreciated by 8 per cent against the dollar, a development that should be seen in the light of the announcement by the Reserve Bank of India in April that future monetary policy will focus more on price stability and less on exchange-rate management and economic growth.

## DANISH MONETARY AND FOREIGN-EXCHANGE CONDITIONS

The Danish krone has been stable vis-à-vis the euro at a level slightly stronger than its central rate in ERM II. Since mid-May the maturity-adjusted yield spread between Danish and German 10-year government bonds has on balance fluctuated between 5 and 15 basis points, having been around zero in the spring. The widening of the yield spread might reflect factors such as the falling long-term yields in Germany compared with Denmark and other European countries. A slight strengthening of the Danish krone in June coincided with a net capital inflow from portfolio investments, reflecting Danish investors' net sales of foreign stocks

[1] China's exchange-rate policy is described in more detail in Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2005, Box 1, p. 4.

DANMARKS NATIONALBANK'S CURRENT-ACCOUNT RATE AND THE DAY-TO-DAY MONEY-MARKET INTEREST RATE Chart 7




Note: The day-to-day money-market interest rate is the tomorrow-next rate. The most recent observations are from 6 September 2007.
In the period just before interest rates were raised in March 2007, the day-to-day interest rate fell only slightly below the current-account rate. The background was that there were no signs that the current-account limits would be exceeded in the week leading up to the interest-rate increase.
Source: Danmarks Nationalbank.

and non-residents' net purchases of Danish bonds. In June and July, Danmarks Nationalbank intervened in the foreign-exchange market in order to stabilise the krone, purchasing foreign exchange for a total of kr. 12.2 billion. In August Danmarks Nationalbank's net purchases of foreign exchange amounted to kr. 9.8 billion, of which kr. 4 billion was due to intervention, while the rest was primarily attributable to proceeds from the central government's disposal of shares in the shipping company Scandlines. At end-August the foreign-exchange reserve was kr. 194.1 billion.

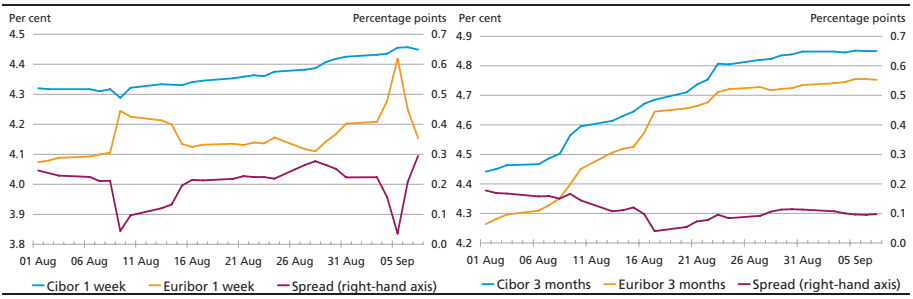
Cyprus and Malta will join the euro area on 1 January 2008. This was decided at the meeting of the Ecofin Council on 10 July 2007. The euro will replace the Cyprus pound and Maltese lira at exchange rates corresponding to their central rates in ERM II.[1] From the turn of the year, Cyprus and Malta will therefore no longer participate in ERM II. The conditions for the remaining ERM II currencies, including the Danish krone, remain unchanged.

In June, Danmarks Nationalbank followed the ECB and raised the lending rate and the rate of interest on certificates of deposit by 25 basis points to 4.25 per cent, effective as of 7 June 2007. The discount and

[1] The respective central rates are 0.585274 Cyprus pounds and 0.429300 Maltese lira per euro.

UNCOLLATERALISED MONEY-MARKET INTEREST RATES IN DENMARK AND THE EURO AREA

Chart 8




Note: The most recent observations are from 7 September 2007.
Source: EcoWin.

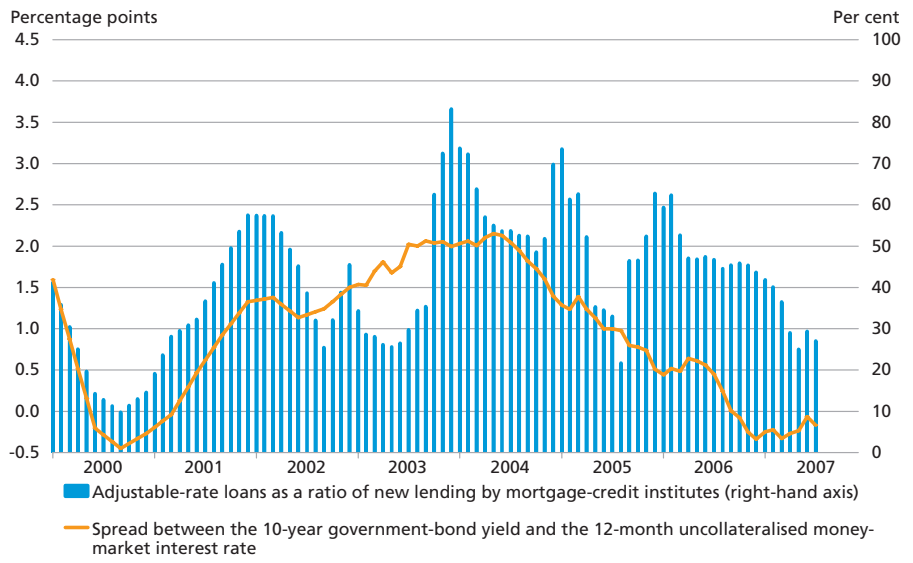
current-account rates were also raised by 25 basis points to 4 per cent. The increases had been anticipated in the market, and were reflected in the money-market interest rates prior to the actual announcements.

On 3 May 2007, the standard maturity of Danmarks Nationalbank's monetary-policy loans and certificates of deposit was reduced from 14 to 7 days in order to curb the large fluctuations in the day-to-day money market interest rate that were previously often observed up to an expected adjustment of interest rates.[1] The transition was smooth and there were no major fluctuations in the day-to-day money-market interest rate around the time that the official interest rates were raised in June, cf. Chart 7.

The international financial turmoil has not had any significant impact on the willingness of Danish banks to lend kroner to each other at the short end of the money market, and it has not been necessary for Danmarks Nationalbank to conduct extraordinary open market operations in that connection. Money-market interest rates in the euro area, on the other hand, were influenced by the uncertainty in the financial markets, and the spread between the very short uncollateralised money-market interest rates in Denmark and the euro area narrowed considerably in mid-August and early September, cf. Chart 8 (left). The ECB has repeatedly provided extra liquidity to the banking sector, cf. Box 1, and, except for the above two episodes, the short-term interest-rate spread has been more or less the same as before the onset of the financial turmoil. The slightly longer uncollateralised money-market interest rates in Denmark have risen since early August, but somewhat less than the corresponding money-market interest rates in the euro area, cf. Chart 8 (right). The

[1] Banks and mortgage-credit institutes are reluctant to bind liquidity for 14-day periods by purchasing certificates of deposit if interest rates are expected to be raised before the certificates mature. In such situations, there will be ample liquidity in the money market and very low day-to-day interest rates. Since current-account deposits with Danmarks Nationalbank are subject to limits, the day-to-day interest rate may even fall below the current-account rate, cf. Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2007, pp. 23 ff.

ADJUSTABLE-RATE LOANS AND YIELD SPREADS Chart 9




Note: Compiled on the basis of mortgage-credit loans for owner-occupied housing. For the period 2000-02 quarterly data is interpolated linearly into monthly data. The long-term yield is a 10-year maturity-adjusted government-bond yield. The most recent observations are from July 2007.

Source: Danmarks Nationalbank.

increasing uncollateralised money-market interest rates in the euro area reflect, among other things, restraint on the part of the banks in lending to each other on an uncollateralised basis in the slightly longer maturities. There were indications of a similar tendency in the Danish money market and forward foreign-exchange market.

On 1 July 2007 the Act on Covered Bonds (SDOs) came into force.[1] Banks and mortgage-credit institutes can pledge Danish government and mortgage-credit bonds, etc. as collateral for loans from Danmarks Nationalbank. Since 2 July 2007, Danmarks Nationalbank has also accepted covered bonds issued by institutions subject to the Financial Business Act or by Danish Ship Finance as collateral.[2] The first covered mortgage-credit bonds (SDROs) were issued in July, while no SDOs had been issued by end-August.

Growth in lending to households has been high, but declining since the spring of 2006. In July lending was 11 per cent higher than in the same month of 2006. Growth in business lending has also declined since early 2007, but remains at a high level of around 15 per cent year-on-year. This matches the normal financing pattern, where growth in business lending

1 For background information, see the sections on SDOs in the Recent Economic and Monetary Trends chapters of Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2007 and 2nd Quarter 2007.

2 Danmarks Nationalbank's terms and conditions for pledging of collateral can be found at www.nationalbanken.dk under Rules, Payments – Rules and Provisions.

typically increases and subsequently declines later in the business cycle than growth in lending to households.[1]

As the spread between short and long-term interest rates has narrowed, adjustable-rate loans as a ratio of the mortgage-credit institutes' new lending for owner-occupied housing has declined from 47 per cent in July 2006 to 27 per cent in July 2007, cf. Chart 9. Deferred-amortisation loans continue to gain ground, rising from 30 per cent of outstanding mortgage-credit loans in July 2006 to 36 per cent in July 2007.

## THE DANISH ECONOMY

### Economic activity, foreign trade and balance of payments

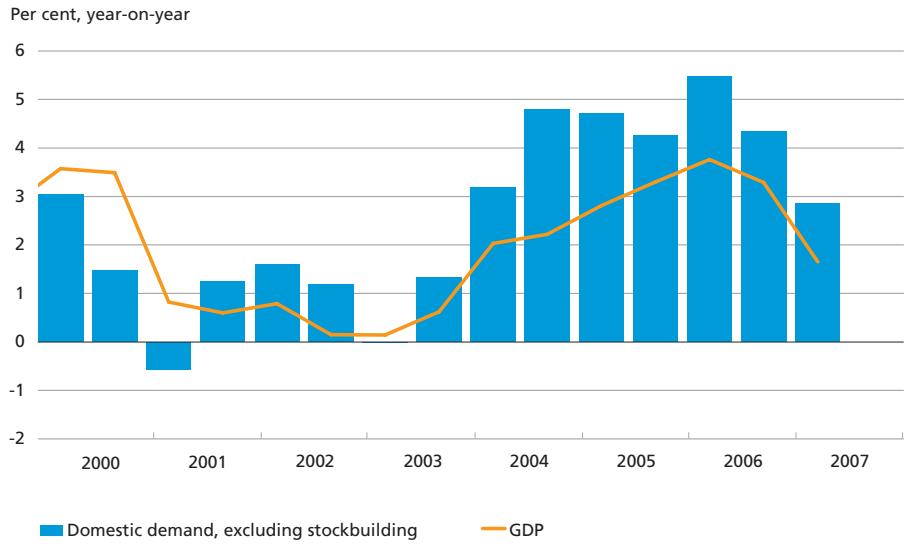
Over the last year, private consumption has risen at a more moderate pace than earlier on in the upswing. Nevertheless, consumption growth remains solid, and according to preliminary national accounts data consumption was 1.4 per cent higher in the 1st half of 2007 than in the same period of 2006. The slowdown in growth can be seen as a return to a more normal situation after a period of particularly high growth rates.

Rising interest rates and a more subdued housing market have contributed to the slower growth in consumption. According to the Association of Danish Mortgage Banks' property price statistics for the 2nd quarter, prices of single-family and terraced houses have been more or less unchanged in 2007 so far, while prices of owner-occupied flats have weakened somewhat. There are, however, major regional differences. In parts of the Greater Copenhagen area prices have shown a pronounced downward trend since the turn of the year, while they have continued to rise in other parts of Denmark. Prices have mainly fallen in the areas that previously saw the strongest increases. The more sluggish housing market is also reflected in few realised sales, a large supply of housing for sale and longer "for sale" periods.

Growth in retail sales has slowed down and total volumes have more or less moved sideways in 2007 so far. Sales of passenger cars peaked in mid-2006 and are now at a lower, but still high level. In the spring, the market was subject to uncertainty regarding the impact of changes in registration fees, but sales have subsequently picked up a little. Consumer confidence fell back in August, possibly in response to the financial turmoil in the wake of the US subprime crisis. Nevertheless, consumers remain optimistic, particularly in their assessments of their own current and future financial position.

[1] Cf. Lars Risbjerg (2006), Money Growth, Inflation and the Business Cycle, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter.

GROWTH IN GDP AND DOMESTIC DEMAND Chart 10




Note: Semi-annual observations.
Source: Statistics Denmark.

In general, the financial position of the households is very sound. Unemployment is low and there are prospects of further increases in real wages in the coming years. The aggregate household sector has accumulated considerable wealth during the upswing so far. Looking ahead, this will buoy up private consumption.

Business investments have increased substantially in recent years and have so far remained high in 2007. In the 1st half-year, business investments were 5.6 per cent higher than the corresponding 2006 level. Investments in machinery and equipment, etc. have increased markedly, and non-residential construction has picked up strongly from a low level. Business investments usually respond to economic upswings with a certain lag, and the favourable development reflects factors such as sound corporate earnings and high capacity utilisation. Enterprises are also seeking to make up for the shortage of labour by increasing the capital stock. Residential investments were also high, mainly due to the completion of previously initiated projects. The slowdown in the housing market is expected to have a dampening impact on new construction, but the statistical evidence in this area is lagging behind.

Domestic demand has thus risen at a more measured pace in 2007, but demand is high, and growth remains sound. Domestic demand, excluding stockbuilding, grew by 2.8 per cent in the 1st half of 2007 compared with the same period in 2006. This was somewhat above the GDP growth rate, cf. Chart 10. Exports and imports have both risen in 2007,

with imports showing the strongest increase, while total net exports made a negative contribution to growth in the 1st half-year. An underlying factor was the shortage of labour, which limited the opportunities for business enterprises to expand production. Hence, a considerable part of the higher demand had to be met by increased imports.

The upward trend in imports has had a negative impact on the balance of trade. In the first seven months of 2007, the trade surplus excluding ships, etc. was kr. 11.6 billion compared with kr. 26.6 billion in the same period of 2006. Imports of both consumer goods and goods for use in the business sector have increased. Falling energy exports, resulting partly from lower energy prices, contributed to reducing the surplus, while industrial exports showed a sound increase.

The current-account surplus was down to kr. 9.4 billion in the first seven months of 2007, approximately kr. 14 billion lower than in the same period of 2006. The surplus also diminished from 2005 to 2006. This reflects a deterioration of the balance of goods and services, while net interest and dividend income rose a little. The falling current-account surplus is basically attributable to Denmark being further into the business cycle than its trading partners.

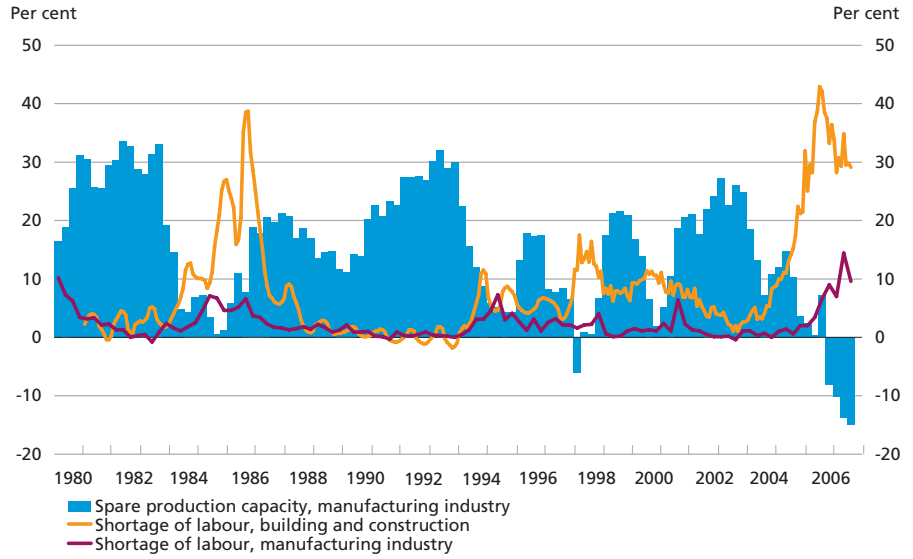
**Labour market**

The rise in employment has continued into 2007. According to data from Statistics Denmark compiled on the basis of payments to ATP (Labour Market Supplementary Pension), there were almost 26,000 more people in full-time employment in the 2nd quarter of 2007 than in the 4th quarter of 2006, equivalent to an increase by just over 1 per cent. The improvement was broadly based across the private sector, while public-sector employment remained virtually unchanged. Over the last year, private-sector employment has grown strongly, particularly in building and construction and services, but manufacturing employment has also picked up, after having declined for some years.

Unemployment has also fallen further. In July, seasonally adjusted unemployment was 90,500, or almost 18,000 lower on a full-time basis than at the turn of the year. Unemployment is now down to 3.3 per cent of the labour force, the lowest level since the early 1970s. Together with the Netherlands, Denmark has the lowest unemployment rate among the EU member states.

Owing to the significant pressure on the labour market, many business enterprises in manufacturing industry and the building and construction sector report that the shortage of labour is curbing production, cf. Chart 11. The share of manufacturing enterprises that cannot attract the labour they require now exceeds the level in the mid-1980s, when over-

INDICATORS OF CAPACITY SHORTAGES Chart 11




Note: Seasonally adjusted. Percentage of business enterprises with curbed production as a result of labour shortages (may be negative as a result of seasonal adjustments). (Net) percentage of business enterprises with spare production capacity, calculated as the percentage of business enterprises with production capacity that is greater than usual/more than sufficient, less the percentage of enterprises with production capacity that is lower than usual/not sufficient. A negative figure indicates a shortage of production capacity.

Source: Statistics Denmark.

heating of the economy triggered large wage and price increases. This reduced Denmark's competitiveness and led to an economic slowdown and rising unemployment. The percentage of manufacturing enterprises with insufficient production capacity is higher than at any time since 1980, cf. Chart 11. The number of vacancies indicates that the labour market is not likely to cool down in the near future. The National Labour Market Authority conducted a survey of the recruitment situation in the spring of 2007 and estimates that at national level business enterprises were unable to fill 58,000 positions over a 2-month period[1].

Capacity pressures in the economy are often measured by the output gap, i.e. the difference between the current level of activity and the activity that is compatible with normal capacity utilisation and stable wage and price developments, cf. Box 2. A positive output gap indicates a risk of accelerating wage and price increases. The output gap is calculated by the Ministry of Finance, among others, and according to the calculations the output gap was positive in 2006. The Ministry also estimates that the gap will widen in 2007. The calculations are subject to uncertainty as regards assessments of the current cyclical position, but

[1] Cf. the report "Recruitment, spring 2007" (in Danish only) from the National Labour Market Authority.

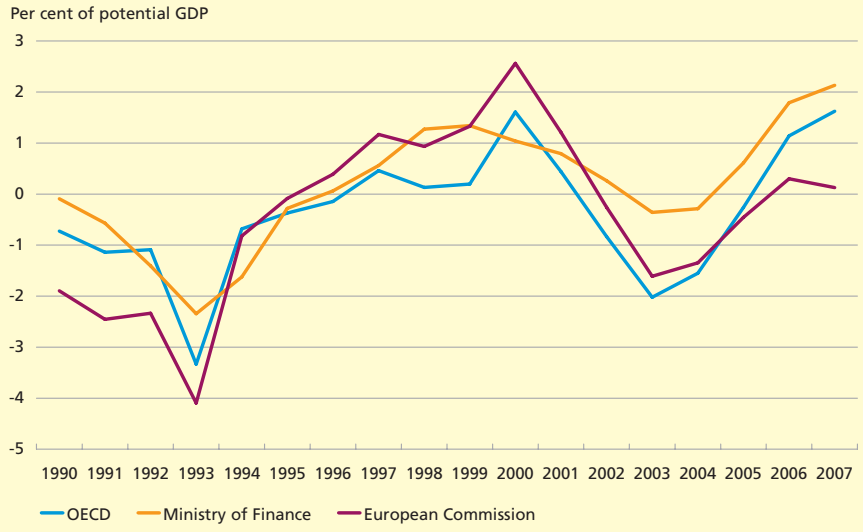
## THE OUTPUT GAP AS AN INDICATOR OF CAPACITY PRESSURES — Box 2

The output gap is an indicator of pressures on production resources in the economy. In a situation with high unemployment and plenty of spare production capacity, the gap is negative. In contrast, a positive gap indicates that there are few spare resources in the economy and that capacity utilisation is high.

The output gap is calculated as the difference between the actual gross domestic product, GDP, and GDP on normal utilisation of production resources, corresponding to stable wage and price development. The latter is referred to as the potential GDP. This gap cannot be observed and must be calculated on the basis of assumptions and estimates. The size of potential GDP, and thus the output gap, is therefore subject to uncertainty. The calculation of potential GDP includes estimates of factors such as how much unemployment can fall before wages or prices accelerate at a pace that is unsustainable for the economy. The estimate for recent years is particularly uncertain, e.g. because wages and prices typically react to changes in unemployment and capacity pressures with a lag.

The uncertainty related to the size of the output gap is reflected in diverging calculations of the Danish output gap from different organisations, cf. Chart 12. The divergences may reflect, for example, whether the calculations focus on wage or price increases. More generally, it is also of significance whether the calculation is based purely on statistics, or whether knowledge of e.g. collective agreements and local wage agreements is also taken into account. The output gap usually changes when the national accounts are revised.

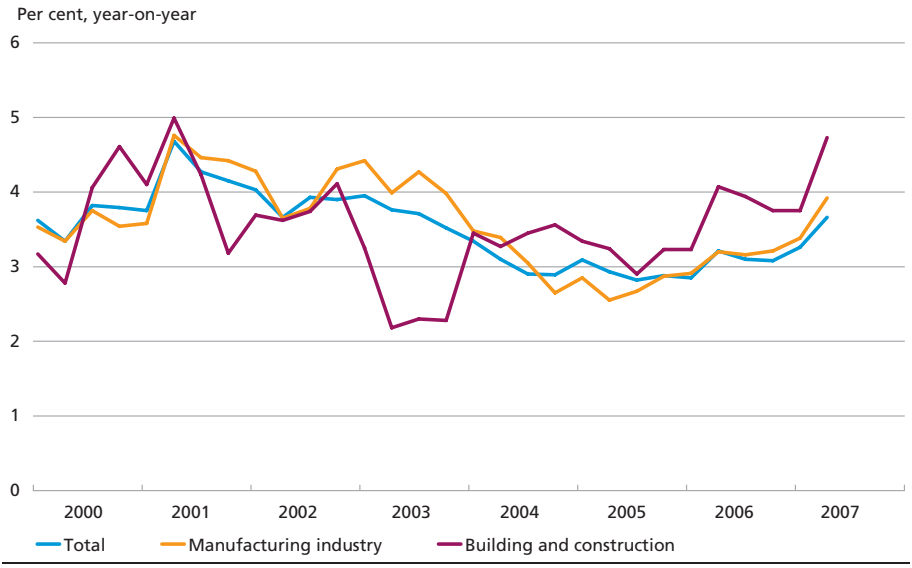
### OUTPUT GAPS FOR DENMARK — Chart 12




Source: OECD, *Economic Outlook* 81, May 2007, Ministry of Finance, *Economic Survey*, August 2007, and the European Commission's spring forecast 2007.

The revisions and uncertainty are always greatest for the most recent years. The output gap is thus a better measure of the historical capacity pressures in the economy than those currently prevalent. Consequently, an assessment of the current cyclical position cannot be based on the output gap alone, but must also include other measures of capacity pressure, e.g. indicators of labour shortage and capacity utilisation.

WAGE INCREASES IN THE PRIVATE SECTOR Chart 13




Source: Statistics Denmark.

the Ministry's results are well in line with the other indicators of capacity pressure, cf. above.

The influx of foreign labour has continued into 2007. The number of active work permits issued to persons from the new EU member states in Eastern Europe is rising sharply and was approximately 12,500 in July, nearly 5,000 more than one year earlier. A corresponding increase has been registered in the number of commuters from Sweden and Germany. In recent years, foreign labour has helped to boost the labour force in a situation where demographic trends point to fewer people of working age. This has made a significant contribution to limiting capacity pressures in the Danish economy.

**Wages and prices**

A higher rate of wage increase reflects the tight labour market. According to Statistics Denmark, hourly wages (earnings) in the private sector were 3.7 per cent higher in the 2nd quarter than in the same quarter of 2006, cf. Chart 13. The rate of wage increase was thus approximately 0.5 percentage points higher than in the 1st quarter. Wage developments were particularly strong in the building and construction sector, where hourly wages rose by 4.7 per cent. In manufacturing industry, the rate of wage increase was somewhat lower, but this partly reflects the fact that many local wage negotiations had not been completed when the statistics were collected. The statistics for wage increases in manufacturing

LABOUR PRODUCTIVITY Chart 14


Note: Labour productivity is calculated as value added at constant prices per employee.
Source: Statistics Denmark.

industry are thus on the low side of the underlying wage development contained in the collective agreements signed in the spring[1] and the local wage negotiations at enterprise level. Data from the Confederation of Danish Industries shows that local wage adjustments in 2007 are significantly higher than in previous years.

The higher rate of wage increase is not matched by corresponding growth in labour productivity. According to preliminary national accounts data, growth in employment in the private non-agricultural sector has exceeded output growth in the last year, resulting in falling labour productivity, cf. Chart 14. The data is subject to uncertainty and frequent revisions. The recorded decline in productivity may, however, be attributable to the rapid increase in employment, with many new employees requiring on-the-job training. In addition, population groups that have previously had little affiliation to the labour market are now in employment. Labour productivity has also declined for the economy as a whole. If this trend does not reverse, business enterprises will soon face a serious cost squeeze.

The rapid wage development exerts pressure on the international competitiveness of Danish business enterprises. In recent years, wages in manufacturing industry have increased somewhat more in Denmark

[1] For a summary of the collective agreements signed in the spring, see Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2007 (Box 3, p. 20).

than in the euro area and Denmark's trading partners taken as one. The gap has widened recently, as Danish wage increases have accelerated while those of the euro area have been more subdued. According to a survey by the Confederation of Swedish Enterprise, hourly wage costs in manufacturing industry were 25 per higher than in the euro area in 2006.

There seem to be strong expectations of pronounced wage increases in the public sector in connection with the collective bargaining next spring. If these expectations are wholly or partly met, this may rub off on the private sector. The risk that a wage spiral is triggered in the current boom gives cause for concern. As stated above, the Danish wage level is already high, and if wage developments outpace those of Denmark's competitors, there is a substantial risk of a prolonged period with higher unemployment.

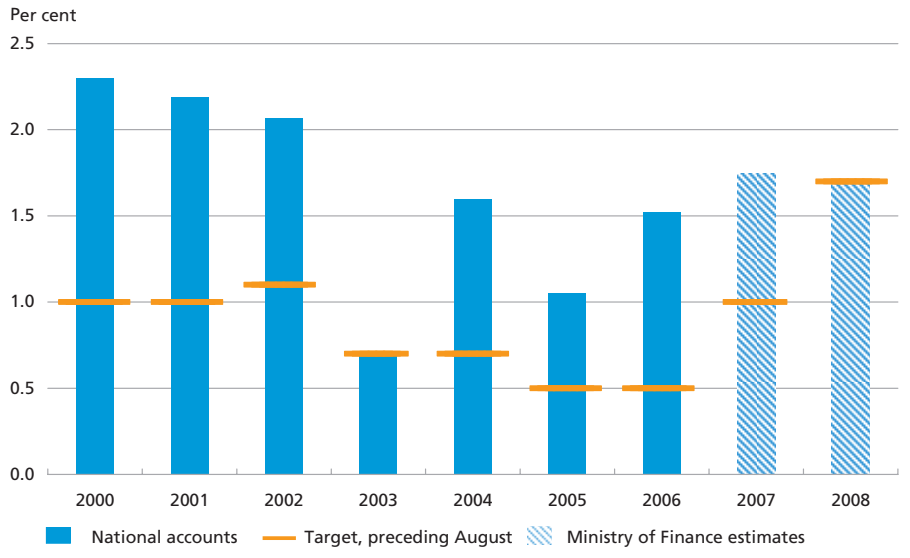
In spite of the strong cyclical upturn and the strong wage development, consumer prices have been stable. The year-on-year increase in the EU's Harmonised Index of Consumer Prices, HICP, was 0.9 per cent in August. The low rate of inflation was to some extent attributable to a modest contribution from external factors, since energy prices were lower than in August 2006 and import price increases were low. In addition, food price inflation has slowed down in recent months. This trend will presumably be short-lived, since poor harvests in large parts of the world and rising global demand for food, driven by factors such as economic growth in China and increased use of crops for biofuel, point to higher world market prices for food. Another reason for the subdued price development so far is the moderate domestic inflationary pressure, given the position in the economic cycle. Domestic market-determined inflation, IMI, which measures the development in domestic wages and profits, has, however, risen almost constantly since the turn of the year, and IMI was 1.7 per cent year-on-year in August.

The strong cyclical position is reflected in selling prices in manufacturing industry, which rose by 2.7 per cent year-on-year in July. A particularly strong trend was seen in intermediate goods, with prices 4.9 per cent above the 2006 level. Higher prices for intermediates entail higher costs for later links in the production chain, and viewed in isolation this exerts upward pressure on overall prices. In the first part of 2007, costs of residential construction were 6.6 per cent higher than one year before, and price increases have gained considerable momentum since the beginning of 2006, particularly with respect to the costs of materials.

**Government finances**

The government surplus was kr. 76 billion in 2006, equivalent to 4.7 per cent of GDP, which was virtually unchanged compared with 2005. The

REAL GROWTH IN PUBLIC CONSUMPTION – ACTUAL AND TARGETS Chart 15




Note: Targets as stated in the Finance Bill from August of the preceding year. Estimates for 2007-08 as stated in Ministry of Finance, *Economic Survey*, August 2007.
Source: Statistics Denmark and Ministry of Finance.

considerable government surpluses in recent years are to some extent attributable to favourable economic developments, as well as extraordinarily high income from taxation of e.g. pension yields and North Sea oil and gas activities. Obviously, these contributions are of a temporary nature. In its Economic Survey from August 2007, the Ministry of Finance estimates that around half of the surplus in 2006 was attributable to cyclical developments and other temporary effects. In 2005, these contributions were even larger.

In constant prices, public consumption in the 1st half of 2007 was 1.8 per cent higher than in the same period of 2006. This is somewhat above the level of growth in public consumption for the whole of 2006, and also considerably higher than the government's target of 1.0 per cent in the 2007 Finance Bill. The Finance Bill 2008 operates with growth of 1.7 per cent in public consumption, which is significantly higher than previous years' targets. For a number of years, growth in public consumption has exceeded government targets, cf. Chart 15, and this should be taken into account when assessing the fiscal policy for the coming years.

On 3 September 2007, the Danish government concluded an agreement with the Danish People's Party on restructuring of various direct and indirect taxes for an amount totalling almost kr. 10 billion. Under the agreement, income tax is eased by raising the personal allowance

and employment allowance, as well as the middle tax bracket threshold. The labour-market contribution is maintained at 8 per cent, and in future energy taxes will be indexed to the general level of price development. On balance, taxation will be eased from 2007 to 2008, which means that the current Finance Bill already holds out prospects for an easing of overall fiscal policy next year.

Denmark is currently at the top of a cyclical upswing with substantial capacity pressures, and this situation is expected to continue in the coming years, cf. the article The Danish Economy 2007-09. Interest-rate conditions must be deemed to be more or less neutral. It is therefore risky to have set the stage for an expansionary fiscal policy in 2008. There are already indications of rising inflation, and the upswing may be derailed by stronger wage and price increases, which in the longer term will invariably lead to an unnecessary rise in unemployment. This risk increases with the prospect of expansionary fiscal policy in 2008.

**The government's 2015 plan**

In August, the government tabled its 2015 plan, outlining the economic targets for the period until 2015, cf. Box 3. The plan replaces the 2010 plan, which was originally launched in January 2001. Even though it can be difficult to meet the targets, medium-term projections are useful tools in economic policy management, e.g. by enabling timely identification and addressing of challenges. The key challenge for the Danish economy, now and in the future, is to ensure an adequate labour supply of the right composition. The labour market is already very tight and demographic trends point to a lower percentage of people of working age in the coming years. This will add to the pressures on the labour market. The welfare agreement from June 2006 helps to counter this problem, primarily by raising the ages for qualifying for early retirement benefits and state pensions, respectively, but this will have only a limited effect on the labour force during the period until 2020. If the ambitious and important target of the 2015 plan of an increase in structural (cyclically adjusted) employment is to be realised, then further initiatives will be required in relation to the labour market, including the attraction of foreign labour.

## THE GOVERNMENT'S 2015 PLAN: TOWARDS NEW GOALS — Box 3

On 21 August 2007, the Danish government presented a plan for economic policy until 2015, a follow-up on the 2005 and 2010 plans. The projections contribute to timely adjustment of economic policy to meet future challenges. A responsible fiscal policy is a precondition if Denmark is to stay on a favourable economic course with low inflation and interest rates.

The 2015 plan includes a number of measures that will increase public spending until 2015. In connection with the government's proposed quality reform, a pool of kr. 10 billion has been allocated to quality enhancements in the public sector, and kr. 50 billion has been set aside in a quality fund to finance enhanced public investments. In addition, the tax freeze is extended until 2015, and a taxation proposal from the government restructures kr. 10 billion worth of government revenue.

Sustainability calculations in the 2015 plan show that the policy pursued is only just sustainable. The impact of the plan's proposals and requirements on government finances is illustrated in Table 1. The Table is based on Denmark's convergence programme from November 2006, which indicated scope for public consumption and investments within 2.2 per cent of GDP. If increased income from the restructuring of taxes and unspecified measures to boost employment and working hours are included, then the total fiscal scope is 3.5 per cent of GDP. This is fully utilised, and most of it is earmarked for higher spending on public consumption and investments.

FISCAL SCOPE IN THE 2015 PLAN — Table 1

| | Per cent of GDP |
|---|---|
| *Sources:* | |
| Convergence programme 2006, including updates[1] | 0.1 |
| Growth in public consumption and investments in convergence programme 2006[2] | 2.2 |
| Higher structural employment, unchanged working hours | 0.8 |
| Indexation of energy taxes, unchanged gross tax | 0.4 |
| Fiscal scope | 3.5 |
| *Allocation:* | |
| Higher employment allowance and lower middle and top taxes, net[3] | 0.4 |
| Tax freeze | 0.3 |
| Increased transfers | 0.1 |
| Energy strategy | 0.3 |
| Growth in public consumption and investments in the 2015 plan[4] | 2.4 |
| Total increase in spending | 3.5 |

Note: The Table is based on rounded figures from tables in Towards new goals – Denmark 2015. Based on the taxation proposal in the 2015 plan.

Source: Towards new goals – Denmark 2015 (in Danish only). Table 1, p. 49 and Table 2, p. 58.

[1] Updates include lower structural unemployment, lower debt and reduction of the labour market contribution to 7.5 per cent.

[2] Fiscal scope excluding new initiatives/requirements, cf. Towards new goals – Denmark 2015, p. 49.

[3] Direct impact less impact on consumption and supply of labour.

[4] Fiscal scope excluding new initiatives/requirements, including the increase in public investments and consumption in the 2015 plan.

CONTINUED Box 3

Economic projections to illustrate the fiscal-policy sustainability are subject to considerable uncertainty. A number of key assumptions in the 2015 plan are very ambitious, such as the assumption that new labour-market initiatives will boost structural employment by 20,000 by the year 2015. This is in addition to the 25,000 that the June 2006 Welfare Agreement is expected to bring onto the labour market. If these targets are to be met, age-related participation rates must be increased substantially since the demographic trend points in the opposite direction. This presumes that the influx of qualified foreign labour continues and increases. The sustainability calculation also includes an assumption that the average number of working hours is kept at the current level, and that efficiency gains are realised in the public sector. The demographic trend points to fewer working hours. Structural unemployment is assumed to fall to 4 per cent, a level that requires considerable flexibility in the labour market during periods of economic boom.

Public consumption is expected to rise substantially in 2007 and 2008 and then to grow more moderately in the following years. This profile, entailing lower growth in expenditure in the slightly longer term, has also been seen in previous plans, but has proved to be difficult to meet in practice. Previous medium-term projections have generally tended to underestimate actual growth in public consumption. All other things being equal, higher growth in public consumption than projected will render planned fiscal policy unsustainable.

The 2015 plan incorporates a taxation proposal whereby regulatory adjustment of the labour-market contribution is abolished and various energy taxes will be indexed to the general level of price development. In return, the employment allowance and middle and top tax bracket thresholds are raised. The agreement recently concluded with the Danish People's Party is close to this proposal. The changes resulting from the agreement are not deemed to have any material impact on fiscal-policy sustainability in the 2015 plan.

# The Danish Economy 2007-09

## INTRODUCTION AND SUMMARY

This article reviews Danmarks Nationalbank's forecast for the Danish economy in the years 2007-09. The forecast has been made using the macroeconometric model Mona[1] and is based on available economic statistics, including Statistics Denmark's quarterly national accounts for the 2nd quarter of 2007[2].

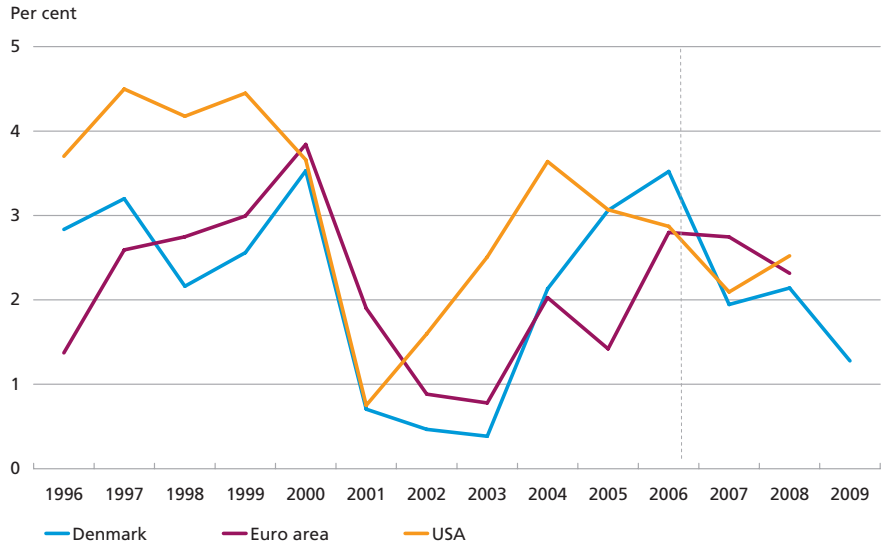
The Danish economy continues to be in a strong cyclical position, with GDP constraints coming from the supply side. GDP growth is expected to be 1.9 per cent in 2007, 2.1 per cent in 2008 and 1.3 per cent in 2009, cf. Table 1. As shown in Chart 1, these growth rates are clearly lower than in recent years. The Danish economy came out relatively strongly from the recession in 2001-03 and has since then been on a cyclical course ahead of the euro area, but slightly behind the US economy. As a result of the sustained upswing in the euro area, its growth is expected to exceed that of Denmark in 2007 and 2008.

Since 2005, private-sector employment has increased strongly and unemployment has fallen to the lowest level for more than 30 years. The strong production capacity pressures across the economy, and the highest labour shortage for decades, have brought the Danish economy to its capacity limit. This is reflected in the fact that demand growth is primarily accommodated by increased imports, but also in the high level of investment to expand the capital stock. The effects are now seen, with a more pronounced lag, in wage and price developments too. The latest collective agreements will entail higher rates of wage increase than in the previous collective agreement period, and there are widespread expectations of considerable wage increases among public-sector employees. The development in wages contributes to domestic inflationary pressures, but inflation has remained at a modest level of below 2 per cent due to falling energy prices and moderate increases in administered prices, among other factors.

[1] The model is described in *MONA – a quarterly model of the Danish economy*, Danmarks Nationalbank, 2003.

[2] The calculations are based on statistical information up to and including 10 September 2007.

GDP GROWTH IN DENMARK, THE EURO AREA AND THE USA Chart 1




Note: Estimates after the broken line.
Source: Statistics Denmark, EcoWin, OECD *Economic Outlook* no. 81 and own forecast.

The strong growth in demand in recent years is expected to continue in the coming quarters. Growth in domestic demand is receding, but not coming to a halt. The dampening can be attributed to e.g. private consumption, against the background of the interest-rate increases observed in the last two years. The higher interest rates have weakened the housing market, where turnover has declined and recent years' strong price increases have ceased. The outlook is favourable for many

KEY ECONOMIC VARIABLES Table 1

| Real growth on previous year, per cent | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|
| GDP | 3.5 | 1.9 | 2.1 | 1.3 |
| Private consumption | 3.1 | 2.1 | 2.5 | 1.7 |
| Public consumption | 1.5 | 1.7 | 2.0 | 1.6 |
| Residential investments | 12.0 | 8.9 | -1.9 | -1.9 |
| Public investments | 13.1 | -9.1 | 8.6 | 5.2 |
| Business investments | 13.5 | 5.4 | 2.4 | -1.7 |
| Inventory investments[1] | 0.4 | -0.4 | -0.3 | -0.3 |
| Exports | 10.1 | 4.2 | 4.7 | 3.8 |
| Industrial exports | 8.3 | 9.1 | 3.8 | 5.7 |
| Imports | 14.4 | 5.0 | 4.3 | 2.8 |
| | | | | |
| Consumer prices, per cent year-on-year | 1.9 | 1.6 | 2.4 | 2.4 |
| Unemployment, 1,000 persons | 124.4 | 95.4 | 85.9 | 96.3 |
| Balance of payments, per cent of GDP | 2.5 | 1.5 | 1.5 | 2.2 |
| Government balance, per cent of GDP | 4.7 | 4.0 | 3.2 | 2.8 |
| Hourly wages, per cent year-on-year | 3.1 | 4.1 | 4.7 | 4.8 |

[1] Contribution to GDP growth.

FORECAST RISKS Box 1

The forecast provides estimates of a number of economic variables for the coming years, including e.g. expected GDP growth of 2.1 per cent in 2008. This does not mean that GDP growth will necessarily be 2.1 per cent next year. The estimate should be taken to mean that GDP growth will be 2.1 per cent in 2008 *in the scenario for the Danish economy that is considered the most probable*. Experience shows that forecasts are seldom spot on, and actual GDP growth may turn out to be weaker or stronger than expected. Normally, the probability of deviations from the estimate is considered to be almost the same in either direction. The forecast uncertainty generally increases with the forecast horizon.

Although the deviations are equally distributed around the forecast estimate, the risks associated with positive or negative deviations are not necessarily the same. The risk scenario could, for example, become asymmetrical in case of non-linear relations between the model variables. In concrete terms, the current low unemployment level is unprecedented in recent decades, and the relationship between wage increases and unemployment may thus be different. A non-linear Phillips curve, which is steeper at a low unemployment level, means that a drop in unemployment from e.g. 3.3 per cent to 3.0 per cent entails a higher rate of wage increase than the decrease that would have been the case if unemployment had risen by 0.3 per cent. This assumption implies an asymmetrical risk scenario around the forecast since the probability of wage increases somewhat in excess of the forecast estimate of 4.7 per cent in 2008 is greater than the probability of wage increases that are correspondingly lower than the forecast estimate, even though positive and negative deviations from the expected level of unemployment are initially found to be equally probable.

The forecast's underlying assumptions regarding the exogenous variables can also result in an asymmetrical risk scenario. The development in the exogenous variables concerning the international economy, financial conditions and fiscal policy is subject to uncertainty, but these variables have to be quantified for the purposes of the forecast. For example, this forecast assumes that fiscal policy will entail growth in public consumption of 2 per cent in 2008. This results in a symmetrical risk scenario around the forecast estimate, provided that the risk of deviations is equally distributed. Recent years' experience indicates, however, that the probability of growth in public consumption somewhat exceeding 2 per cent is greater than the probability of correspondingly lower growth. As a result, substantial positive and negative deviations from the forecast estimates are not equally distributed, entailing that the probability of capacity pressure and inflation considerably above the forecast is greater than the probability of capacity pressure and inflation considerably below the forecast.

of Denmark's major export markets, and sound export growth is expected despite weaker competitiveness.

As a consequence of the labour shortage, growth in GDP will not match growth in demand. Capacity pressures will remain high in the near future, and there is still a risk of marked adverse effects on the Danish economy in the form of high wage increases and loss of competitiveness, in spite of the interest-rate increases, cf. Box 1.

OVERVIEW OF FORECAST ASSUMPTIONS Table 2

| | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|
| International economy: | | | | |
| Export market growth, per cent year-on-year | 7.3 | 8.0 | 7.6 | 7.5 |
| Export market price, per cent year-on-year | 1.3 | 0.4 | 1.0 | 1.6 |
| Foreign price, per cent year-on-year | 1.5 | 0.9 | 1.3 | 1.9 |
| Foreign hourly wages, per cent year-on-year | 2.5 | 2.2 | 2.8 | 3.2 |
| Financial conditions, etc.: | | | | |
| 3-month money-market interest rate, per cent per annum | 3.1 | 4.1 | 4.1 | 4.1 |
| Average bond yield, per cent per annum | 4.1 | 4.7 | 4.8 | 4.8 |
| Effective krone rate, 1980=100 | 101.6 | 103.0 | 103.3 | 103.3 |
| Dollar rate, DKK per USD | 5.9 | 5.5 | 5.4 | 5.4 |
| Oil price, Brent, USD per barrel | 66.1 | 68.9 | 73.2 | 71.5 |
| Fiscal policy: | | | | |
| Public consumption, per cent year-on-year | 1.5 | 1.7 | 2.0 | 1.6 |
| Public investment, per cent year-on-year | 13.1 | -9.1 | 8.6 | 5.2 |
| Public-sector employment, 1,000 persons | 816.6 | 819.4 | 823.4 | 825.7 |

The assumptions behind the forecast are described below, followed by a more detailed review of the forecast.

## ASSUMPTIONS IN THE PROJECTION

This projection is based on a number of assumptions concerning the international economy, the financial conditions and fiscal policy, cf. Table 2.

### The international economy

Global economic growth is strong. In the USA, the pace has slowed down, while the upswing is continuing in Europe, Asia and other regions. In the calculations, the turmoil in the financial markets, cf. the article on pp. 37ff, is assumed to have only a limited impact on demand. The global upswing, which really took off during 2004, thus appears to be the strongest upswing since the early 1970s. The high export-market growth in the projection can be attributed to the favourable outlook for Denmark's export markets.

Price increases in the export market will gain momentum from 2007 to 2009, but will remain moderate. Foreign prices are expected to follow the same pattern, rising by 1.9 per cent in 2009. In the light of the positive cyclical position of the euro area, among others, the projection operates with gradually rising foreign wage increases, albeit from a low level.

**Interest rates, exchange rates and oil prices**

In the forecast, the development in short-term and long-term interest rates is based on the expectations that can be derived from the yield curves in the financial markets.

In the projection the short-term interest rate is assumed to be 4.1 per cent in 2008 and 2009. The long-term interest rate is assumed to remain virtually unchanged at 4.75 per cent. Estimating market expectations is, however, subject to heightened uncertainty in view of the turmoil in the financial markets.

Since the beginning of 2006, the krone has strengthened in nominal effective terms, primarily reflecting the dollar's weakening vis-à-vis the euro. In the projection, the effective krone rate and dollar rate are unchanged from the level on 10 September.

Global growth has entailed growing demand for commodities, and oil prices peaked in mid-July at almost 80 dollars per barrel (Brent). In the projection, oil prices follow futures prices, which weaken somewhat from around 75 dollars per barrel at the beginning of the forecast period.

**Fiscal assumptions**

The fiscal assumptions of the projection are based on the Finance Bill 2008 and the most recent tax agreement concluded between the Danish government and the Danish People's Party. Real growth in public consumption is projected to be 2.0 per cent in 2008, which is slightly higher than according to the Finance Bill. This reflects the normal tendency to exceed the target set in the Finance Bill, cf. p. 21, and should be viewed in the light of the strong pressure on public service expenditure in Denmark. Public investments are expected to grow by 8.6 per cent in 2008, which means that fiscal policy will act as a considerable economic stimulus next year. Only a slight increase in public-sector employment is envisaged in the projection.

## FORECAST FOR THE DANISH ECONOMY 2007-09

**Output and employment**

According to the available national accounts data, GDP growth has slowed down over the last year, and average annual GDP growth in the forecast period is expected to be lower than in 2005 and 2006. The principal explanation for the dampening is that output cannot keep up with demand due to labour shortages and to the already high utilisation of the capital stock. Continuous pressures on the capital stock and the

THE LABOUR MARKET Table 3

| 1,000 persons, annual averages | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|
| Total employment | 2,781 | 2,847 | 2,854 | 2,844 |
| Of which private sector | 1,964 | 2,028 | 2,031 | 2,018 |
| Unemployed | 124 | 95 | 86 | 96 |
| Labour force | 2,905 | 2,943 | 2,940 | 2,940 |

labour market are expected throughout the forecast period, as reflected in the sustained wide output gap, cf. p. 17.

The demographic development contributes to the strong pressure on the labour market in the projection. The number of persons in the age group with the highest participation rate, i.e. 20-59 years, is declining by approximately 18,000 annually, and thus reducing the supply of labour. Despite the demographic development, the labour force is assumed to be almost unchanged in the forecast period, cf. Table 3. This reflects the expectation that the favourable employment opportunities will attract more Danes to the labour market, and that Danish business enterprises will continue to employ more foreigners, including commuters from neighbouring countries. In recent years, Danish business enterprises and organisations have gained more experience with recruiting from abroad and have expanded their recruiting channels. This can make it easier to attract labour from abroad in the future. However, unemployment has also declined in many of Denmark's neighbouring countries, which entails intensified competition for labour. Danish business enterprises need to be competitive in this regard if the high level of employment and the labour force are to be sustained.

Unemployment in Denmark has decreased considerably since 2003, to a very low level. The forecast operates with continued strong demand for labour and a declining unemployment rate until mid-2008. The pressure on the labour market will then begin to ease, and unemployment will increase somewhat as economic growth slows down.

In view of the low unemployment rate and stagnating labour force, productivity will be the determining factor for economic growth in the near future. Over the last year, the development in productivity has been weak in the light of the strong growth in employment. In the forecast employment grows only moderately from 2007 to 2008 since it is difficult to attract new employees due to the low unemployment rate and stagnating labour force. Business enterprises are expected to respond to the tight labour market by continuing to invest in new production equipment and by restructuring production to enhance the efficiency of labour input.

WAGES, ETC. IN NON-AGRICULTURAL SECTOR Table 4

| Per cent year-on-year | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|
| Hourly wages | 3.1 | 4.1 | 4.7 | 4.8 |
| Hourly wage costs | 3.5 | 4.3 | 4.6 | 4.7 |
| Hourly productivity | 1.9 | 0.3 | 1.9 | 1.8 |
| Wage share, per cent of gross value added | 63.4 | 65.1 | 65.1 | 65.1 |

This will stimulate productivity growth, which will increase to a level close to the average of the last 15 years, cf. Table 4.

**Wages and prices**

Wage increases have gained momentum since 2005 as unemployment has decreased. The rate of wage increase is expected to accelerate further in the coming quarters against the backdrop of the notably higher wage adjustments agreed in this year's annual local wage negotiations in industry. In the forecast unemployment continues to be low and annual growth in hourly wages in industry is expected to be 4.5-5 per cent, cf. Table 4.

In the projection, wage increases remain higher than abroad. As mentioned above, the favourable cyclical conditions in e.g. the euro area are expected to lead to higher foreign wage increases, resulting in a slight narrowing of the spread to Danish wage increases in 2009. However, the development implies further deterioration of wage competitiveness in the coming years.

Several of the new collective agreements include a "free choice wage account" that allows the wage-earner to use saved funds for extra days off, pension, wages or continuing training. The option of more days off is expected to lead to a minor decrease in working hours per employee in 2008. Looking ahead, hourly wage costs in the non-agricultural sector are expected to follow the same pattern as hourly wages.

Unit labour costs increase in the forecast as the expected growth in hourly productivity of just under 2 per cent in 2008 and 2009 is lower than the growth in hourly wage costs. Should productivity growth fail to recover as expected, there is a risk of significant growth in unit labour costs, which will result in upward price pressures and loss of competitiveness.

A higher wage share (measured as payroll in relation to gross value added in the non-agricultural sector) is expected since higher payroll costs are not fully offset by price increases for manufactured goods in 2007. The wage share is almost constant for the rest of the forecast period.

CONSUMER PRICES Table 5

| Per cent year-on-year | Weight[1] | 2006 | 2007 | 2008 | 2009 | 2007 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Q2 | Q3 | Q4 | Aug. | Sep. | Oct. |
| HICP ..... | | 1.9 | 1.6 | 2.4 | 2.4 | 1.5 | 1.1 | 1.8 | 0.9 | 1.4 | 1.7 |
| Index of net retail prices ..... | 100.0 | 2.0 | 1.8 | 2.5 | 2.4 | 1.7 | 1.4 | 2.2 | 1.2 | 1.8 | 2.2 |
| Exogenous: | | | | | | | | | | | |
| Energy ..... | 7.1 | 8.5 | -0.3 | 0.6 | -0.1 | -2.5 | -2.1 | 2.1 | -4.9 | 1.6 | 3.3 |
| Food ..... | 14.4 | 2.5 | 3.4 | 3.0 | 2.8 | 4.2 | 2.2 | 2.6 | 1.8 | 2.6 | 2.9 |
| Adm. prices ... | 4.7 | 0.9 | 0.6 | 3.5 | 4.2 | 0.2 | 0.8 | 1.1 | 0.8 | 0.8 | 0.8 |
| Rent ..... | 24.3 | 2.1 | 2.2 | 2.3 | 2.4 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 |
| Excl. exogenous | 49.5 | 1.0 | 1.6 | 2.7 | 2.6 | 1.8 | 1.5 | 2.1 | 1.9 | 1.5 | 1.8 |
| Imports ..... | 15.0 | 2.6 | 1.6 | 2.8 | 2.8 | 1.4 | 1.3 | 1.9 | 1.3 | 1.4 | 1.7 |
| IMI ..... | 34.5 | 0.4 | 1.6 | 2.7 | 2.6 | 1.7 | 1.6 | 2.2 | 1.7 | 1.6 | 1.9 |

Note: The most recent actual data cover August 2007.
[1] Weight in the index of net retail prices, per cent.

Annual consumer price inflation was just under 2 per cent at the beginning of 2007, but has decreased to around 1 per cent in recent months. Domestic market-determined inflation, IMI, has been on an upward course since the end of 2004, because capacity pressures have, among other things, led to higher production costs, including payroll costs. Rising sales prices in manufacturing industry, together with the recent strong growth in wholesale prices for Danish goods, also point to an upward price pressure. In the projection, the higher wage increases are reflected in higher price increases over time, cf. Table 5.

In the next few months, annual energy price inflation is expected to increase, especially since the calculation no longer includes the high energy prices in August 2006. A minor increase in energy prices is expected in 2008 due to higher oil prices, cf. Table 2. Food price inflation is expected to increase in the near future against the backdrop of higher world market prices for e.g. grain and milk. The intensified domestic price pressure and rising energy and food prices are expected to bring HICP inflation to just over 1.5 per cent towards the end of 2007.

In 2008, IMI is expected to rise further to 2.7 per cent. The index of net retail prices is expected to increase by 2.5 per cent, while annual consumer price inflation is expected to be slightly lower. This is because specific taxes are assumed to be unchanged, with the exception of the agreed indexation of energy taxes. Inflation is expected to rise to 2.4 per cent in 2008 and 2009.

**Domestic demand**

Private consumption increased by 0.2 per cent in the 2nd quarter of 2007 after an increase by almost 1 per cent in the 1st quarter. Consumption

growth for the 1st half of 2007 is 1.3 per cent compared to the 2nd half of 2006. Since 2005, consumption growth has been slower than growth in private-sector disposable income, resulting in a lower consumption ratio, cf. Table 6. The background is the increase in interest rates over the last two years, primarily at the short end of the spectrum. The higher interest rates have also contributed to a slowdown in the housing market. However, consumption growth is not likely to come to a halt, in view of the sound financial position of the households characterised by robust growth in income and strong wealth. This picture is supported by the high level of consumer confidence, despite the drop in August. Consumption growth is expected to exceed 2 per cent in 2007 and 2008, corresponding to a small decrease in the consumption ratio.

The housing market has slowed down since the autumn of 2006. Quick turnover and surging prices have been replaced by more difficult sales conditions and almost stagnating prices. Generally, prices have dropped in the segments where the price per square metre had reached the highest levels. The segments of the housing market which had previously seen more moderate development experienced modest price increases. In the forecast, housing prices are expected to stay close to the current level in nominal terms.

Recent years have seen strong growth in residential investments. The high housing prices and sound household finances have increased demand for new homes and improvement of existing homes – to such an extent that construction companies have been unable to meet the demand. Residential investments are expected to stay at the high level in the next few quarters. In 2008 and 2009, residential investments are expected to recede a little as many building projects are completed and house prices decline in real terms.

Business investments fell by 4.8 per cent in the 2nd quarter of 2007, following an increase of the same magnitude in the 1st quarter. In the 1st half of 2007, business investments were 3.8 per cent higher than in the 2nd half of 2006, i.e. the strong development seen in the last three

INCOME, WEALTH AND CONSUMPTION — Table 6

| | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|
| Cash prices, per cent year-on-year ..... | 21.1 | 2.8 | 0.5 | 0.0 |
| Real disposable income, private sector, per cent year-on-year ..... | 5.1 | 2.9 | 2.9 | 2.1 |
| Consumption ratio, per cent of private sector disposable income ..... | 90.6 | 89.9 | 89.6 | 89.3 |
| Net lending, private sector, kr. billion ..... | -35.5 | -43.1 | -30.2 | -10.8 |

years continued. Investments in plant and equipment in the non-agricultural private sector have reached a very high level, resulting in a considerable expansion of the capital stock in relation to output. The background for this is robust output growth, and at the same time many business enterprises are finding it difficult to recruit sufficient labour. As this pressure is not about to cease, business investments are expected to remain high in the coming quarters. During 2008 and 2009, the investment ratio is expected to be reduced from its current high level. Non-residential construction rose during 2006 from a low level and is forecast to increase a little further. This more or less offsets the expected dampening of residential investments and thus contributes to maintaining the strong pressure on the construction sector.

Domestic demand, excluding inventory investments, fell by 0.6 per cent in the 2nd quarter of 2007 after strong growth in the two preceding quarters. The positive contributions from private consumption and residential investments were more than offset by the decrease in business investments. For the 1st half of 2007 as a whole, growth in demand was 1.3 per cent up on the 2nd half of 2006. Growth in demand is expected to remain high in the next few quarters, i.e. 2.5-3 per cent year-on-year, but will decline to just over 2 per cent in 2008 and below 1 per cent in 2009, due to the gradual slowdown in consumption growth and a declining level of investment.

**Foreign trade and the balance of payments**

The strong growth in demand and the capacity pressures in the Danish economy have resulted in a pronounced increase in imports. Especially imports of services rose steeply in 2005 and 2006, in step with exports of services, which have a considerable element of foreign services. Growth in imports of goods was also high, primarily for goods for direct consumption and goods for use in the non-agricultural private sector. The growth in business imports should be viewed in the light of the strong increase in investments and domestic industrial production.

In the 1st half of 2007, total imports were 1.4 per cent higher than the level observed in the 2nd half of 2006. This development masks a robust increase in imports of goods and a small decline in imports of services. For 2007 as a whole, import growth is estimated at 5 per cent, compared to more than 14 per cent in 2006, cf. Table 7. In the following years, import growth will decrease further as growth in demand slows down. Nevertheless, import growth is expected to remain high in 2008, reflecting the capacity pressure, which contributes to the sustained high growth in imports of goods, and the standardised import ratio increases throughout the forecast period.

EXPORTS AND IMPORTS Table 7

| Per cent year-on-year | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|
| Exports, real | 10.1 | 4.2 | 4.7 | 3.8 |
| Imports, real | 14.4 | 5.0 | 4.3 | 2.8 |
| Export prices | 2.4 | -0.5 | 0.5 | 1.5 |
| Import prices | 3.0 | 1.4 | 0.3 | 0.9 |
| Terms of trade | -0.6 | -1.9 | 0.2 | 0.5 |
| Import ratio, non-energy goods | 23.8 | 24.4 | 25.0 | 25.4 |

Exports of goods and services have risen strongly during the recovery, albeit less than imports. Growth in sea-freight exports has been particularly high, against the background of the expansion of the merchant fleet in 2005. Exports of services declined in the 1st half of 2007, compared to the 2nd half of 2006, and are expected to follow a more moderate pattern in the near future. In the 1st half of 2007, total exports rose by 0.7 per cent, i.e. a somewhat lower growth rate than in the two preceding years. In the forecast annual growth in exports will be in the range of 4-5 per cent.

Industrial exports have risen considerably since the beginning of 2005, driven by strong growth in the export markets. Growth in exports of manufactured goods is expected to be approximately 9 per cent in 2007, and subsequently to diminish. The dampening of growth in industrial exports reflects weakened wage competitiveness, high capacity utilisation and labour shortages, while the strong growth in export markets declines only marginally. Import growth in Denmark's export markets is stronger than Denmark's export growth, entailing loss of market shares for the manufacturing sector.

The forecast operates with declining energy exports, driven by reduced oil and gas production, although energy exports are still expected to be somewhat higher than energy imports. Annual growth in agricultural exports is expected to be a few per cent, supported by strong global demand for food.

Since 2006, price increases on the export side have been lower than those on the import side, resulting in deterioration of the terms of trade. The forecast operates with a modest improvement in the terms of trade.

The balance of payments has deteriorated rapidly since the beginning of 2006, from a high level supported by considerable income from energy and sea freight. The balance of payments thus still shows a surplus. The forecast operates with sound surpluses, particularly on trade in services and investment income, while a small deficit on trade in goods is estimated for 2007 and 2008. Bunker expenses, i.e. payment for

BALANCE OF PAYMENTS Table 8

| Kr. billion | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|
| Trade in goods | 7.8 | -4.3 | -0.5 | 14.3 |
| Trade in services | 40.9 | 31.8 | 34.5 | 35.7 |
| Interest, transfers, etc. | -7.5 | -2.7 | -7.5 | -9.2 |
| Current account, total | 41.2 | 24.8 | 26.6 | 40.8 |

ships' purchases of fuel abroad, have increased in step with the expansion of the merchant fleet, and the forecast maintains annual bunker expenses at around kr. 30 billion. For 2007 and 2008 the forecast assumes a current-account surplus of approximately kr. 25 billion, cf. Table 8. It is expected to increase to kr. 40 billion in 2009, when growth in domestic demand is lower than for Denmark's trading partners taken as one.

# Turmoil in the Financial Markets

*Jakob Windfeld Lund, Financial Markets*

## INTRODUCTION

Considerable turmoil arose in international financial markets during the summer of 2007. This unrest was triggered by increasing losses on subprime US mortgages.[1] The proliferation of new financial instruments has spread the credit risk among many different investor types, and there is growing nervousness in the financial markets concerning which financial institutions could be exposed to possible losses. Money market participants have endeavoured to secure liquidity for their own purposes and shown restraint in lending to counterparties, particularly at longer maturities.

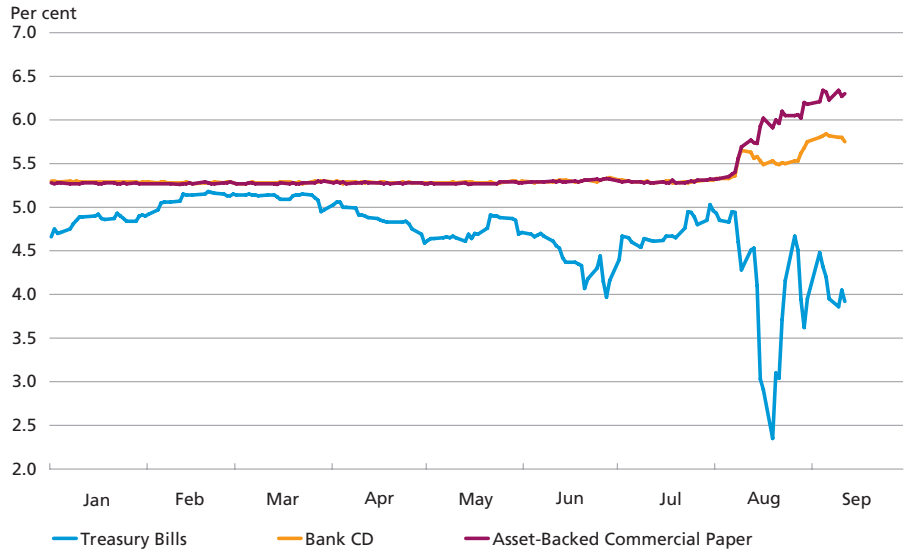
This has resulted in strong price fluctuations in the financial markets. Prices of securities directly associated with the subprime market have plummeted. Other securities have been affected too, especially stocks and debt instruments issued by financial institutions that are thought likely to suffer losses or liquidity pressures in connection with the subprime market. Considerable price fluctuations were also observed in derivatives markets, and the costs of hedging market and credit risks have generally risen. Nervousness in the markets has increased demand for very safe financial assets, at times driving the yield on US Treasury Bills far below other short-term money market interest rates, cf. Chart 1.

The market developments can be interpreted broadly as a flight to safety and a sharp increase in risk premia. This turnaround follows several years' hunt for yield, where investors moved towards more risky investments, and financial risk premia narrowed. International reports on financial stability have for some time highlighted the risk of a sharp increase in unsustainably low risk premia.[2]

[1] Before the summer, the emerging problems in the US subprime mortgage market were outlined in Danmarks Nationalbank, *Monetary Review*, 2nd Quarter 2007, Box 1 "Subprime US housing loans", and in Danmarks Nationalbank, *Financial stability 2007*, Box 3 "Implications for the financial markets of a weakening US housing market".

[2] Cf. e.g. International Monetary Fund (2007), ECB (2007), Bank for International Settlements (2007) and Bank of England (2007).

1-MONTH MONEY-MARKET INTEREST RATES, USD, 2007 Chart 1




Note: Treasury Bills refer to US Treasury Bills, Bank CD (Certificates of Deposit) refer to traded certificates of deposit, Asset-Backed Commercial Paper (ABCP) is short-term debt securities with a portfolio of securities as collateral, cf. the description in this article.
Source: Federal Reserve Board.

## THE MARKET FOR SUBPRIME MORTGAGES

Until 2003, prime mortgages, cf. Box 1, accounted for the largest share of the value of new mortgages in the USA. Subprime mortgages have gained considerable ground since then, making up 21 per cent of total new lending in 2006 and around 15 per cent of outstanding housing loans at year-end. The growth in subprime mortgages can, on the one hand, be attributed to aggressive lending. On the other hand, rising housing prices have pushed the financing requirements of many households to levels that exceed the loan amount and debt service limits for prime loans.

Adjustable-rate mortgages (ARMs), often with deferred amortisation, have accounted for a major part of mortgage loan growth in the USA, particularly in the subprime segment. Borrowers have been attracted by the low nominal debt service payments. Furthermore, subprime lenders have managed to reduce the initial debt service payments further by means of so-called teaser loans, offering an attractive, low teaser interest rate in the first 2-3 years. The teaser interest rate is often lower than the money-market interest rate, but is subsequently raised to the normal variable rate for subprime mortgages. The teaser interest rate sometimes

THE US MORTGAGE MARKET Box 1

The US mortgage market[1] makes a distinction between prime mortgages for creditworthy customers and subprime mortgages for less creditworthy customers[2]. A prime mortgage must meet the following criteria:

- The borrower must have a good credit history, i.e. must have paid bills, interest and instalments on credit cards and other loans in due time.
- The borrower must have a good credit score calculated on the basis of the borrower's personal circumstances, income, wealth and other factors.
- The loan amount must not exceed 417,000 US dollars.
- The debt service payments must not exceed 55 per cent of the borrower's disposable income.
- The nominal loan must not exceed 85 per cent of the property value.
- Income and property value must be fully documented.

Another type of loan is prime jumbo loans. They meet all the criteria for prime mortgages, except that they exceed the fixed limit of 417,000 US dollars. House price increases in recent years have boosted the share of jumbo prime loans.

A third type of mortgage is Alt-A loans. They also meet most of the criteria for prime mortgages, but are more flexible, e.g. as regards the required documentation of income.

Subprime mortgages do not meet the criteria for prime mortgages and are often granted to customers with a poor credit history or poor credit score. Subprime loans are also granted if the debt service payments are too high in relation to income, or the loan-to-value ratio is too high.

[1] There are significant differences between the markets for housing loans in Denmark and the USA, cf. Kjeldsen (2004) and Frankel et al. (2004).

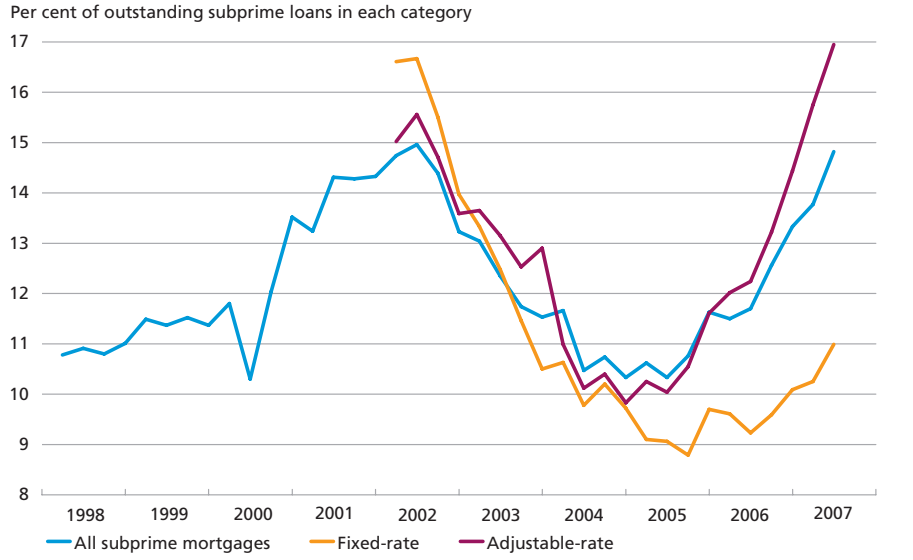
[2] The US subprime mortgage market is described further in Kiff and Mills (2007).

masks negative amortisation, i.e. adding the interest discount during the teaser period to the loan principal. The borrower may be able to service the loan during the teaser period, but when the debt service payments increase sharply as the interest rate is raised, there is a considerable risk of the borrower becoming unable to pay.

Teaser loans have only existed for a few years, and most of the interest-rate adjustments from teaser rates to normal variable subprime rates have not yet occurred, but are expected over the next year or so.

Mortgage delinquencies, i.e. loans more than 30 days overdue, have, since mid-2005, grown from 10.3 per cent to 14.8 per cent of all subprime mortgages and from 10.0 per cent to 17.0 per cent of adjustable-rate subprime mortgages, cf. Chart 2. The share of subprime mortgages in foreclosure reached 5.5 per cent in June compared to 3.6 per cent a year earlier. In August, US President George W. Bush promised to implement a number of measures to help vulnerable households to

SUBPRIME MORTGAGE DELINQUENCIES Chart 2




Note: Mortgage delinquencies are more than 30 days overdue. Standard fixed-rate or adjustable-rate subprime mortgages account for only a share of all subprime mortgages granted by members of the Mortgage Bankers Association.
Source: Bloomberg (Mortgage Bankers Association).

keep their homes and protect consumers against misselling of mortgages.[1]

## STRUCTURED CREDIT PRODUCTS

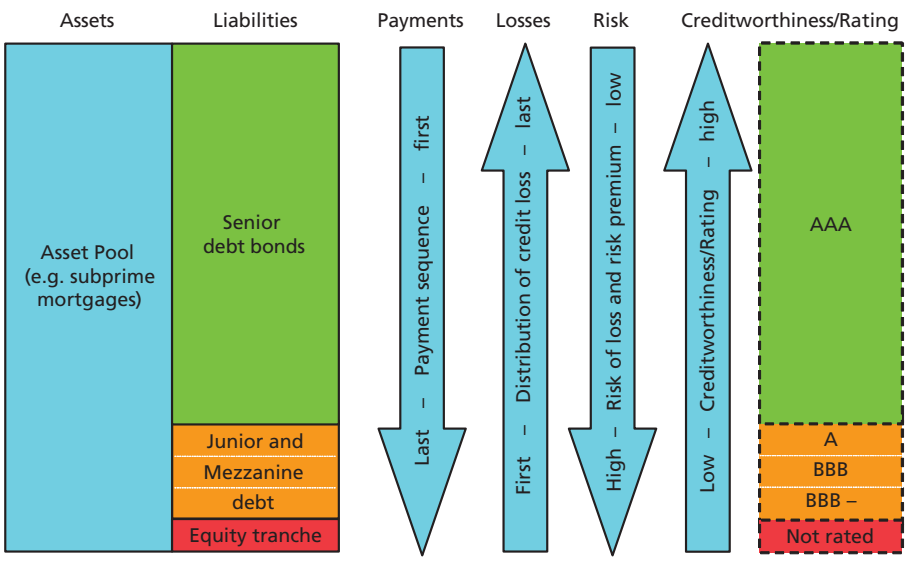
Subprime mortgages have been used by financial institutions to tailor structured credit products.

Structured credit products are asset-backed securities (ABS), based on a pool of assets, e.g. subprime mortgages, which serves as collateral for various classes of ABS bonds. The individual classes have different levels of seniority in relation to the assets serving as collateral, and therefore different risk profiles. The rating agencies have given the safest class of ABS bonds their highest credit rating, AAA, cf. Chart 3.

In order to protect the high rating of the safest bond class, less safe bond classes with lower ratings are established, known as junior or mezzanine tranches. These tranches absorb the first potential losses on the loans serving as collateral. The least safe class, which absorbs the initial losses, is known as the equity tranche. Only very large losses affect the safest AAA-rated class.

[1] Cf. White House (2007).

RISK PROFILE FOR VARIOUS ABS TRANCHES Chart 3




In order to support the very high rating of the safest class, additional collateral can be included, so that the value of the collateral exceeds the value of the issued bonds. Furthermore, it can be ensured that the interest income from the loan portfolio exceeds the interest payments to investors on the total bond issue. Finally, credit insurance can be taken out against the risk of losses exceeding the buffers in the subordinated bond classes.

The credit ratings of the subordinated bond classes, i.e. junior and mezzanine tranches, are lower than those of the senior debt, but decent ratings between AA and BBB- are still possible. These credit bonds can be used in an asset pool as collateral for a new structured credit product called CDO (collateralised debt obligation)[1]. This process takes advantage of the fact that the losses on the various assets in the portfolio have not been closely correlated historically, which means that losses are not expected to occur simultaneously. In addition, the same methodology as in the first round is used to create a new, very safe class of senior-debt bonds and support a high rating.

Structured credit products, as described above, are based on quantitative credit-risk models including a detailed analysis of substantial historical data on loss events. Historical data that shows low loss levels and little correlation between loss events, implies limited uncertainty about the loss ratio on a diversified portfolio. The interest margin has more than compensated for the risks of loss that could be calculated using

[1] This process can be repeated a number of times to create CDO$^2$, i.e. CDOs based on other CDOs.

quantitative credit-risk models based on historical data. One of the problems with this method has been precisely this reliance on historical data. In view of the strong growth in subprime loans, the historical loss data will generally be misleading in the event of higher losses than predicted in the model.

The rating agencies have played a significant role in the development of the market for structured credit products. Following the recent turmoil in the financial markets, the rating agencies have been widely criticised, especially for their involvement in tailoring credit products that only just make it into the desired rating class. Such a tailored risk profile can make a structured credit product less safe than a corporate or government bond with the same rating, thereby increasing its vulnerability to downgrades. Another point of criticism against the rating agencies is that they only late into the turmoil downgraded some securities from a very high to a very low rating. It has also been pointed out that the rating agencies have a strong financial interest in the development of the market for structured products – a major source of income – which can give rise to conflicts of interest.

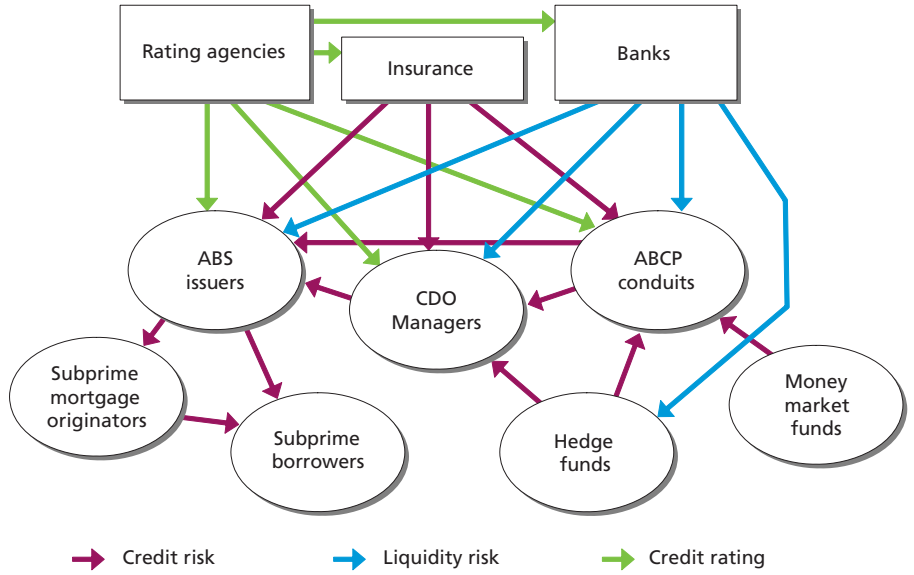
## INVESTMENT VEHICLES

Recent years have seen the emergence of a new type of leveraged investment vehicle investing in structured credit bonds financed by the issuance of Commercial Paper (CP). These investment vehicles are called Structured Investment Vehicles (SIV) and Asset-Backed Commercial Paper (ABCP) conduits.

CP is a type of short-term debt securities traded in the money market. They are normally issued by banks and large business enterprises with high ratings, but now also to a great extent by SIVs or ABCP conduits under established CP programmes. These programmes are normally rated beforehand by one or more rating agencies on the basis of the investment portfolio and risk management policy of the issuing bank, enterprise or ABCP conduit. For a CP programme to obtain a high rating, it is often necessary to have a backup line from one or more banks and maybe also credit insurance.

The new SIVs and ABCP conduits have had a leveraged position, financing their investments in long-term securities with credit risk by means of short-term variable-rate borrowing with the securities as collateral. Even though the market risk from different interest-rate sensitivities of assets and liabilities is typically hedged, the investment vehicle depends on access to short-term financing, which makes it exposed to liquidity risk.

FOOD CHAIN IN THE MARKET FOR SUBPRIME AND STRUCTURED CREDIT Chart 4

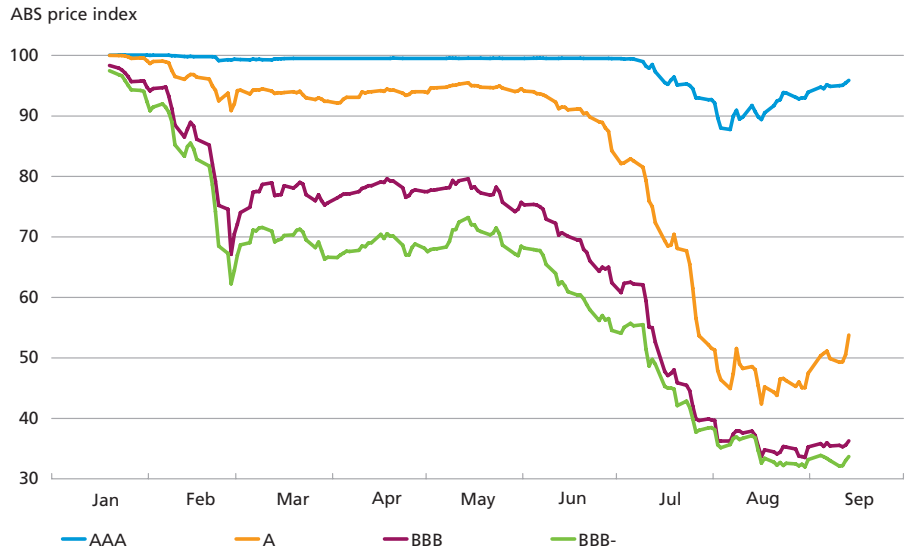



## THE CHANGED FINANCIAL LANDSCAPE

Structured credit and other innovative products have contributed to changing the financial landscape, especially in the USA[1]. In recent decades, growth in the total assets of the US financial sector has exceeded US GDP growth. Other financial intermediaries, particularly investment banks, mutual funds and securitisation vehicles, have taken over many of the tasks and risks traditionally associated with banks' deposit and lending activities. The banks are participating in this process, but the risks have been passed on and no longer appear directly on the banks' balance sheets. Through innovative structured credit methods, the credit risk from e.g. the market for subprime mortgages has been blended together, sliced, diced and spread in a seemingly intractable and opaque pattern, cf. Chart 4. However, one characteristic feature of this chain is that the business model for both investment vehicles and banks is increasingly dependent on continuing access to market financing.

[1] The structural development in the US financial sector is described in Bhatia (2007).

PRICE DEVELOPMENTS FOR VARIOUS TRANCHES OF ABS BASED ON SUBPRIME LOANS, 2007 Chart 5




Note: Prices are on the ABX.HE index for ABS bonds based on subprime home equity loans.
Source: EcoWin (Markit Partners).

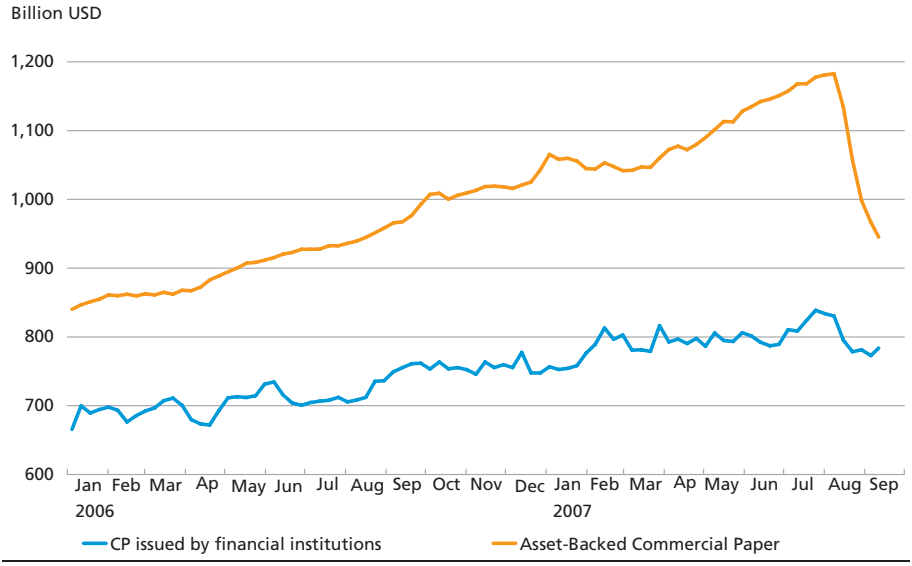
## MARKET DEVELOPMENTS IN THE SUMMER OF 2007

The US housing market has been under pressure in recent years, with increasing delinquencies among subprime borrowers. Against this background, the price of bonds based on subprime loans has dropped strongly, cf. Chart 5, and in July there were more and more reports of losses in SIVs and ABCP conduits. The development in losses diverged from the historical data underlying the structured bonds. Bond classes that were uncorrelated in the historical data, and therefore regarded as low-risk, have turned out to be positively correlated in turbulent periods. This has reinforced price declines and has considerably undermined the collateral basis for CP issuance by many of the leveraged investment vehicles.

During August, the investment vehicles began to encounter problems with issuance of CP to finance their investments in securities, the price of which had in the meantime plummeted. ABCP yields rose from 5.3 per cent to more than 6 per cent, and the outstanding volume of ABCP has shrunk by more than 20 per cent since early August as some ABCP could not be refinanced, cf. Chart 6.

Pronounced drops in stock prices and the prices of other risky securities indicate that some market participants had to conduct fire sales. In addition, there was considerable demand for safe securities, e.g. very short-term government securities.

OUTSTANDING VOLUMES OF FINANCIAL AND ASSET-BACKED CP Chart 6




Note: The data covers only USD-denominated Commercial Paper. The European market for Asset-Backed Euro Commercial Paper (ABECP) has reportedly also contracted.
Source: Federal Reserve Board.

The investment vehicles' difficulties also revealed that although structured products had removed the direct credit risk from the banks' balance sheets, there was still a considerable indirect connection via backup lines. A number of investment vehicles had backup lines from banks to support their CP issues, and they began to draw on these commitments. In addition, some investment vehicles were owned by banks. In July and August, exposures with investment vehicles landed two German banks, IKB and Sachsen LB, in such serious difficulties that IKB had to be bailed out by its principal shareholder and Sachsen LB was acquired by Landesbank Baden-Württemberg.

Satisfying the liquidity needs of different customers is a core element of banking[1]. Banks' ability to fulfil their roles as providers of liquidity depends on confidence in the banks among market participants, which facilitates access to the necessary market financing, as well as access to central-bank liquidity.

European banks have been particularly active in supplying liquidity to the credit markets and to private equity funds for leveraged buyouts. At end-2006, the off-balance-sheet backup lines, guarantees, etc. reported by a sample of large EU banks accounted for 30 per cent

[1] Overdraft facilities for retail customers, foreign-exchange transactions and foreign-exchange loans to non-financial corporations, backup lines for CP programmes, prime brokerage services to hedge funds, bridge loans for buyouts by private equity funds, market making in financial products for institutional customers.

of their total assets. Half of the total value of ABCP backup lines came from EU banks, whereas US and Japanese banks together accounted for only one third.

Recently, individual banks have concentrated on securing liquidity for servicing their own customers, amidst the strong demand for liquidity due to poorly functioning CP markets and uncertainty concerning bank involvement in investment vehicles. Consequently, banks have shown reluctance in lending excess liquidity in the interbank market. In the USA and the euro area, the very short-term overnight interest rates rose steeply, but in extraordinary open-market operations, central banks intervened to supply collateralised liquidity, thereby pushing the very short-term interest rates back towards the official interest rates. Such collateralised central-bank lending means that the short-term interbank market is partly replaced by transactions with central banks. These loans are mostly very short-term loans that can be renewed as required.

## CONCLUSION

The emergence of structured products and the resultant dispersion of banks' credit risk is a positive financial innovation, which has expanded the risk capacity of the financial system. The risk on US subprime loans has been spread all over the world, stimulated by a strong appetite for yield. However, the development in 2007, especially in recent months, has revealed greater uncertainty than anticipated as regards the quantitative assumptions underlying the decisions to create, and invest in, the complex structured products. The rating agencies have helped transform complex products into securities with very high ratings, based on assumptions about correlations and credit risk that have turned out to be untenable. At the same time, it became clear that an unknown part of the risk had not been removed completely from the banks' balance sheets. Many banks worldwide had owned investment vehicles or committed themselves to granting credit to these firms to back up their issuance of securities to finance investments.

At the beginning of September, some uncertainty still prevailed in the financial markets. The very short-term money markets have functioned relatively smoothly after the central-bank intervention, but the money market for the longer maturities and the CP market for maturities of 1-12 months have been characterised by many banks' reluctance to relend longer-term liquidity. In the light of the poorly functioning markets and consequent liquidity risk, the individual banks tend to reserve longer-term liquidity for their own commercial transactions and

potential drawings on backup lines, rather than lending to other banks. The tendency to reserve longer-term liquidity makes it difficult for many banks to conduct normal transactions with their customers. This applies to e.g. long-term forward foreign-exchange contracts, for which banks normally hedge the foreign-exchange risk by means of offsetting contracts in the market.

The recent development in the market illustrates that general shifts in risk appetite and risk premia quickly can change the business conditions, especially for banks that continually depend on access to financing in the money market.

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# Petrodollars, Portfolio Restructuring and Long-Term Interest Rates

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## INTRODUCTION AND SUMMARY

Global financial imbalances have widened significantly in recent years and the US current-account deficit, which was previously financed primarily by the Asian emerging market economies, is increasingly financed by the oil-exporting countries, cf. Table 1.[1] Following the tripling of oil prices, from just over 20 dollars per barrel in 2002 to 72 dollars per barrel in August 2007, the oil-exporting countries now finance most of the US current-account deficit. Therefore, the savings and investment strategies of these countries have a major impact on global demand for government bonds – and thus on long-term interest rates.[2]

The current rise is the third steep increase in oil prices. While the high oil prices during the oil crises of 1973-74 and 1979-80 were caused by sudden slumps in the supply of oil, today's high oil prices are driven mainly by increased demand. At the same time, the industrialised economies have become less oil-intensive[3], and thus more resilient to oil-price rises. Consequently, the current oil-price rises have a more modest impact on inflation and economic growth in oil-importing countries than was the case in the 1970s.

During the two oil crises, international financial markets were less developed than today and the oil-exporting countries did not invest in securities to the same extent as they do now. Instead, much of the oil revenue was deposited with international banks, typically US banks. Most of the extraordinary revenue of the oil-exporting countries was, however, allocated to increasing imports, not least in response to rapidly rising public consumption and major infrastructure investments.

1 Global imbalances are discussed in detail in Iversen (2006).
2 In an editorial, *The Economist* has argued for shifting the focus from China to the oil-exporting countries in the debate on global imbalances (Petrodollar power, 7 December 2006).
3 In the EU, the ratio of oil consumption to GDP has been halved since the first oil crisis.

BALANCE OF PAYMENTS Table 1

| Billion dollars | 2002 | 2006 | Change |
|---|---|---|---|
| Surpluses | | | |
| Oil-exporting countries[a] | 88 | 571 | 483 |
| Asian emerging market economies[b] | 122 | 263 | 141 |
| Japan | 113 | 167 | 55 |
| EU[c] | 57 | 13 | -44 |
| Deficits | | | |
| USA | -472 | -869 | -397 |
| Rest of the world | -59 | -130 | -72 |
| Memo: | | | |
| Statistical discrepancies (total surplus) | -151 | 16 | 167 |

Note: [a] The oil-exporting countries include the IMF's Fuel Exporters and Norway.
[b] The Asian emerging market economies include the IMF's Developing Asia (including China).
[c] EU includes the euro area and Denmark, Switzerland, Sweden and the UK.
Source: Higgins, Klitgaard and Lerman (2006).

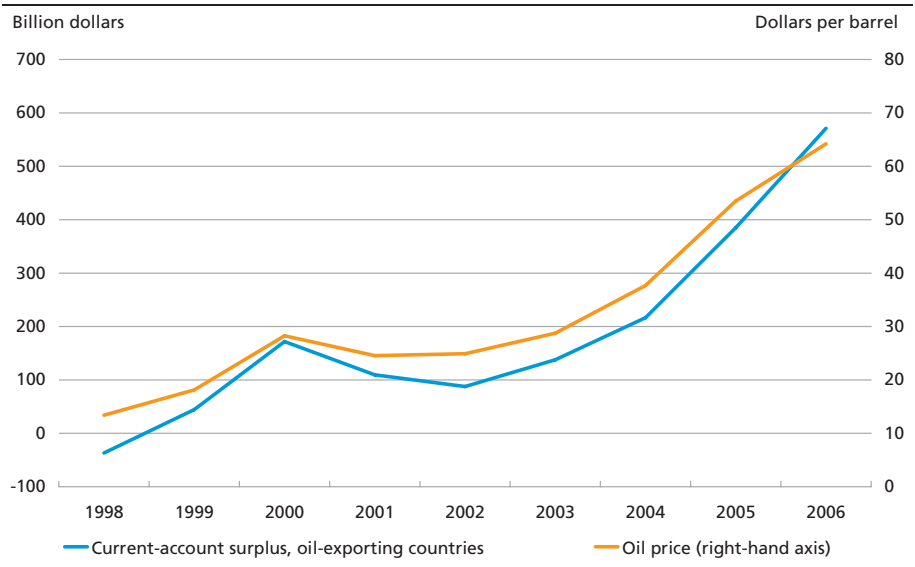
This time around, the oil-exporting countries have saved up more of the oil revenues and have invested most of them in safe assets, such as US government bonds. This has contributed to a downward pressure on long-term interest rates. In line with the accumulation of substantial wealth in recent years, the oil-exporting countries have also become more willing to assume risk. Consequently, an increasing proportion of the assets are managed by entities other than the central banks of the oil-exporting countries. These sovereign wealth funds first seriously hit the "radar screens" of international market participants around the turn of the year. Since they are not subject to the same restrictions as central banks, they are able to invest in riskier assets. Several other countries, including China, are currently setting up similar funds. Such changes to the investment strategies of countries with large current-account surpluses tend to reduce the demand for government bonds, which could exert upward pressure on long-term interest rates.

This article discusses ongoing changes to the investment strategies of the oil-exporting countries and the potential impact on long-term interest rates.

## OIL PRICES AND OIL REVENUES

A steep increase in oil prices generates a similar increase in the export revenues of the oil-exporting countries. The higher oil revenues may be employed in one of two ways. Oil exporters may increase imports of goods and services, or acquire foreign financial assets, mainly in the form of deposits with foreign banks and investments in foreign stocks and bonds.

BALANCE OF PAYMENTS AND OIL PRICE Chart 1




Note: The oil price is calculated as an annual average. The oil-exporting countries include the IMF's Fuel Exporters and Norway, cf. IMF (2006a).
Source: IMF, Reuters EcoWin and own calculations.

Since oil prices really took off in 2003, the oil-exporting countries have allocated just under half of the increase in export revenues to higher imports, i.e. consumption and domestic investments. The rest of the increase manifests itself as a current-account surplus, cf. Chart 1.[1] The Chart clearly illustrates the close correlation between oil prices and current-account surpluses in the oil-exporting countries. It is a rule of thumb that for every 10-dollar increase in the price of oil, the oil-exporting countries typically generate a further 110 billion dollars of current-account surplus.

As a consequence of the rise in oil prices, the oil-exporting countries now boast current-account surpluses that exceed those of the Asian emerging market economies and Japan. In 2006, the oil-exporting countries had an estimated current-account surplus of 571 billion dollars, up from 88 billion dollars in 2002, cf. Table 1.

## HOW DO THE OIL-EXPORTING COUNTRIES INVEST THEIR WEALTH?

The USA, with a deficit of 869 billion dollars in 2006, is the primary counterpart of the oil-exporting countries' current-account surplus of 571

[1] In the national accounts, gross savings are identical to the sum of gross investments plus net lending, the latter being equivalent to the surplus on the current account of the balance of payments less net capital transfers from abroad. This relation is typically expressed as S = I + CA in textbooks.

billion dollars in 2006, cf. Table 1. Thus it is to be expected that the oil-exporting countries are re-investing a large portion of their surpluses directly in the USA. This is difficult to prove, however. The problem is that, with a few exceptions, the oil-exporting countries do not publish breakdowns of their foreign assets. Therefore, secondary data sources must be used, e.g. information provided by securities issuers. However, it is often not possible to identify the final buyer based on secondary data sources – one of the primary reasons being the growing complexity of international financial transactions involving international central securities depositories, offshore financial centres and hedge funds. For example, an oil exporter can invest funds in US government bonds using a London-based depository. The issuer, in this case the US Treasury, will record this transaction as a purchase from the UK.

Three secondary data sources are typically used. Firstly, the US Treasury Department reports on foreign purchases of US securities, broken down by different maturities. Secondly, the BIS publishes figures on banks' deposits from and lending to individual countries. Thirdly, Bloomberg publishes data on mergers and acquisitions. A comparison of the current-account figures of each oil-exporting country with these data sources provides an indication of where the oil money is going and how much of the total savings it is possible to account for.

Toloui (2007) has conducted this analysis and finds that for the period 2002-06 only about 40 per cent of the total savings of the oil exporters can be accounted for. Some 2/3 of this identifiable portion was invested in bank deposits and other safe assets, including government bonds, primarily denominated in dollars. However, the country data coverage is somewhat uneven: while most of the Russian surplus can be accounted for, it is possible to account for only 27 per cent of the surplus of the Middle Eastern countries. Russia is the driving force behind the observable demand for safe assets, with investments in safe assets amounting to about 80 per cent, while the Middle Eastern countries invested only about 50 per cent of their identifiable funds in safe assets.

Statistically, it is not possible to achieve a more complete picture of how the oil exporters have invested their current-account surpluses. However, economic theory can give an indication of how investment strategies may change as oil wealth accumulates. In the following section, we will explore how the risk appetite of the oil exporters may change over time – and the impact of this change on long-term interest rates.

## OIL SAVINGS AND LONG-TERM INTEREST RATES

A transfer of revenue from the oil-importing countries to the oil-exporting countries, as a result of higher oil prices, can impact long-term interest rates in two ways.

Firstly, the oil-exporting countries' high propensity to save will increase global savings. Other things being equal, this will exert downward pressure on global long-term interest rates.

Secondly, in addition to impacting the level of global savings, a transfer of revenue will determine which assets are in demand. If the countries have different preferences, a transfer of revenue from the oil-importing countries to the oil-exporting countries will influence the relative demand for asset types. If the oil-exporting countries are less risk averse than the oil-importing countries, higher oil prices will, other things being equal, dampen the demand for government bonds through this portfolio effect and exert upward pressure on interest rates.

Depending on which effect is dominant, the overall effect on long-term interest rates of a transfer of revenue from the oil-importing countries to the oil-exporting countries can be positive or negative. Traditionally, most attention has been given to the savings effect, but the portfolio effect is increasingly coming into focus. The weakening of the savings effect and the strengthening of the portfolio effect after a protracted period of high oil prices is entirely in accordance with economic theory.

Under the so-called permanent income hypothesis, the savings effect will be reduced as oil exporters begin to perceive the high level of oil prices as permanent[1] – the reason being that the need to save, to achieve a steady development in consumption, is reduced if oil revenues are expected to remain high in the future.

The opposite applies to the portfolio effect, the significance of which is expected to increase as the assets of the oil-exporting countries grow. It seems fair to describe large investment funds as having a decreasing relative risk aversion, i.e. their risk aversion decreases as their assets grow.[2] Under a portfolio allocation model, this assumption would mean that the willingness to hold a larger share of risky assets increases as assets grow. Consequently, the proportion of investments placed in

[1] After several years of high oil prices, expectations for long-term oil prices seem to have shifted upwards. Thus futures prices indicate that the market expects much of the oil-price rise to be permanent. Accordingly, several oil-exporting countries that use a statutory normal price to determine when to save oil revenues have raised this threshold price.

[2] If an investor invests the same proportion of his assets in risky assets irrespective of the size of the assets, the investor has a *constant relative risk aversion*. If, on the other hand, the investor invests a larger (smaller) proportion in riskier assets when the assets grow, this can be defined as exhibiting a *decreasing (increasing) relative risk aversion*, cf. Elton et al. (2007).

CURRENT PORTFOLIO RESTRUCTURING Box 1

The Norwegian Government Pension Fund restructured its portfolio back in 1998, shifting its assets from bonds only to a more risky foreign portfolio consisting of 40 per cent stocks. In a press release at the beginning of this year, the pension fund announced that it would change the allocation to 40 per cent bonds and 60 per cent stocks.[1] The increased risk profile is a consequence of the growth in the pension fund assets to more than 1,800 billion Norwegian kroner.

Russia will also place billions of petrodollars in stocks.[2] This is part of a plan to divide the stabilisation fund into two components: a reserve fund of 10 per cent of nominal GDP and a fund for future generations, which will invest about 5 per cent of GDP every year. The reserve fund will be placed in government bonds, while the assets of the fund for future generations will be placed in riskier asset classes, including stocks.

For the oil-exporting countries in the Middle East, the evidence of increased risk appetite in the form of stocks is of a more anecdotal nature, given the insufficient statistics available, cf. above. It is a fact, however, that an increasing proportion of the assets of the oil-exporting countries are managed by entities other than their central banks, including national oil companies, and oil and investment funds, and these entities are usually regarded as less risk averse than the central banks. For example, the GCC countries[3] have accumulated reserves in the order of 150 billion dollars since the end of 2002, representing only about 25 per cent of their total current-account surpluses during this period. For the oil-exporting countries as a whole, some 30 per cent of the current-account surplus was placed by the central banks in 2006, relative to approximately 50 per cent in 2002, cf. the IMF (2006c).

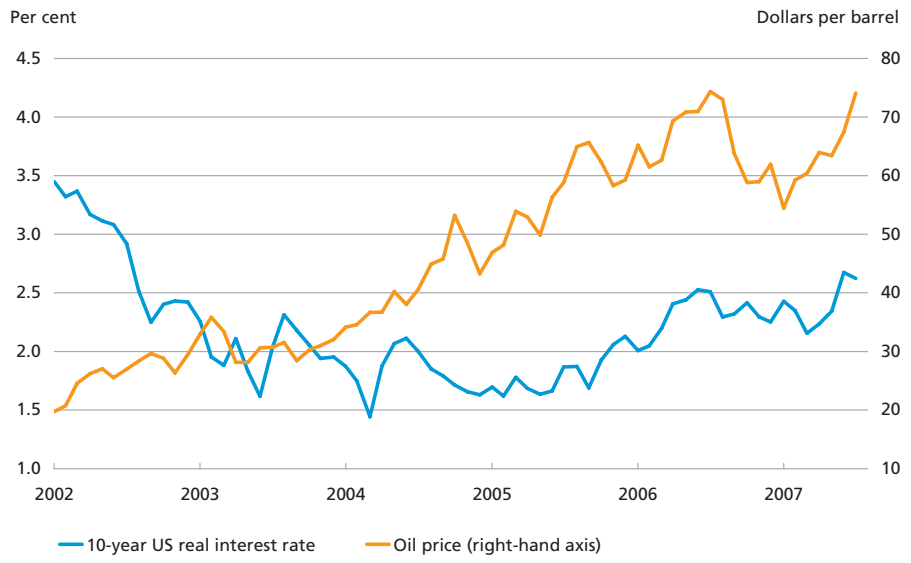
[1] *Press release no.* 28/2007. Increased equity investments by the Government Pension Fund – Global are to ensure a continued good return (in Norwegian only).
[2] *Financial Times* (24 April 2007).
[3] Refers to Cooperation Council of the Arab States of the Gulf. This group includes Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates.

government bonds falls as the assets of the oil-exporting countries grow. This could lead to reallocation of existing portfolios generated from oil revenues, and is probably what we have been witnessing since 2002. Examples of current portfolio restructuring in oil-exporting countries are provided in Box 1.

**Long-term interest rates**

In early 2002, the oil-exporting countries focused on safe dollar investments, such as US government bonds. This approach, combined with a positive savings effect, has probably helped to push down long-term interest rates. In line with the continued asset accumulation resulting from higher oil prices, the investment strategies of the oil-exporting countries have gradually become less risk averse and the countries have, little by little, placed a larger proportion of their investments in risk-related assets. This substitution towards riskier assets has

OIL PRICE AND REAL INTEREST RATE 2002-07 Chart 2




Note: The oil price shown is WTI Light Crude Spot traded on NYMEX. The real interest rate is based on a 10-year US Treasury Inflation-Protected Security (TIPS). The inflation indexation is based on a consumer-price index that includes all consumer prices, including oil prices. Thus, oil prices are included directly in the calculation of real interest rates. This may create an immediate negative correlation between the two variables if oil-driven consumer-price rises are not passed on to nominal interest rates.
Source: Reuters EcoWin.

probably exerted gradual upward pressure on interest rates. The dynamics described are consistent with the actual development in interest rates and oil prices over the period 2002-07, cf. Chart 2.

Caution should be exercised in interpreting the direction of causation based on simple time series, such as oil prices and interest rates in Chart 2. It could be just a statistical coincidence. Firstly, real interest rates exhibit a high degree of sluggishness. Secondly, no adjustment has been made for other factors that affect both variables. Oil prices have increased in parallel with the expansion in the global economy. It may therefore be difficult to determine whether a correlation between oil prices and interest rates should be attributed to the oil-price effect on interest rates or whether both factors have been driven by the expansion in the global economy, including the US economy.[1] However, the correlation described between oil prices and long-term US interest rates also holds true if adjusted for cyclical effects through regression analysis. Given the short time span, the sluggishness of interest rates and the trend in oil-price movements – i.e. the tendency of oil prices to rise throughout the period under review – major statistical problems are associated with regression analysis.

[1] Barsky and Kilian (2004) argue that the demand side, including global macroeconomics, have a more significant impact on oil prices than hitherto assumed by economists.

CONSUMPTION-BASED CAPITAL ASSET PRICING MODEL (CCAPM) Box 2

The CCAPM is based on a representative investor who maximises his expected benefit from current and future consumption. Financial assets enable the investor to smooth consumption over time via intertemporal consumption smoothing.

The simplest CCAPM specification assumes that investor preferences can be described by an analytical (power) utility function and that the growth rate of consumption has a logarithmic normal distribution. This assumption results in a linear relationship between interest rates, the risk aversion of the representative investor, the time preference, i.e. the trade-off between current and future consumption, as well as the mean value and standard deviation in the consumption growth rate, cf. Cochrane (2005). Interest rates and the two consumption parameters are directly observable on the basis of historical data. This data is applied, along with an estimated value of the time preference, to calibrate the model. By reducing the risk aversion in the calibrated model and keeping the other parameters unchanged, it is possible to examine the effect on interest rates of lower risk aversion.

**Effect of declining risk aversion**

A calibration exercise is an alternative way to quantify the effect of portfolio restructuring. The idea is to simulate a relevant economic model by choosing realistic parameter values that will help to ensure that the predictions of the model are, to all intents and purposes, in line with reality. Once the model has been calibrated, individual parameters can be adjusted, e.g. risk aversion, in order to study their impact on the relevant variable – in this case long-term interest rates.

The so-called CCAPM, outlined in Box 2, is an appropriate model framework for this purpose. The model is a standard model framework in finance theory. As opposed to relative pricing models, e.g. the classic Black-Scholes model for pricing of options where prices are fixed relative to an underlying asset, CCAPM is an absolute pricing model where prices are based on the actual exposure of the asset to fundamental macroeconomic risks.

Using a CCAPM framework, Jen and Miles (2007) have studied the correlation between risk aversion and long-term US interest rates.[1] They have found that for realistic parameter values, 10-year US interest rates may increase by about 40 basis points in the coming years. It must be stressed that the model outcome is subject to uncertainty, and that a number of reservations should be made. The outcome shows that – within the framework of a standard economic model – increased risk tolerance may, other things being equal, lead to higher long-term interest rates, and the impact may be significant.

[1] Jen and Miles (2007) applies a variation of CCAPM based on Barro (2006).

## CONCLUSION AND PERSPECTIVE

In this article, we have attempted to demonstrate how the growing assets of the oil-exporting countries may exert upward pressure on long-term interest rates. The article has not taken the Asian central banks into consideration. It should be noted, however, that the pressure on long-term interest rates could be strengthened by likely portfolio re-structuring in Asia, notably in China.

China holds the world's largest foreign-exchange reserve totalling approximately 1,200 billion dollars. So far, the country has placed the bulk of these assets in US government bonds. Therefore, China attracted considerable international attention last March when announcing that it would set up a new investment fund, State Investment Company, modelled on the Singaporean investment fund Temasek. This decision reflects a wish for more diversification and a higher rate of return. Until now, China has announced that about 200 billion dollars will be actively invested, equivalent to roughly one sixth of the total foreign-exchange reserve.

The first visible evidence of China's new policy line emerged on 20 May 2007 with the announcement that China's State Investment Company would invest 3 billion dollars in Blackstone, the second-largest US private-equity fund.[1] It is important to bear in mind, however, that 3 billion dollars is equivalent to just a few days of reserve accumulation in China, so China's foreign-exchange policy has not changed dramatically for the time being.

Finally, the emergence of large sovereign wealth funds could give rise to a number of problems for the international financial markets, cf. Lowery (2007). One concern is that lack of transparency could lead to increased volatility in the financial markets as different market participants act on their expectations of the contemplated actions of these funds. Another concern is that increasing financial protectionism could result from foreign sovereign wealth funds gaining control of sensitive domestic enterprises.

[1] Japan is also contemplating setting up a sovereign wealth fund, cf. *Financial Times*, 22 April 2007. The aim of the investment fund, which is expected to be modelled on Temasek, will be to increase the rate of return on Japan's foreign-exchange reserve.

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# Status of the Faroese Economy, Mid-2007

*Niels Bartholdy, Economics*

## SUMMARY

The Faroese economy is booming. Employment has risen, particularly in the building sector, the financial sector, the service sectors and sea farming. In spite of favourable market conditions, fisheries and the fish-processing industry have witnessed a decline in employment, primarily reflecting a shortage of labour. Unemployment was down to 1.4 per cent in July 2007.

Marine biologists estimate that the cod stocks in Faroese waters are at the lowest level for 100 years.

In 2006, the balance of trade showed a substantial deficit for the second year running, but unlike in 2005 the deterioration was clearly related to higher imports of consumer goods, cars, etc.

There was a government surplus in 2006, and the same is expected in 2007.

## ECONOMIC ACTIVITY[1]

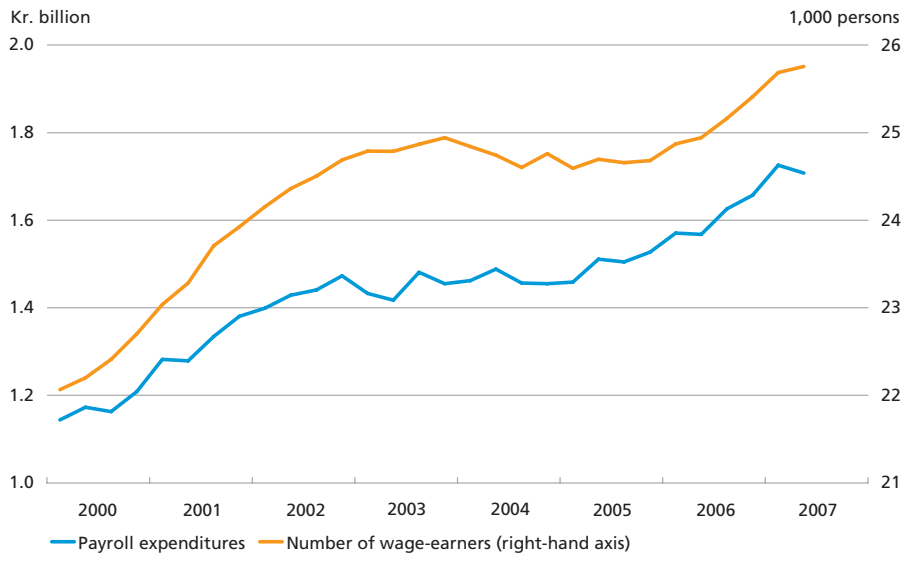
The upswing in the Faroese economy that began in 2006 has so far continued into 2007. Payroll expenditures and employment have both risen significantly over the last year or so, cf. Chart 1.

Payroll expenditures, which normally account for between 2/3 and 3/4 of the Faroe Islands' gross domestic product at factor cost, were more than 9 per cent higher in the 1st half of 2007 than in the 1st half of 2006, and employment was 3.5 per cent higher in the first five months of 2007 than in the same period of 2006. To the extent that productivity has also increased, economic growth has been very strong. Consumer prices have risen by just under 3 per cent, implying a significant increase in real wages.

The upswing is particularly pronounced in the private service sectors, which now employ just over one quarter of the labour force, and in the financial and building sectors, cf. Chart 2.

[1] The national accounts for the Faroe Islands are published with a considerable lag and in current prices only. Consequently, the assessment of current activity in the Faroese economy must be based on other indicators such as wage and employment statistics and volume statistics for fisheries.

PAYROLL EXPENDITURES AND EMPLOYMENT — Chart 1

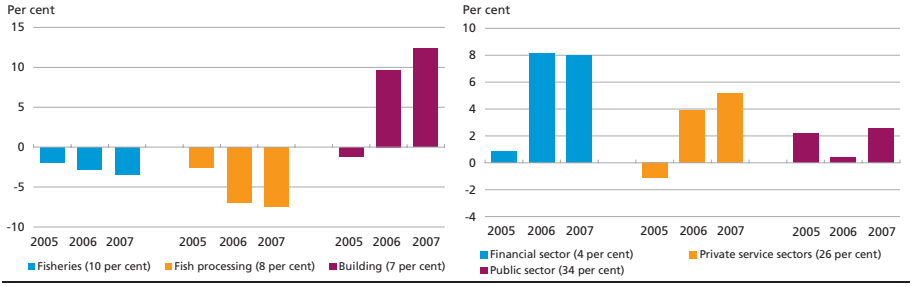



Note: Seasonally adjusted quarterly data.
Source: Hagstova Føroya and own calculations.

In the private service sectors, employment was approximately 5 per cent higher in the first five months of 2007 than in the same period of 2006. Employment growth has been especially high in business service and road transport, while employment in maritime transport has declined after the opening of the tunnel to Klaksvík in April 2006.

The strong economy, rising house prices and sound earnings in the banking sector have in recent years resulted in the expansion of the Faroese banks' activities, not least portfolio management. In mid-2007, Føroya Banki was privatised and stock-exchange listed, and Eik Banki (until 2006 Føroya Sparikassi) was stock-exchange listed in July 2007.

WAGED EMPLOYMENT IN SELECTED SECTORS — Chart 2



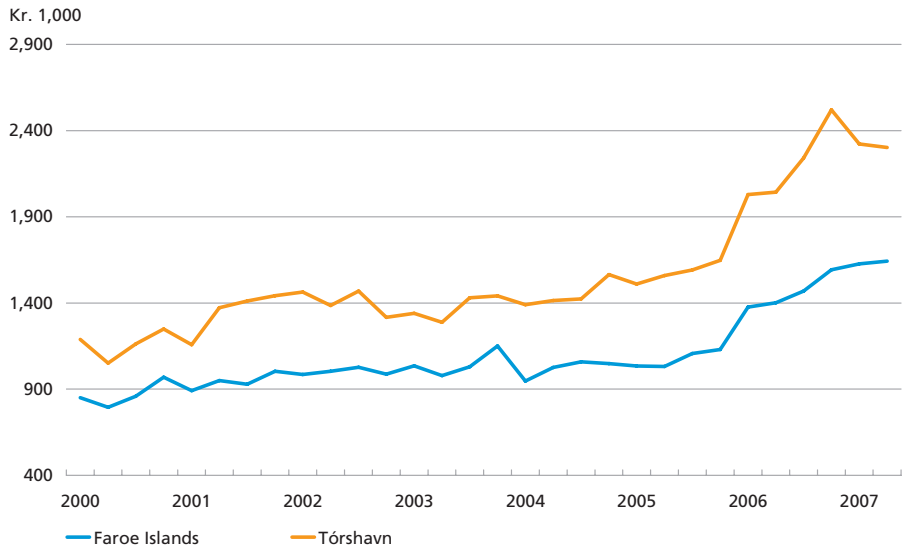

Note: Data for 2007 shows the change in the period January-May 2007 in relation to the same period of 2006. Figures in brackets indicate the sector's share of total waged employment in 2006.
Source: Hagstova Føroya.

Total employment in the Faroese financial sector was 8 per cent higher in January-May 2007 than in the corresponding period of 2006.

Payroll expenditures and employment in the building and construction sector increased considerably in 2006 and the 1st half of 2007. This should, however, to some extent be seen in the context of falling employment in 2005, resulting from the completion of a major tunnel-construction project. The building and construction sector is expected to experience further pressure in the near future, as a large residential and non-residential building project in the Tórshavn area and two new tunnel projects, Streymoy-Eysteroy and Streymoy-Sandoy, are implemented.

Housing prices in the Tórshavn area soared in 2006, but receded somewhat in early 2007, cf. Chart 3. For the Faroe Islands as a whole, prices have shown a steady upward trend over the last year, following a sharp increase in early 2006. The latter can be attributed to the introduction of new loan structures in the autumn of 2005, with longer maturities and deferred amortisation, leading to fierce price competition for housing loans. The new loan types seem to have led to a one-off upward adjustment of prices. The greater supply of housing resulting from the current building projects can be expected to dampen price developments further.

HOUSING PRICES — Chart 3




Note: Quarterly averages, most recently from the 2nd quarter of 2007. Housing prices for the Faroe Islands overall are calculated by weighing prices for small settlements, large settlements and Tórshavn, respectively. Population weights have been applied.
Source: Eik Banki, Hagstova Føroya and own calculations.

Growth in public-sector employment was 0.4 per cent in 2006, and payroll expenditures in the public sector rose by 2.4 per cent, reflecting the conclusion in 2005 of a collective agreement for the public sector that keeps wage increases at a low level. A new agreement was concluded in February 2007, entailing wage increases of 1.7 per cent in 2007 and 3 per cent in each of the following three years.

Data for the first months of 2007 points towards accelerating growth in public-sector employment in spite of the very tight Faroese labour market. Better coordination of the government and municipal finances could help to ensure that overall employment in the public sector does not become procyclical.

Employment in fisheries and fish processing fell further. For fisheries, employment in the first five months of 2007 was approximately 3 per cent lower than in the same period of 2006. Catch volumes of cod and haddock, traditionally very important species in the Faroe Islands, have declined, and the high overall level of employment has made it difficult to attract crews in some parts of the fisheries sector. Prices have, however, been good and earnings sound. This is reflected in payroll expenditures, which were 14 per cent higher in the 1st half of 2007 than in the 1st half of 2006.

Fish-processing factories have been severely affected by labour shortages and to some extent also by the lower catches of cod. On the other hand, price developments for filleted fish have been favourable, and overall the fish-processing industry made a profit of kr. 15 million in 2006, compared to a loss of the same magnitude in 2005. There are, however, considerable variations from factory to factory.

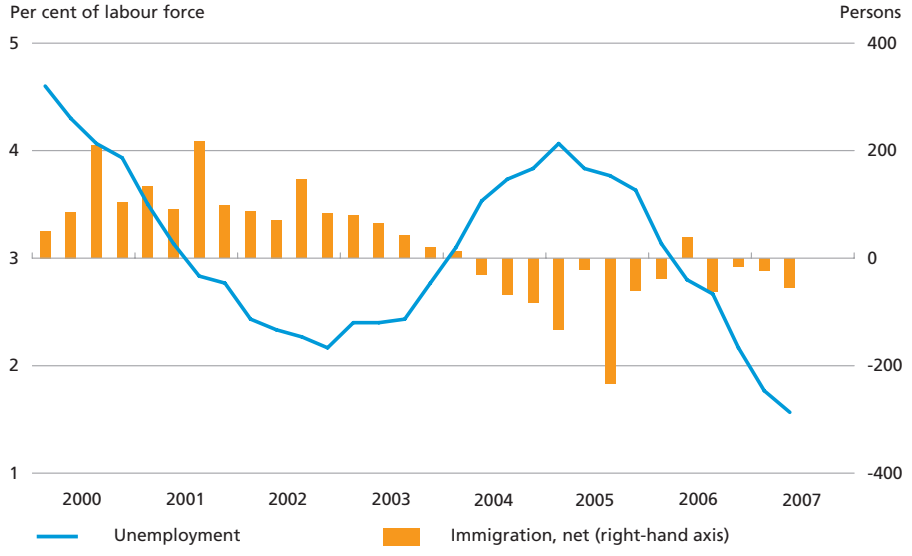
The sea farming industry has re-established itself after some crisis-ridden years, and employment rose by more than 50 per cent in 2006. Although this sector accounts for only a small share of total employment and payroll expenditures (approximately 1.5 per cent), the recovery in 2006 nevertheless contributed significantly to overall employment growth in the Faroe Islands.

The increase in employment has led to a pronounced fall in the already low rate of unemployment, to 1.4 per cent in July 2007. Unlike previously, this has not led to net immigration, cf. Chart 4. The acute shortage of labour has sparked a discussion in the Faroe Islands about facilitating access for foreigners to the Faroese labour market.

There are no clear signs that the tight labour market will be reflected in wage inflation. Following the conclusion of the collective agreement for the public sector, agreements for the private labour market were concluded in the spring of 2007, entailing wage increases in the range of

UNEMPLOYMENT AND IMMIGRATION

Chart 4




Note: Quarterly data. Both unemployment and immigration have been seasonally adjusted.
Source: Hagstova Føroya and own calculations.

3 per cent in the coming years. However, this does not exclude the possibility of accelerating wage inflation due to wage drift.

The year-on-year rate of increase in the consumer price index was 2.7 per cent in the 2nd quarter of 2007. If energy is excluded, the rate of increase was only around 1 per cent.

**Fisheries**

Fishing in waters close to the Faroe Islands, which accounts for around 60 per cent of total fisheries, has traditionally been entirely dominated by demersal fishing for cod, haddock and saithe. The depletion of the stocks of cod has constituted an increasing problem in recent years. The volumes of cod caught in Faroese waters almost halved from 2004 to 2006. Faroese marine biologists estimate that stocks are now at the lowest level for 100 years, and the International Council for Exploration of the Seas, ICES, is calling for a complete ban on direct cod fishing. Faroese fisheries are primarily regulated by controlling the number of fishing days. The Faroese marine biologists proposed reducing the number of fishing days by 40 per cent in 2007/08. The Faroese government decided to cut fishing days by 2 per cent and to extend conservation orders for certain fishing areas.

Catches of haddock have also declined, and the marine biologists assess stocks to be "medium" (whereas cod stocks are "low"). The de-

cline is, however, moderate and is offset by higher prices. In contrast, catches of saithe were very high in both 2005 and 2006, and stocks are not threatened. Saithe now accounts for 25 per cent of the catch value in Faroese waters, compared with 21 and 16 per cent for cod and haddock, respectively. Monkfish has also gained importance and now accounts for 11 per cent of the catch value. Both prices and volumes rose further in 2006 following strong increases in 2005.

The most lucrative fishery activities in 2006 were pelagic fishing for herring, mackerel and blue whiting, and fishing from large factory trawlers, primarily in the Barents Sea. Together, these two activities accounted for 46 per cent of the total Faroese catch value in 2006.

Limiting cod fishing is difficult, partly due to deep-rooted traditions in this area, partly due to the substantial demand for cod for processing and the favourable price developments in recent years. The market price for cod was 25 per cent higher in 2006 than in 2004. The diversification of fisheries will make it easier to survive a period with a complete ban on e.g. cod fishing without major economic consequences, but in the short term parts of the fleet and some local communities will obviously be affected.

In 2006, production of sea-farmed salmon and trout was less than one third of the level at the peak in 2003, before epidemics triggered a major crisis in the sector as well as stagnation in the overall Faroese economy. Sea farms have now been reconstructed to provide better protection against disease and dissemination, including limitations on production in each fjord and segregation of different year classes. On the basis of these new health initiatives, fish farmers expect production to increase to about 30,000 tons in 2007 and 2008, around half of the 2003 level.

## FOREIGN TRADE

Exports of Faroese goods, which mainly consist of fish products, were relatively stable at kr. 3.6-3.9 billion in 2004-06. The substantial declines in cod catches and farmed salmon have been offset by higher prices and increasing catches of other species such as saithe, blue whiting and monkfish.

The favourable economy of the Faroe Islands is clearly reflected in imports. The trade deficit did actually decline from kr. 900 million in 2005 to kr. 810 million in 2006, but the 2005 figure was influenced by the registration of a new passenger ferry, Smyril.

Imports excluding ships rose by more than kr. 800 million in 2006, and the trade balance deteriorated by more than kr. 400 million, cf. Table 1.

TRADE BALANCE — Table 1

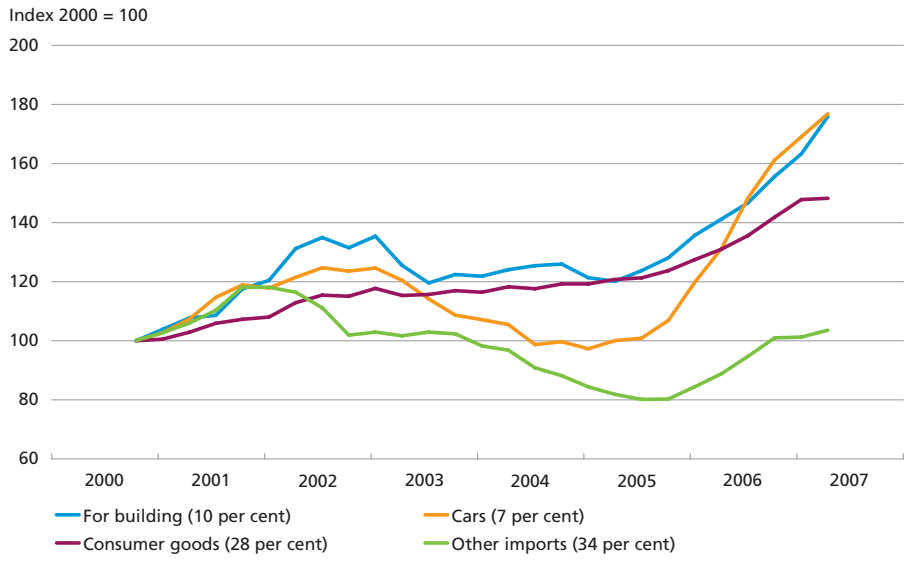
| Kr. million | 2004 | 2005 | 2006 |
|---|---|---|---|
| Exports | 3,689 | 3,586 | 3,869 |
| Imports | 3,762 | 4,486 | 4,678 |
| Imports, excluding ships | 3,582 | 3,710 | 4,547 |
| Trade balance | -72 | -900 | -810 |
| Trade balance, excluding ships | -82 | -318 | -754 |

Source: Hagstova Føroya.

The upward trend in imports, especially of cars and building materials, continued in the 1st half of 2007, cf. Chart 5. Car imports rose by 50 per cent in 2006 and have continued their strong increase in 2007. Imports of consumer goods also rose sharply in 2006, but the curve flattened out in the 1st half of 2007.

The most recent data for the overall Faroese balance of payments relates to 2004. Besides the trade balance, the current account includes trade in services, transfers from abroad, etc., and for some years up to 2004 there were sizeable surpluses. At end-2004, the Faroe Islands had accumulated net external assets of kr. 3.4 billion. The substantial trade deficits in the last couple of years have presumably resulted in a current-account deficit. A simple projection, with the balance of services and

IMPORT VALUE BROKEN DOWN BY SUBCOMPONENTS — Chart 5




Note: 4-quarter moving averages. "Other imports" are total imports excluding goods for building, cars, consumer goods, energy and ships. Figures in brackets indicate percentages of total imports in 2006.
Source: Hagstova Føroya and own calculations.

THE BANKS' FINANCIAL RESULTS Table 2

| Kr. million | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|
| Net interest and fee income | 546 | 574 | 553 | 550 | 632 |
| Value adjustments, etc. | 73 | 43 | 95 | 47 | 49 |
| Profit from financial items | 618 | 617 | 648 | 597 | 682 |
| Operating expenses | 280 | 281 | 290 | 313 | 371 |
| Net losses and provisions | 46 | 437 | 119 | -15 | -74 |
| Profit from subsidiaries, etc. | 0 | 1 | 13 | 41 | 123 |
| Ordinary operating result before tax | 293 | -100 | 252 | 341 | 507 |
| Solvency ratio | 32.0 | 30.9 | 31.4 | 20.6 | 18.4 |

Note: Eik Bank Danmark is a wholly owned subsidiary of Eik Banki (formerly Føroya Sparikassi) and is included under "Profit from subsidiaries, etc.".
Source: Financial statements of Eik Banki, Føroya Banki, Norðoya Sparikassi and Suðuroyar Sparikassi.

transfers remaining at the 2004 level, would indicate a zero on the current account in 2006.

## THE FINANCIAL SECTOR

The economic upswing is clearly reflected in the financial statements of the Faroese banks and provided a good foundation for privatising Føroya Banki and listing Eik Banki in mid-2007[1].

Lending growth is strong. Business lending was 56 per cent higher in the 2nd quarter of 2007 than one year earlier, while lending to households had increased by 18 per cent. This is now also resulting in rising interest and fee income, which had been stable for a number of years and was limited by intense price competition for housing loans in 2005, cf. Table 2. However, the banks' operating expenses have also increased as a result of the higher level of activity. The positive outcome of the sea farming crisis is reflected in the development in losses and provisions, as provisions were reversed in both 2005 and 2006.

The profit before tax was kr. 500 million in 2006, which is almost 50 per cent higher than in 2005. The interim financial statements for the 1st half of 2007 point to even higher profits in 2007.

[1] Føroya Banki is the result of a merger in 1994 of two major Faroese banks, Føroya Banki and Sjóvinnubankin, and has hitherto been owned by the Financing Fund of 1992. Since the "banking compromise" between the Danish and Faroese governments in 1998, the Financing Fund has been controlled by the Faroese government, which has now decided to privatise the bank, initially by selling 66 per cent of the share capital. Eik Banki is the new name adopted by Føroya Sparikassi at the beginning of 2007. (Sources: Jørn Astrup Hansen, *Faroese Banks 1906-2006* (in Danish only), Handelshøjskolens Forlag, 2007, and High Commissioner of the Faroe Islands, *Report 2007* (in Danish only)).

GOVERNMENT FINANCES Table 3

| Kr. million | 2003 | 2004 | 2005 | 2006 | Budget 2007 |
|---|---|---|---|---|---|
| Taxes and duties, etc. | 2,936 | 2,840 | 2,897 | 3,349 | 3,426 |
| Block grants | 632 | 633 | 631 | 632 | 635 |
| Total income | 3,568 | 3,472 | 3,528 | 3,981 | 4,061 |
| Operating costs | 3,194 | 3,323 | 3,467 | 3,578 | 3,736 |
| Capital investments | 262 | 228 | 201 | 268 | 261 |
| Net interest costs | 90 | 72 | 71 | -7 | 12 |
| Total expenses | 3,545 | 3,624 | 3,739 | 3,839 | 4,009 |
| Balance | 23 | -152 | -211 | 142 | 52 |
| Net government debt, year-end | 2,124 | 2,075 | 2,305 | 1,691 | … |

Note: Income and balance for 2006 are exclusive of extraordinary income of kr. 535 million from distribution of extraordinary dividend by Føroya Banki. Net government debt is gross debt less the government's balance with Landsbanki Føroya (but not the value of government-owned enterprises).

Source: Fíggjarmálaráðið (Faroese Ministry of Finance), Landsbanki Føroya and High Commissioner for the Faroe Islands *Report 2007*.

## PUBLIC FINANCES

The government is also profiting from the upswing, which brings higher revenue from taxes and duties, including import duties. Revenue rose by 13 per cent in 2006, while expenditure rose by slightly less than 3 per cent. The result was a surplus of kr. 142 million, cf. Table 3, equivalent to approximately 1.3 per cent of GDP.

The 2007 Finance Act budgets for a small surplus. In view of the sustained economic growth and rising imports year-to-date, revenue has undoubtedly been estimated on the low side, so that the surplus for 2007 will be greater. On the expenditure side, the Act budgets for an increase of just over 4 per cent, which is high, given the recovery and the shortage of labour.

The government's outstanding debt was reduced considerably in 2006 due to the surplus and extraordinary dividend payments from Føroya Banki prior to the privatisation.

With regard to the municipalities, preliminary data from the Faroese bureau of statistics, Hagstova Føroya, indicates that overall current and capital expenditure declined slightly in 2006 after having risen for some years.

The gross debt of the municipalities is assessed to have been approximately kr. 0.7 billion at end-2006.[1]

[1] Source: High Commissioner of the Faroe Islands, *Report 2007* (in Danish only).

## ECONOMIC PROSPECTS

The Faroese economy is in a period of strong growth, with good fish prices and very low unemployment. The privatisation of Føroya Banki marks a clear step out of the shadow of the banking crisis in the early 1990s and the subsidy-managed economy of the preceding years. Now the Faroe Islands are emerging as a modern, market-based economy on a sound, relatively diversified basis.

Obviously, fisheries remain crucial as a source of export income, but the sector's significance in terms of employment and total economic activity is declining. Nevertheless, an important downside risk in the current favourable economic environment is that fish prices are unlikely to rise forever, and that for instance a global slowdown may send prices plummeting, leading to a significant increase in the already large trade deficit.

On the other hand, restructuring of the sea farms provides a healthier basis for the essential diversification of export earnings and reduced dependence on individual species such as cod, where stocks are at an all-time low. On account of the low stocks, there have been attempts to farm cod, but as yet it is uncertain whether this is commercially viable.

The mounting trade deficit and the very low rate of unemployment are clear signals that the economy is running at full steam. In view of the pronounced shortage of labour it would make good sense for the municipalities and the government to show budget restraint in the coming years.

Test drillings for oil in the Faroese underground have still to yield results that provide a basis for initiating production. There are plans for a third tender, presumably in 2008.

# The Effective Krone Rate and Trade in Services

*Erik Haller Pedersen, Economics*

## INTRODUCTION AND CONCLUSIONS

Danmarks Nationalbank calculates and publishes the effective krone rate, which is an index indicating the strength of the krone vis-à-vis a basket of currencies. The weights for the calculation of the effective krone rate are based on trade in manufactured goods, and are updated from time to time on the basis of an international data set, a "trade matrix". This article applies a method for quick and easy approximate updating of the weights, based solely on trade data from Statistics Denmark. In addition, the significance of including trade in services in the calculation of weights is assessed.

The conclusion is that the effective krone rate is a fair representation. It is relatively robust to the choice of base year, as well as to the exclusion of trade in services. Inclusion of trade in services, which has a wider geographical spread than trade in manufactured goods, makes the index slightly more exposed to fluctuations in the dollar than the traditional krone-rate index.

## CALCULATION OF THE EFFECTIVE KRONE RATE – TRADITIONAL METHOD

The value of the krone vis-à-vis another currency is represented by the bilateral exchange rate, e.g. Danish kroner per euro. In a nominal effective krone-rate index, the strength of the krone is measured against a basket of currencies. In order to calculate this index, it is necessary to determine the weight of each currency in the index, and in practice also to limit the number of currencies included.

The way the weights are calculated depends on the intended use of the krone-rate index. Usually it is sought to measure the effect of exchange-rate fluctuations on foreign trade, i.e. a measure of competitiveness. The weights must therefore reflect the relative importance of Denmark's trading partners in terms of overall trade. The more exposed Danish manufacturers are to competition from a given country's products, the greater should be the weight of that country's currency.

Today 27 countries are included in the set of weights for calculating the nominal effective krone rate. The weights are based on trade in manufactured goods in 2002. The final weights are achieved by weighting together a set of bilateral import weights and a set of double-weighted export weights. Danish business enterprises compete with e.g. German manufacturers in the Danish market (captured in the import weight), but also in the German market and third markets (summed up in the double-weighted export weight). This calculation requires an international data set and cannot be performed using data from Statistics Denmark only. Calculation of the nominal effective krone rate is documented by Ølgaard (1992) and by Pedersen (1998) and (2004).

Competitiveness is influenced not only by the bilateral exchange rate, but also by differences in wage developments in Denmark and abroad. This is reflected in the real effective krone-rate index, measuring the relative development in wages expressed in the same currency, cf. Pedersen (1996). The real effective krone rate illustrates the development over time in Denmark's competitiveness vis-à-vis its major trading partners. The weights used for calculating a real effective rate are identical to those used for calculating a nominal effective rate.

## ALTERNATIVE CALCULATION OF WEIGHTS FOR THE EFFECTIVE KRONE RATE

The Appendix describes an alternative method for calculating the weights in the krone-rate index. This method differs from the traditional method, but only slightly. In the outlined alternative method, the import weight is determined in the usual way, while the export weight is explicitly broken down into a bilateral export weight, e.g. competition with German products in the domestic German market, and a weight indicating competition in third markets, e.g. with Germany in markets outside Germany, cf. Box 1. The traditional method applies a single, double-weighted export weight, cf. above.

In itself, this methodological change has only a small impact on the weights. The most significant difference between the new method outlined in the Appendix and the traditional method is that exports have been given a greater weighting, cf. the Appendix.

An advantage of the outlined alternative calculation method is that, assuming a relatively stable global trade structure, the weights can be updated on the basis of national data only, unlike the traditional method, which requires an international data set. This can be used to assess the robustness of the krone-rate index to ongoing changes in trade flows.

ALTERNATIVE CALCULATION OF WEIGHTS FOR THE EFFECTIVE KRONE RATE Box 1

The Appendix outlines a weighting method whereby the weights for country *j* in the krone-rate index are calculated as a weighted average of bilateral import weights, bilateral export weights and a weight that captures competition from country *j* in third markets.

$$w_j = \lambda^M MW_j + \lambda^{BX} \gamma_j BXS_j + \lambda^{TX} TXW_j$$

"$w_j$" is the weight of county "*j*" in the effective krone-rate index, while $MW_j$ is the bilateral import weight vis-à-vis country "*j*", e.g. imports from Germany as a ratio of total Danish imports. This weight captures Danish manufacturers' competition with German manufacturers in the domestic Danish market. $\gamma_j BXS_j$ measures competition with German business enterprises in the domestic German market. This expression comprises the bilateral export weight, $BXS_j$, i.e. Danish exports to Germany as a ratio of total Danish exports to the 27 countries in the krone-rate index, as well as the quantity $\gamma_j$, which increases with the openness of the German economy. The more open the economy, the smaller the share of competition with Germany that takes place in the German market. Instead, Denmark is competing with Germany in third markets. $TXW_j$ measures the competition met by Danish business enterprises from German enterprises in markets outside Germany and Denmark, i.e. third markets. The three sets of weights are weighted together using the weights $\lambda^M, \lambda^{BX}, \lambda^{TX}$, illustrating the respective shares of Danish output that are sold in the domestic market, in Germany and in third markets, cf. the formulae in the Appendix.

The approximation approach, which assumes that some sub-components in the calculations of weights remain unchanged, can also be used to estimate the significance of including trade in services in the calculations. International statistics for trade in services still leave much to be desired, and it is difficult to set up a full international trade matrix that includes trade in both manufactured goods and services. Application of the bilateral export and import weights calculated on the basis of national data makes it possible to estimate the significance of trade in services, a steadily increasing sector that now accounts for close to 25 per cent of global trade. There are, however, various methodological issues related to including trade in services, cf. below.

## CALCULATIONS BASED ON DANISH DATA

In Table 1, the effective krone rate has been calculated using the 2002 weights and the calculation method outlined in the Appendix, i.e. TCW (Total Country Weights). This enables comparison with the traditional method since trade flows in 2002 are also used for calculating the

weights for the effective krone rate, shown in the last column in the Table.

As described in the Appendix, the weights on the export side are higher in the TCW calculations than in the traditional calculations. Consequently, the aggregate weight of the euro area is a little greater, primarily on account of Germany. German business enterprises are major competitors of Danish enterprises, especially in third markets, and are given a greater weighting in the alternative calculation. In contrast, the weights of several other euro area member states have been reduced.

ALTERNATIVE WEIGHT CALCULATION — Table 1

| | Bilateral import weight | Openness indicator | Bilateral export weight | Third-market weight | TCW | Krone-rate weight |
|---|---|---|---|---|---|---|
| Percentages, 2002 data | 30.7 | 33.5 | | 35.8 | 100 | |
| Germany (DEM) | 26.2 | 0.91 | 22.2 | 26.9 | 24.4 | 21.0 |
| UK (GBP) | 11.2 | 1.19 | 10.5 | 9.9 | 11.2 | 10.4 |
| Sweden (SEK) | 13.0 | 0.71 | 12.3 | 10.6 | 10.7 | 9.0 |
| USA (USD) | 3.8 | 1.65 | 8.5 | 4.3 | 7.4 | 8.6 |
| France (FRF) | 5.9 | 1.02 | 5.4 | 6.2 | 5.9 | 6.4 |
| Netherlands (NLG) | 7.1 | 0.56 | 5.0 | 7.5 | 5.8 | 5.3 |
| Italy (ITL) | 5.0 | 1.19 | 2.6 | 2.5 | 3.5 | 5.1 |
| Belgium (BEF) | 4.4 | 0.25 | 2.0 | 3.6 | 2.8 | 4.1 |
| Japan (JPY) | 1.8 | 1.77 | 2.2 | 2.0 | 2.6 | 3.9 |
| Norway (NOK) | 2.8 | 1.16 | 8.0 | 2.7 | 4.9 | 3.7 |
| Finland (FIM) | 3.1 | 0.86 | 2.8 | 3.4 | 3.0 | 2.5 |
| Spain (ESP) | 1.7 | 1.12 | 3.4 | 3.3 | 3.0 | 2.5 |
| Switzerland (CHF) | 1.5 | 0.88 | 1.7 | 2.0 | 1.7 | 1.9 |
| Austria (ATS) | 1.5 | 0.83 | 1.2 | 1.4 | 1.3 | 1.7 |
| Ireland (IEP) | 1.5 | 0.55 | 2.2 | 3.2 | 2.0 | 1.7 |
| Portugal (PTE) | 0.8 | 1.00 | 0.5 | 0.5 | 0.6 | 0.7 |
| Canada (CAD) | 0.2 | 0.90 | 1.0 | 1.2 | 0.8 | 0.7 |
| Australia (AUD) | 0.1 | 1.10 | 1.0 | 0.7 | 0.6 | 0.5 |
| Greece (GRD) | 0.3 | 1.00 | 0.6 | 0.5 | 0.5 | 0.3 |
| Iceland (ISK) | 0.1 | 1.17 | 0.6 | 0.3 | 0.4 | 0.2 |
| New Zealand (NZD) | 0.1 | 1.00 | 0.2 | 0.1 | 0.1 | 0.1 |
| Poland (PLN) | 1.8 | 1.14 | 2.2 | 2.1 | 2.1 | 1.9 |
| Korea (KRW) | 0.7 | 1.13 | 0.8 | 0.8 | 0.8 | 1.4 |
| Czech Republic (CZK) | 0.6 | 0.67 | 0.6 | 1.4 | 0.8 | 0.8 |
| Hungary (HUF) | 0.4 | 0.80 | 0.5 | 0.6 | 0.5 | 0.8 |
| China (CNY) | 3.9 | 0.92 | 1.3 | 1.2 | 2.0 | 3.6 |
| Hong Kong (HKD) | 0.6 | 0.29 | 0.7 | 1.1 | 0.6 | 1.2 |
| Euro area (EUR) | … | … | … | … | 52.8 | 51.3 |

Note: The TCW weight set is calculated as 0.307*Bilateral import weight + 0.335*(Openness indicator*bilateral export weight) + 0.,358*third-market weight, cf. Box 1. The weights are calculated on the basis of 2002 trade data, since this is the base year in the effective krone-rate index. The differences between the weight sets in the last two columns thus purely reflect differences in the calculation methods.

The "openness indicator" is a measure of the openness of the economy, i.e. foreign trade in relation to the overall economy. The lower the figure, the more open the economy. Iceland is seen to be a very closed economy. The reason is that trade in manufactured goods (SITC 5-9) is applied. Most of Iceland's exports, fish and aluminium, are outside this category.

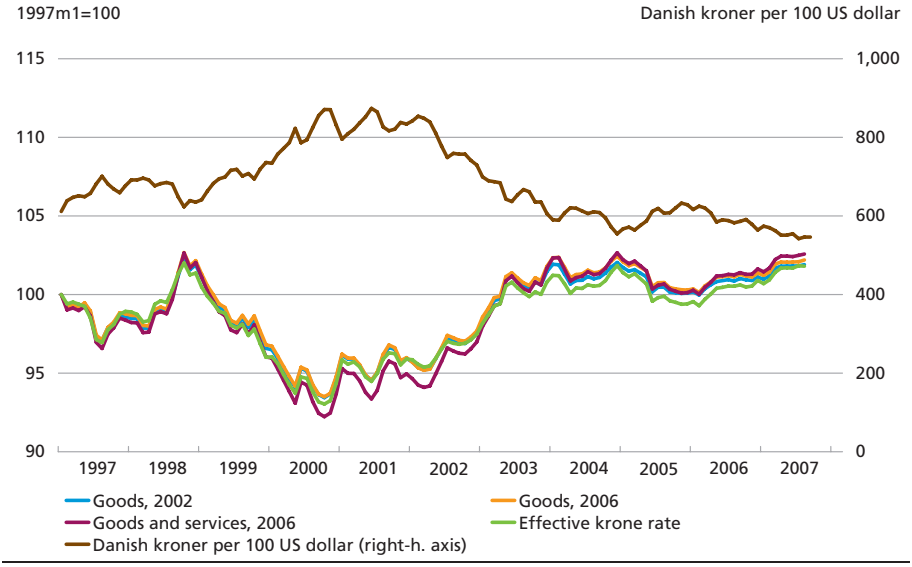
Source: OECD, Statistics Denmark and own calculations.

The greater weighting of the euro area is offset by the lower weighting of the "dollar area", i.e. the USA, China and Hong Kong. It is important to emphasise that Denmark predominantly competes with neighbouring countries. Total trade with Asia, including China and Japan, and the whole of Eastern Europe, is still lower than trade with Sweden.

When calculated as described in the Appendix, the set of weights changes only marginally, and the overall development in the krone-rate index since 1997 is almost the same, irrespective of the weighting method applied, cf. Chart 1. The alternative method therefore seems to be applicable as an approximation of the traditional calculation method. Below it is used to assess the quality of the 2002 weights compared with a more current set of weights, and also to assess the significance of including trade in services in the calculation.

In Table 2, the alternative method is used to calculate sets of weights on the basis of trade in manufactured goods in 2002 and 2006, respectively. The purpose is to assess the robustness of the krone-rate index in terms of the base year. Since 2002 the weights of particularly Germany and the UK have declined, while those of Sweden and China have increased. China's weight has increased by more than 50 per cent, but the overall changes are so small that the effective krone rate based on 2002 weights must be assessed to give a true and fair view of the development, cf. Chart 1.

EFFECTIVE KRONE RATE CALCULATED USING DIFFERENT WEIGHT SETS Chart 1




Note: Krone-rate index calculated using the four weight sets in Table 2.
Source: Own calculations.

KRONE-RATE WEIGHTS WITH DIFFERENT WEIGHT BASES Table 2

| | Effective krone rate | Alternative weighting method | | |
|---|---|---|---|---|
| | | 2002 weights manufactured goods | 2006 weights manufactured goods | 2006 weights manufactured goods and services |
| Germany (DEM) | 21.0 | 24.4 | 23.1 | 21.4 |
| UK (GBP) | 10.4 | 11.2 | 9.4 | 9.7 |
| Sweden (SEK) | 9.0 | 10.7 | 11.8 | 11.4 |
| USA (USD) | 8.6 | 7.4 | 7.8 | 10.7 |
| France (FRF) | 6.4 | 5.9 | 5.8 | 5.4 |
| Netherlands (NLG) | 5.3 | 5.8 | 5.6 | 5.3 |
| Italy (ITL) | 5.1 | 3.5 | 3.7 | 3.4 |
| Belgium (BEF) | 4.1 | 2.8 | 2.7 | 2.5 |
| Japan (JPY) | 3.9 | 2.6 | 2.2 | 2.7 |
| Norway (NOK) | 3.7 | 4.9 | 4.6 | 5.1 |
| Finland (FIM) | 2.5 | 3.0 | 3.0 | 2.9 |
| Spain (ESP) | 2.5 | 3.0 | 3.2 | 3.2 |
| Switzerland (CHF) | 1.9 | 1.7 | 1.6 | 2.2 |
| Austria (ATS) | 1.7 | 1.3 | 1.3 | 1.1 |
| Ireland (IEP) | 1.7 | 2.0 | 1.9 | 1.9 |
| Portugal (PTE) | 0.7 | 0.6 | 0.6 | 0.5 |
| Canada (CAD) | 0.7 | 0.8 | 0.8 | 0.9 |
| Australia (AUD) | 0.5 | 0.6 | 0.7 | 0.8 |
| Greece (GRD) | 0.3 | 0.5 | 0.5 | 0.7 |
| Iceland (ISK) | 0.2 | 0.4 | 0.4 | 0.4 |
| New Zealand (NZD) | 0.1 | 0.1 | 0.1 | 0.2 |
| Poland (PLN) | 1.9 | 2.1 | 2.4 | 2.1 |
| Korea (KRW) | 1.4 | 0.8 | 1.0 | 0.8 |
| Czech Republic (CZK) | 0.8 | 0.8 | 1.2 | 1.0 |
| Hungary (HUF) | 0.8 | 0.5 | 0.6 | 0.6 |
| China (CNY) | 3.6 | 2.0 | 3.1 | 2.9 |
| Hong Kong (HKD) | 1.2 | 0.6 | 0.7 | 0.8 |
| Euro area (EUR) | 51.3 | 52.8 | 51.4 | 48.3 |

Note: The related indices are shown in Chart 1. In the calculation of the weights in the last column, the country shares of services in 2005 have been added to the country shares of trade in goods in 2006. The reason is that the full breakdown of trade in services by country is published with a lag.

Source: OECD, Statistics Denmark and own calculations.

The last column in Table 2 shows a set of weights calculated using the method outlined in the Appendix, but now including trade in services. In this case, the changes in relation to the traditional index are somewhat greater.

Danish trade in services has a wider geographical spread than trade in manufactured goods. While the 27 countries in the krone-rate index account for approximately 90 per cent of Denmark's aggregate trade in manufactured goods, their share of trade in services is only 75 per cent. The more diverse trade is also reflected in a lower weight for the euro area, whereas that of the "dollar area", i.e. the USA, China and Hong Kong increases – from 11.6 per cent to 14.4 per cent. The greater exposure to the dollar rate is illustrated in Chart 1, where the krone-rate

DECOMPOSITION OF CHANGE IN EFFECTIVE KRONE RATE FROM OCTOBER 2000 TO AUGUST 2007 Table 3

| Index points | Effective krone rate | 2006 weights goods | 2006 weights goods and services |
|---|---|---|---|
| Euro (EUR) | 0.04 | 0.04 | 0.02 |
| Swedish krona (SEK) | 0.84 | 1.04 | 1.03 |
| Norwegian krone (NOK) | -0.02 | -0.01 | -0.02 |
| Pound sterling (GBP) | 1.14 | 1.29 | 1.32 |
| US dollar (USD) | 3.56 | 3.56 | 4.85 |
| Japanese yen (JPY) | 2.85 | 1.16 | 1.42 |
| Chinese yuan[1] (CNY) | ... | 1.14 | 1.06 |
| Other currencies | 0.36 | 0.48 | 0.67 |
| Total change during the period | 8.77 | 8.70 | 10.35 |

Note: A positive figure indicates that the Danish krone has strengthened vis-à-vis the currency in question. The decomposition shows the contributions in index points from the individual currencies. The greater the weight of a country, the greater the contribution to the change in the overall index for a given change in the bilateral exchange rate. The contributions from the individual currencies add up to the total change during the period under review.

Source: Own calculations.

[1] The Chinese currency was not included in the official krone-rate index until October 2004.

index including trade in services shows a steeper downward trend during the period from 1998 to 2001 (dollar strengthening), but also increases more after 2001 (dollar weakening), compared with the traditional index, cf. also the decomposition in Table 3. Overall, the difference from the traditional krone-rate index is, however, not great. Including trade in services in the krone-rate index has no material impact on the overall development in the index over time, and thus on the assessment of Denmark's competitiveness.

## METHODOLOGICAL ISSUES WHEN INCLUDING TRADE IN SERVICES

Denmark's considerable agricultural exports are excluded when weights are calculated on the basis of manufactured goods. The reason for this has traditionally been that price formation is not fully market-based due to the many subsidy schemes and trade restrictions in this area. For a large proportion of Danish exports, e.g. pork, this is likely to be of lesser importance, but it has been decided to apply the calculation method most frequently used internationally.

The increasing international trade in services, which now accounts for almost one quarter of global trade, is typically excluded too[1]. This is mainly attributable to data availability problems in that international statistics for trade in services are far less comprehensive than foreign-

[1] The Bank of England includes services in its calculation of the sterling exchange rate index (ERI), cf. Lynch and Whitaker (2004).

trade statistics for goods. In addition, there are a number of fundamental methodological problems.

When calculating the weights, it is sought to determine where the underlying economic activity took place. The invoicing currency is of less significance. What matters is competition experienced by Danish enterprises from enterprises based in a given country. Exports from e.g. Sweden to Denmark invoiced in dollars should not affect the weighting of the USA. Local costs in Sweden, not the invoicing currency, will ultimately determine the degree of competition from Sweden.

Attempting to capture the location of the economic activity behind a transaction in the krone-rate index poses special problems in relation to services such as sea freight. If a Swedish company employs a Danish shipping company to sail goods from China to the USA, this is registered as export of a service from Denmark to Sweden, even though the activity, i.e. the actual service, takes place between China and the USA. In reality, Denmark is more likely to be competing with other seafaring nations such as Greece. Moreover, the service typically includes very little Danish output and few Danish costs, since most input – bunkering, crew, etc. – tends to be foreign. Thus it is more likely to reflect Danish ownership of foreign output. It is sought to include only trade based on Danish output in the weighting, and therefore this activity should not be fully included.

Another case in point is a Swiss business enterprise which holds the copyright to the works of some of the world's best-selling authors. When one of them publishes a new book, Swiss exports of services to Denmark increase, despite the fact that the actual "production" seldom takes place in Switzerland.

These examples serve to illustrate some of the fundamental problems related to including services in an effective krone-rate index, and, viewed in isolation, they support continued exclusion of services in the calculations. Indeed, this is typically the case in most national calculations of effective exchange rates, including the indices calculated by the ECB. There are no plans to change the traditional calculation method, or, for that matter, to include services when the weights for calculation of the effective krone rate are updated again in a few years.

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## APPENDIX

The alternative weighting method presented in this article is described in Zanello and Desruelle (1997) and applied by Lynch and Whitaker (2004) and Bayoumi et al. (2005), among others. See also Alsterlind (2006).

The point of departure is a matrix, i.e. a table describing output and trade flows between, in this case, 28 countries: Denmark and 27 export markets. If the first country in the matrix is Denmark, the top row, first cell, shows Danish output sold in the domestic market, followed by Danish exports to the 27 export markets. The second country could be Germany, so that the second row, first cell, shows German exports to Denmark, i.e. Danish imports from Germany. Cell two shows German output for the domestic German market, and the rest of the row shows German exports to other countries than Denmark. Similarly, each of the remaining countries has a row with output for the domestic market and exports broken down by recipient country.

The first column of the matrix shows Danish output for the domestic market at the top, followed by Danish imports by country, so that the first column shows the Danish market broken down by supplier countries. Column two is Germany, and so forth.

A value-added and trade matrix like this is used as the starting point for calculating weights for effective exchange-rate indices. The matrix can be standardised horizontally or vertically to obtain shares, cf. the two share matrices below. Standardisation by imports and domestic demand for domestic output is called "s" (supply matrix), and standardisation by exports and output intended for the domestic market is called "w" (application matrix). Since the standardisation basis is not the same, the diagonal elements of the two matrices usually differ.

$$w = \begin{pmatrix} w_1^1 & w_1^2 & \cdots & w_1^{28} \\ w_2^1 & w_2^2 & & \\ \vdots & & \ddots & \\ w_{28}^1 & & & w_{28}^{28} \end{pmatrix} \begin{matrix} \sum 1 \\ \vdots \\ \vdots \\ \sum 1 \end{matrix}$$

$$s = \begin{pmatrix} s_1^1 & s_1^2 & \cdots & s_1^{28} \\ s_2^1 & s_2^2 & & \\ \vdots & & \ddots & \\ s_{28}^1 & & & s_{28}^{28} \end{pmatrix}$$
$$\sum 1 \quad \cdots \quad \cdots \quad \sum 1$$

To calculate the weights for the effective krone rate, we need the Danish row of *w*s, i.e. the first row in the *w* matrix, and all the *s*s. If the first row of the *w* matrix is multiplied by each row of the *s* matrix, and the result is entered into a new matrix, $v_1$, we obtain a total breakdown by country of the competition met by Danish exporters, cf. Zanello and Desruelle (1997).

The new matrix is a product of the *s* matrix and a matrix with the first row of the *w* matrix as the diagonal, surrounded by zeros.

$$v_1 = \begin{pmatrix} w_1^1 s_1^1 & w_1^2 s_1^2 & w_1^3 s_1^3 & \cdots & w_1^{28} s_1^{28} \\ w_1^1 s_2^1 & w_1^2 s_2^2 & w_1^3 s_2^3 & \cdots & w_1^{28} s_2^{28} \\ w_1^1 s_3^1 & w_1^2 s_3^2 & w_1^3 s_3^3 & \cdots & w_1^{28} s_3^{28} \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ w_1^1 s_{28}^1 & w_1^2 s_{28}^2 & w_1^3 s_{28}^3 & \cdots & w_1^{28} s_{28}^{28} \end{pmatrix}$$

The sum of the matrix elements is 1, but the first row of the new matrix indicates the share of Danish output. The first-row elements are therefore not included in the effective krone-rate index, while the remaining elements are included. Thus, the element in row *j* column *k* describes the share of country *k* of the market in country *j*. These weight contributions to the krone rate must be rescaled to add up to 1.

$$v_{1j}^k = \frac{w_1^k s_j^k}{\sum_k \sum_{j \neq 1} w_1^k s_j^k} = \frac{w_1^k s_j^k}{\sum_k w_1^k (1 - s_1^k)}$$

In the above expression of country *k*'s share in country *j*, *k* and *j* are also used in the sum signs, where *k* counts up all 28 countries, while *j* counts up the 27 export markets, i.e. the 28 countries excluding Denmark.

We have thus described the weights for the effective krone-rate index. The 27 row sums in the $v_1$ matrix illustrate the 27 country weights. For example, the total weight for Germany is the sum of row 2.

The set-up in the $v_1$ matrix can also inspire a decomposition of the index across countries, cf. Lynch and Whitaker (2004). The red first column of the matrix shows the contribution from imports. The blue diagonal shows the bilateral contribution from exports, i.e. the contribution from German competition in the German market, British competition in the UK market, etc. The rest, in green, shows the third-market contribution from exports, i.e. the contribution from German competition in the UK market, British competition in the German market, etc. While there are only 27 bilateral import contributions and 27 bilateral export contributions, there are many third-market contributions, cf. the number of green elements in the $v_1$ matrix.

The aggregate weight contribution from imports, the share of red fields, can be expressed as:

$$\lambda_1^M = \frac{w_1^1 (1 - s_1^1)}{\sum_k w_1^k (1 - s_1^k)}$$

The formulae are written with 1 for Denmark. If 1 is replaced by *i,* full accordance is achieved between the notation in the references showing the calculation of effective exchange rates for all countries in the matrix.

The aggregate contribution from bilateral exports, the share of blue fields, is:

$$\lambda_1^{BX} = \frac{\sum_{k\neq 1} w_1^k s_k^k}{\sum_k w_1^k (1 - s_1^k)}$$

The aggregate contribution from third-market exports, the share of green fields, is:

$$\lambda_1^{TX} = \frac{\sum_{k\neq 1} w_1^k (1 - s_1^k - s_k^k)}{\sum_k w_1^k (1 - s_1^k)}$$

The three $\lambda$ s add up to 1.

Country *j*'s share of Danish imports, the red field for country *j* as a share of the sum of red fields, indicates the simple import share:

$$MW_{1j} = \frac{w_1^1 s_j^1}{\sum_{k\neq 1} w_1^1 s_k^1} = \frac{s_j^1}{\sum_{k\neq 1} s_k^1}$$

The contribution from country *j* via bilateral exports, the blue field for country *j* as a share of the sum of blue fields, can be expressed as:

$$BXW_{1j} = \frac{w_1^j s_j^j}{\sum_{k\neq 1} w_1^k s_k^k} = \frac{s_j^j \sum_{k\neq 1} w_1^k}{\sum_{k\neq 1} w_1^k s_k^k} \quad \frac{w_1^j}{\sum_{k\neq 1} w_1^k} = \gamma_j BXS_{1j},$$

which shows that the $BXW_{1j}$ expression can be broken down into $\gamma_j = \frac{s_j^j \sum_{k\neq 1} w_1^k}{\sum_{k\neq 1} w_1^k s_k^k}$ and the simple bilateral export share $\frac{w_1^j}{\sum_{k\neq 1} w_1^k}$, called $BXS_{1j}$. This can be calculated using data from Statistics Denmark only. $\gamma_j$ can be interpreted as an "openness indicator" for country *j*, cf. Lynch and Whitaker (2004).

The contribution from country *j* to the export weight via third-market exports, the green fields in the row for country *j* as a share of the sum of green fields, can be written as follows:

$$TXW_{1j} = \frac{\sum_{k\neq 1,j} w_1^k s_j^k}{\sum_{k\neq 1} w_1^k (1 - s_1^k - s_k^k)}$$

The total weight of country *j* in the aggregate krone-rate index can now be expressed as a sum of three components: the contributions from imports, bilateral exports and third-market exports:

$$w_{1j} = \lambda_1^M MW_{1j} + \lambda_1^{BX} \gamma_j BXS_{1j} + \lambda_1^{TX} TXW_{1j}$$

This formula has been used to set up Table 1 in the text. The formula has also been used for the calculations in Table 2 with all quantities unchanged except bilateral imports and exports, i.e. $MW_{1j}$ and $BXS_{1j}$, which can be calculated using data from Statistics Denmark only. This corresponds to the updating technique used by the Bank of England for calculating the sterling ERI, cf. Lynch and Whitaker (2004), which, however, also updates the third-market contribution on the basis of the most recent data for the countries' aggregate trade. The significance of not updating the third-market contribution is assessed to be minimal in the short run and consequently updates have been omitted here. This also makes the updating process more operational.

The calculation method outlined in this Appendix deviates only slightly from the method used for calculating the traditional effective krone rate. The difference can be illustrated on the basis of the above matrices. The alternative method inserts zeros in row 1 in the $v_1$ matrix and rescales the remainder of the elements in the matrix by the same factor so that they add up to 1. The traditional method, on the other hand, sets row 1 in the *s* matrix at 0 and scales the rest of the elements in the *s* matrix columns so that each column adds up to 1. With this converted *s* matrix, the $v_1$ matrix has inherent zeros in the first row and its elements include the weight contributions to the traditional calculations of the country weights for the krone-rate index. The resulting country weights differ only slightly under the two methods. The major difference is that in the alternative calculation we also choose to change $w_1^1$ in the *w* matrix, which in these calculations takes added value as its point of departure rather than output value as hitherto, cf. the method description in Pedersen (1998). Consequently, the export side is given a greater weight under the alternative calculation method than under the traditional method – 69.3 per cent and 54.4 per cent, respectively. Others often simply weight the import and export sides together with a weight of 0.5 each. This is the case for e.g. the effective exchange rate index calculated by the European Central Bank, ECB.

# The Directive on Payment Services

*Anders Mølgaard Pedersen, Payment Systems*

## INTRODUCTION

In the spring of 2007, the EU Ministers of Economic Affairs and Finance, the Ecofin Council, and the European Parliament reached agreement on a Directive on Payment Services. The Directive lays down rules for consumers' and enterprises' payments by other instruments than cash or cheques, i.e. "electronic payments". In addition, the Directive regulates the access to provide payment services and introduces a new type of financial enterprise in EU legislation in the form of payment institutions.

Today, the EU member states' legislation on payment services varies in a number of respects.[1] The overall purpose of the Directive is to remove these differences and establish the basis for an internal market for payments. Furthermore, the Directive is the legal foundation for the future Single Euro Payments Area, SEPA.[2] However, the Directive goes beyond SEPA as it also covers other currencies than the euro, including Danish kroner.

The Directive must be transposed into national law in the EU by 1 November 2009. In Denmark, this will require a number of amendments to payments legislation. For instance, new legislation is required in areas that are currently unregulated, e.g. value dates in connection with payments.[3] In addition, the existing Danish legislation must be adapted to the Directive. The implementation of the Directive will entail a considerable workload for the Danish authorities.

The Directive will affect Danish consumers and enterprises in connection with both national and cross-border payments. The Directive will require amendment of virtually all of the banks' customer agreements that enable payments. In several cases customer rights will be enhanced by the legislative amendments. As an illustration, the required execution

1 Cf. e.g. the European Commission, *Comparative tables on national rules*, 25 September 2003, available at http://ec.europa.eu/internal_market/payments/framework_index_en.htm.

2 The SEPA project is described in more detail in Elin Amundsen, SEPA – Single Euro Payments Area, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2007.

3 I.e. when the bank of the payer/payee ceases/begins to add interest when a payment is executed.

time for credit transfers between two EU member states will be reduced from the present six days to just one day by 2012.[1]

The Directive will also provide the framework for enhanced competition among providers of payment services by making it easier for consumers and enterprises to compare the services on offer and switch between providers. Furthermore, the Directive will improve the access conditions for payment service providers from other EU member states. Intensified competition is expected to entail lower costs for the users of payment services, i.e. consumers and enterprises.

In the preparatory work, key issues for Denmark were that a few existing Danish rules, which are regarded as important, could be maintained. Moreover, the Directive should not include rules, which were disproportionately costly to payment service providers in non-euro area member states. There was particular focus on the Directive's provisions related to charges, liability for fraudulent use of payment instruments and payment execution time. The final Directive is not deemed to pose any distinct problems for Denmark in these areas.

## BACKGROUND

There has been an increased focus, in recent years, at European level on the importance of smooth execution of payments for consumers and enterprises. A key issue has been the costs of cross-border payments, which have been found to be very high by e.g. the European Commission in several studies.[2] In some cases, the high costs could be a barrier to trade in goods and services between EU member states.

Other studies have revealed great differences between the EU member states as regards the average costs of payment services for consumers and enterprises. These costs can vary by a factor of up to eight from one EU member state to the next, and in some member states they account for as much as 2-3 per cent of GDP.[3] Consequently, the single market for payments in the EU is still a long way off, and some member states have the potential for substantial savings to society.

The relevant political initiatives so far include a 1997 directive on cross-border credit transfers in the EU.[4] This directive aimed at ensuring that

[1] See the definition of credit transfers in Box 1. The execution time for such transfers between two EU member states is currently regulated by the Danish Act on Cross-Border Credit Transfers of 15 April 1999. As regards cross-border payments, the Directive provisions on execution time apply solely to transfers in euro, cf. Box 3.

[2] Cf. e.g. the European Commission's press release of 20 September 2001, *Cross-border payments: New Commission study confirms high charges*, and the appurtenant report from Retail Banking Research.

[3] Cf. the European Commission, *Working Document to the Proposal for a Directive on Payment Services in the Internal Market, Impact Assessment*, SEC(2005)1535, December 2005.

[4] Directive 97/5/EC of the European Parliament and of the Council of 27 January 1997 on cross-border credit transfers.

cross-border credit transfers could be made more rapidly, reliably and cheaply in the future. Also in 1997, the Commission issued a recommendation concerning transactions by electronic payment instruments.[1] The primary purpose was to ensure certain rights for the holders of these payment instruments.

In 2001 these legal acts were accompanied by a regulation on cross-border payments in euro.[2] The regulation prohibits the banks from imposing higher charges for cross-border payments in euro than for corresponding national payments. The aim was to reduce customers' costs for cross-border payments. According to a recent study, the regulation has had the desired effect since the costs have been significantly reduced.[3]

The 2001 regulation was one of the factors that induced European banks to initiate the establishment of SEPA, the future Single Euro Payments Area for consumers and enterprises. SEPA will introduce new payment instruments for payments in euro throughout Europe. Banks in Europe, including Danish banks, will gradually begin to offer the new instruments to their customers from the beginning of 2008.

A precondition for SEPA was harmonisation of the national payments legislation of the EU member states. In December 2005, the Commission tabled a proposal for a directive on payment services. The proposal was then considered by a Council working group and the Economic Committee of the European Parliament. In the spring of 2007, the Ecofin Council and the European Parliament reached agreement on the directive text. The Directive is expected to be formally adopted later this year and is being translated into the various EU languages.

## CONTENTS

The Payments Services Directive is divided into titles on (I) scope, (II) access to execute payment services as a payment institution, (III) information requirements, (IV) general contractual conditions, i.e. the rights and obligations of payment service providers and customers, and (V) other provisions.[4]

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1 Commission Recommendation 97/489/EC of 30 July 1997 concerning transactions by electronic payment instruments and in particular the relationship between issuer and holder. A recommendation from the European Commission is not binding on the EU member states, as opposed to a directive or a regulation.

2 Regulation (EC) No 2560/2001 of the European Parliament and of the Council of 19 December 2001 on cross-border payments in euro.

3 Cf. the European Commission's press release of 11 January 2007, *Cross-border payments now significantly cheaper*, and the report, *Staff Working Document on the Impact of Regulation (EC) No 2560/2001 on bank charges for national payments*, SEC(1783)2006, of 18 December 2006.

4 The text of the Directive is available via the European Commission's website, http://ec.europa.eu/internal_market/payments/framework_index_en. htm, Amendments by the European Parliament.

**(I) Scope**

The Directive is based on the principle of total harmonisation, which means that the EU member states must implement it in its exact form. However, the Directive does in several areas allow some national discretion in the implementation, but only in connection with national payment service providers and their execution of payment services in their own country.

The Directive regulates payment services between payment service providers and their customers, and includes provisions on the right to provide payment services. Such providers are essentially limited to credit institutions and electronic money (e-money) institutions as defined in the e-money directive[1], and the new payment institutions. No other enterprises may provide payment services in the EU according to the Payment Services Directive.[2]

Box 1 outlines the Directive's definition of payment services. In addition, the Directive lists a number of activities that, for various reasons, are outside its scope. These include payments by cash or cheque, transport of money, exchange of currency in cash, collection of funds for charitable purposes and cash-back transactions[3]. Furthermore, the Directive does not cover payments between payment service providers, such as transactions in the money market.

A notable exception from the Directive is payments using instruments with relatively limited use. These are payment instruments that can only be used at the issuer's premises or a relatively limited number of outlets. This provision is taken to mean that many existing payment cards, e.g. petrol cards, charge cards for department stores and retail chains or payment cards issued by transport companies, are outside the scope of the Directive.

Another key exception is payments for digital services via mobile telephones or the Internet where the provider is not merely the payment intermediary. Examples of such payments are purchases of ringing tones or news updates delivered to a mobile telephone. A characteristic feature of this type of payment is that the provider not only executes the payment, but also adds value to the supplied service by making the underlying medium available, i.e. this is not a pure payment service.

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1 Directive 2000/46/EC of the European Parliament and of the Council of 18 September 2000 on the taking up, pursuit of and prudential supervision of the business of electronic money institutions. This directive introduced a new type of institution in EU legislation, i.e. electronic money institutions. Electronic money can be defined in brief as prepaid funds stored on an electronic device and acknowledged as a means of payment by others than the issuer.

2 Except central banks and post office giro institutions. The latter do not exist in Denmark.

3 A cash-back transaction is payment of cash by a retail outlet to a customer who, by means of a payment card, withdraws more money than required for the purchase. The original card payment will normally be covered by the provisions of the Directive.

PAYMENT SERVICES UNDER THE DIRECTIVE Box 1

A payment service is defined in the Annex to the Payment Services Directive as one of the following seven activities:

1. Cash deposits. A service enabling cash to be placed on a payment account as well as all the operations required for operating a payment account. The Directive defines a payment account as an account used for execution of payment transactions.
2. Cash withdrawals. A service as in item 1, but enabling cash withdrawals from a payment account.
3. Execution of transfer of funds. A service enabling transfer of funds from one payment account to another, e.g. credit transfers where the payment is initiated by the payer, card payments or direct debit, i.e. a payment initiated by the payee under a mandate from the payer.
4. Execution of transfer of funds under a credit line. A service as in item 3, but with a credit line in favour of the payer. An example is transfer of funds in connection with credit card payments.
5. Issuing and/or acquiring payment instruments. A transfer to the customer of an instrument that can be used for payment execution (issue), or a service enabling placement on a payment account of funds received by the payee after execution of a payment via a payment instrument (acquisition).
6. Money remittance. A service enabling transfer, initiated by the payer, of cash funds to the payee without a payment account being created.
7. Execution of mobile payments, Internet payments, etc. A service enabling transfer of funds from payer to payee on the basis of a payment order placed via telecommunications or IT equipment where the equipment provider acts only as payment intermediary.

The Directive only regulates payments for which the payment service providers of both the payer and the payee are located in the EU. In addition, the payment must be in euro or another EU currency, e.g. Danish kroner. The Directive's provisions are mandatory as regards payment services for consumers, but may be deviated from for other customers, i.e. enterprises and public authorities.[1]

**(II) Payment institutions**

As mentioned, the Directive introduces a new type of financial enterprise, payment institutions, in EU legislation. They will be allowed to provide all payment services described in Box 1, but are subject to more restrictions on their other activities than e.g. credit institutions. A payment institution is granted a "European passport", which authorises it to perform cross-border activities in other EU member states subject to an authorisation issued by the supervisory authority of its home member state.

[1] The underlying assumption is that enterprises and public authorities are better equipped than consumers to negotiate agreements with their payment intermediaries that will put them in a more favourable position than the rules of the Directive.

Payment institutions may not receive deposits or issue electronic money. They are only allowed to grant credit in connection with payment execution, e.g. credit card payments. In practice, the new institutions will cover a broad range of enterprises, including issuers and acquirers of payment cards for general use, money remitters[1] and telecommunications companies that offer mobile payments.

As with credit institutions and e-money institutions, payment institutions are subject to capital requirements. The Directive lays down requirements concerning both the initial capital and ongoing capital of the payment institutions where the latter requirement depends on the business volume, cf. Box 2. The capital requirements for payment institutions are relatively modest compared to the requirements applying to credit and e-money institutions. This reflects differences in customer risk.[2]

Besides the capital requirements, the payment institutions are required to have implemented measures to ensure that the customers can get their funds back in the event of insolvency of the institution. The measures could be e.g. formal segregation of funds received from customers into special bank accounts, or a bank guarantee for customer claims. This requirement for *ringfencing* of customer funds applies solely to institutions that conduct other activities besides payment services.[3]

The Directive allows the EU member states to waive the above requirements for small payment service providers, provided that their monthly executed payments do not exceed 3 million euro. An enterprise subject to a waiver must not provide payment services in other member states. This provision will ensure that small payment service providers choose to register with the national supervisory authority, which is important to combat money laundering and financing of terrorism.

**(III) Information requirements**

The Directive also lays down rules regarding information from payment service providers to their customers about the payment services. A central aim is to make it easier for customers to compare the services on offer, enhancing competition among the payment service providers. The information requirements apply to all types of payment service providers, i.e. payment institutions as well as credit and e-money institutions.

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1 Western Union and Moneygram are examples of money remitters.

2 For example, electronic money institutions are required to have an initial capital of at least 1 million euro. In addition, the own funds of the institutions must continually exceed 1 million euro or 2 per cent of their outstanding e-money, whichever is higher.

3 In addition, the EU member states can decide that the requirement is not applicable to individual claims of less than 600 euro.

## CAPITAL REQUIREMENTS FOR PAYMENT INSTITUTIONS — Box 2

The Payment Services Directive imposes capital requirements on payment institutions. The Directive makes a distinction between initial and ongoing capital requirements. The latter capital depends on the institution's business volume. The institution's own funds must never fall below the larger of the two amounts.

The *initial capital* requirement depends on the intended activities of the payment institution. If the institution intends to provide money remittance only, the requirement is an initial capital of at least 20,000 euro. If the institution intends to execute mobile payments, the requirement is an initial capital of at least 50,000 euro. If the institution intends to provide one or more other payment services, the requirement is at least 125,000 euro.

The national supervisory authority may choose one of the following three methods for calculation of the *ongoing capital requirement*:

- *Method A*. The payment institution's own funds shall be at least 10 per cent of its overheads in the preceding year. This requirement can be adjusted in the event of a material change in the payment institution's business volume since the preceding year. The projected overheads are used if the institution has not completed a full year's business.
- *Method B*. The own funds requirement shall be calculated as a percentage of the monthly average of the value of the institution's executed payments in the preceding year, on a descending scale, cf. Table 1. In addition, a multiplication factor, k, shall be applied, depending on the payment services executed by the institution (money remittance: k=0.5; mobile payments: k=0.8; other payment services: k=1).

PERCENTAGES IN METHOD B — Table 1

| Average monthly value of payments in preceding year | Per cent/interval |
|---|---|
| Up to 5 million euro | 4.0 |
| Over 5 million euro – up to 10 million euro | 2.5 |
| Over 10 million euro – up to 100 million euro | 1.0 |
| Over 100 million euro – up to 250 million euro | 0.5 |
| Over 250 million euro | 0.25 |

*Example*: A payment institution, which only provides money remittance (k=0.5), executed payments in the preceding year for on average 10 million euro per month. The ongoing capital requirement of the institution is calculated at 0.5*((5*0.04)+(5*0.025)) = 162,500 euro.

- *Mehod C*. The own funds requirement is calculated as the sum of the institution's interest income, interest expenses (negative sign), commission and fees received and other operating income in the most recent financial year, multiplied by a factor descending with this sum, cf. Table 2, multiplied by factor k from method B.

MULTIPLICATION FACTOR IN METHOD C — Table 2

| Sum of interest income, etc. | Factor/interval |
|---|---|
| Up to 2.5 million euro | 0.10 |
| Over 2.5 million euro – up to 5 million euro | 0.08 |
| Over 5 million euro – up to 25 million euro | 0.06 |
| Over 25 million euro – up to 50 million euro | 0.03 |
| Over 50 million euro | 0.015 |

*Example*: In the last financial year, a payment institution issuing payment cards (k=1) had interest income of 20 million euro, interest expenses of 15 million euro, fee and commission income of 2 million euro and other operating income of 3 million euro. The sum of interest income, etc. is 20 - 15 + 2 + 3 = 10 million euro, and the ongoing capital requirement is calculated as 1.0*((2.5*0.1)+(2.5*0.08)+(5*0.06)) = 750,000 euro.

The Directive distinguishes between information related to contracts for single payments, e.g. a money remittance transaction, and framework contracts for a series of payments. A framework contract will normally be concluded where a customer uses an account or a payment instrument for the payment. Furthermore, the Directive distinguishes between information requirements prior to conclusion of a contract and after execution of a payment. Information on payments may be collected and given to the customer on a monthly basis.

Payment instruments for low-value payments are subject to information requirements, which are less stringent for the payment service provider.[1] These rules are aimed particularly at new payment instruments, e.g. certain e-money products. For the providers of these instruments, meeting the general information requirements will often entail relatively high costs. In addition, the use of these instruments is usually associated with only limited risk for the customer.

**(IV) General contractual conditions**

The key provisions of the Directive relate to the general terms and conditions for contracts between the payment intermediary and the customer. Box 3 reviews a number of provisions that attract particular attention in Denmark. These provisions concern the Directive's rules on charges, liability for fraudulent use and payment execution time. The final Directive is expected to enable Denmark to maintain the existing Danish rules on charges for Dankort payments and liability in the event of fraudulent use of e.g. payment cards.

In addition, the Directive lays down rules on value dates, according to which the payment service provider of the payer may cease to add interest at the earliest on the date when the payment is withdrawn from the customer account. Furthermore, the payment service provider of the payee should add interest as from the date when that payment service provider receives the amount. Together with the rules on execution time, this will limit payment service providers' potential interest revenue related to payments. The aim is to encourage the payment service providers to rely more on other sources of income, e.g. charges, that are more visible to the customers.

As mentioned, value dates are not regulated by current Danish legislation. Instead, value dates are agreed freely between the payment service providers and their customers. The value rules of the Directive are, in some respects, more favourable for the customers than current Danish

[1] It must not be possible to use these instruments for single payments exceeding 30 euro, or they must not contain a stored value exceeding 150 euro. In connection with purely national payments, the EU member states may choose to reduce these limits or raise them to 60 euro and 500 euro, respectively.

GENERAL CONTRACTUAL CONDITIONS IN THE PAYMENT SERVICES DIRECTIVE Box 3

**Charges**

The Payment Services Directive's rules on charges are to fulfil several purposes. One provision stipulates that the payer and payee must each pay the charges imposed by their respective payment intermediaries. The purpose is to extend the application of the SHARE principle, i.e. that payer and payee pay their own fees and commissions, throughout the EU.[1] Experience has shown that this is the most efficient principle as it best supports fully automated payment processing.

Another provision on charges stipulates that the payment intermediary must not prevent the payee, i.e. a retailer, from imposing charges on the payer for using a certain instrument. Consequently, card enterprises must not prohibit retailers from passing on charges for acquiring card payments, i.e. the use of "no surcharge" rules is not allowed. However, the EU member states may prohibit passing on charges if this is found to impede the use of efficient instruments.

The aim of the second provision on charges is to enhance the transparency of the acquisition charges imposed by the card enterprises. On several occasions, the European Commission has stated that it finds the banks' acquisition charges on certain types of card payments too high.[2] If the retailers are allowed to pass these charges on to their customers, the customers will choose the payment cards with the lowest charges. This will exert downward pressure on the charges.

In Denmark these provisions are found to be compatible with the financing model for the Dankort, as agreed in 2005.[3] According to the initial recitals in the Directive, the payee may be charged by their payment service providers in the form of a fixed subscription payment as is the case for the Dankort scheme. Furthermore, the Dankort is found to be an efficient instrument, which will make it possible to maintain the regulatory prohibition of passing on charges on Dankort payments in physical trade.[4]

**Liability for fraudulent use**

An example of fraudulent use of a payment instrument is unauthorised use of a lost or stolen payment card. The Directive's rules on liability in the event of fraudulent use aim at a balance between protecting customers from losses and encouraging them to be careful in using the instrument as well as encouraging payment service providers to develop safe payment instruments.

The liability rules in the Directive can be outlined as follows:

1. A customer bears a loss of up to 150 euro as a form of own risk if the fraudulent use can be attributed to a lost or stolen payment card or to the customer's insufficient prudence in using the instrument.
2. A customer bears the entire loss on fraudulent use if the customer has acted fraudulently or grossly neglected the duty to protect the payment instrument from fraudulent use.
3. The EU member states may choose to reduce the customer's liability under items 1 and 2, unless the customer has acted fraudulently or deliberately neglected the duty to protect the instrument from fraudulent use.
4. As soon as a customer has informed the payment service provider of loss, theft or fraudulent use of a payment card, the customer should not bear further losses on fraudulent use unless the customer has acted fraudulently.
5. If a payment service provider has failed to ensure that customers can at any time report loss, theft or fraudulent use of an instrument, the customer has no liability for the loss on fraudulent use, unless the customer has acted fraudulently.

CONTINUED Box 3

These rules were a key issue to Denmark in the work with the Directive. For some time, there was concern that the rules could lower the level of protection that Danish customers enjoy today. According to the Danish Act on Certain Means of Payment, the customer shall bear the own risk on fraudulent use only if the PIN code has been used. In addition, Danish legislation includes a ceiling of kr. 8,000 for the customer's loss. Item 3 above is found to enable Denmark to maintain these rules.

**Execution time**

The Directive's provisions on execution time aim to reduce the number of float days for cross-border payments. According to directive 97/5/EC on cross-border credit transfers, it must not take more than six days for a credit transfer to reach the payee in another EU member state. Studies show that the average execution time for such transfers is just under three days. There has been widespread political agreement that this execution time is still too long.

The Directive's rules on execution time apply to pure euro-denominated payments and national payments in other EU currencies, e.g. krone-denominated payments in Denmark. The Directive also regulates payments with one currency exchange between euro and another EU currency if the exchange takes place in the relevant non-euro area member state. A credit transfer in euro from a krone account in Denmark to a euro account in Gemany will thus be covered by the rules, whereas a corresponding transfer in Danish kroner will not.

According to the Directive, a credit transfer of this type must be executed by the end of the following day at the latest.[5] Until 1 Januar 2012 the payment service provider and the customer may agree on three days instead. As regards paper-based payments, e.g. payments using giro slips, the parties may agree to extend the execution time by one day.[6]

Furthermore, the Directive lays down rules for the value dating of pure cash deposits, i.e. cash deposits denominated in the same currency as the account, with the payment service provider holding the account. Such deposits from consumers should be booked to the customer's account on the date of the cash deposit, while deposits from enterprises, etc. must be booked no later than the following day.

The rules on execution time were also given a certain amount of attention by the Danish authorities. The original directive proposal tabled by the Commission indicated that these rules should apply to payments in all EU currencies. However, compliance with this requirement for cross-border transfers in other EU currencies than euro would impose very high costs on the payment service providers in the absence of an SEPA-like infrastructure. Consequently, the rules on execution time were limited to the above payments.

[1] Alternatives are the OUR principle, i.e. the payer bears all the costs, or the BEN principle, i.e. the payee bears all the costs.

[2] Cf. e.g. the European Commission, *Communication From the Commission, Sector Inquiry under Art 17 of Regulation 1/2003 on retail banking (Final Report),* January 2007.

[3] The agreed financing model for the Dankort is described in Danmarks Nationalbank, *Payment Systems in Denmark*, 2005, Chapter 7.

[4] This means a transaction where both the purchaser and the vendor are physically present, as opposed to e.g. e-commerce.

[5] The rules for SEPA credit transfers stipulate an execution time of three days. This will have to be changed to one day as a consequence of the Directive.

[6] As regards debit payments, i.e. card payments and direct debit, the Directive allows the payment intermediary and the customer to negotiate the maximum execution time.

market practices. Cases in point are cash deposits from consumers, and payments from abroad, which in future accrue interest as from the date of a payment service provider's receipt of the funds.

Among other general contractual conditions, the Directive lays down rules for the amendment and termination of framework contracts and a payment service provider's access to suspend the use of a payment instrument. In addition, the Directive regulates the payer's right to claim refunds and to cancel a payment order, as well as the liability for correct execution of payments. Several of these areas require harmonisation of legislation to support, in particular, the payment instruments in SEPA.

**(V) Other provisions**

The Directive enables the European Commission to adjust a number of provisions to take account of the technological advances and ensure uniform application. The Commission may, among other things, adapt the definition of activities that are considered to be payment services, cf. Box 1. In order to do so, the Commission must consult a Payments Committee composed of representatives of the EU member states.

The Payments Services Directive must be transposed into national law by 1 November 2009. It will replace the directive on cross-border credit transfer of 1997 and the 1997 recommendation on electronic means of payment. The 2001 regulation on cross-border payments in euro continues to be in force.

## IMPLEMENTATION IN DENMARK

The Payment Services Directive will require a number of amendments to Danish payments legislation. The Directive will affect some Danish Acts, notably the Act on Certain Means of Payment. The implementation of the Directive will entail considerable work for the Danish authorities, and the following should only be regarded as preliminary reflections.

A number of payment instruments that are currently regulated by the Act on Certain Means of Payment are outside the scope of the Directive. These include instruments that can only be used at the issuer's premises. It remains to be seen how these payment instruments are to be regulated in the future. If the Act on Certain Means of Payment is to apply, perhaps with a few amendments, payment instruments will thus be regulated by two sets of legislation according to whether they fall within the scope of the Directive.

The Directive also regulates payment services that are normally executed without a payment instrument. An example is a single payment such as a money remittance transaction, cf. Box 1. This type of payment

service is not covered by the Act on Certain Means of Payment in Denmark, and is only to a limited extent regulated by other legislation. The implementation of the Directive will thus require regulation of a new area.

New Danish legislation is also required to regulate the access to provide payment services as a payment institution. Similar access for other types of institution is regulated overall by the Financial Business Act. Preliminary analyses show that only very few enterprises in Denmark will have to apply for authorisation as payment institutions, although this will depend on the exact interpretation of the provisions defining the scope of the Directive, cf. above.

The Directive also lays down rules for a number of other areas that are not currently regulated in Denmark. These areas include value dates, as well as the payer's right to claim refunds or cancel a payment order and the payment service provider's access to suspend the use of a means of payment. Execution time for national payments is yet another example of an area requiring new legislation.

The existing Danish legislation needs to be adapted to the Directive in several other areas. An example is the rules on information requirements, which are considerably more detailed in the Directive than in the Danish Act on Certain Means of Payment. Presumably, there will be little difference in practice between the information currently given by e.g. Danish banks to their customers and the Directive's information requirements.

As mentioned, the EU member states have some national discretion in the implementation of certain areas of the Directive. This applies to a number of provisions on the access to provide payment services and the general contractual conditions. These decisions typically reflect various trade-offs and will in many cases require a political decision.

# Press releases

## 6 JUNE 2007: INTEREST RATE INCREASE

Danmarks Nationalbank's lending rate and the rate of interest on certificates of deposit are raised by 0.25 per cent to 4.25 per cent. The discount rate and the interest rate on the banks' current accounts with Danmarks Nationalbank are raised by 0.25 per cent to 4.00 per cent. The increase will have effect as from 7 June 2007.

The interest rate increase is a consequence of the raising by the European Central Bank of the minimum bid rate on the main refinancing operations by 0.25 per cent to 4.00 per cent.

## 20 AUGUST 2007: NEW SHIP COIN WITH THE FRIGATE JYLLAND AS ITS MOTIF

On 10 September 2007, Danmarks Nationalbank issues a new 20-krone coin with the Frigate Jylland as its motif. This is the second coin in a series with ships as their common motif.

The coin will be presented today on the Frigate Jylland in the port of Ebeltoft. The Frigate Jylland is the world's longest wooden ship and represents outstanding craftsmanship. It also marks the beginning of a new age, being powered by both sails and an engine – an innovation within shipbuilding at the time when it was launched. The Frigate was commissioned by the Royal Danish Navy and was involved in the Battle of Helgoland in 1864, in which it became a national symbol. Later it became the royal ship of King Christian IX. Today the Frigate Jylland is a popular tourist attraction in Ebeltoft.

The motif for the coin was designed by the sculptor Hans Pauli Olsen, who also designed the motifs for the Christiansborg Castle and Nólsoy Lighthouse tower coins and the Ugly Duckling fairy tale coin.

The Frigate Jylland coin is issued as a 20-krone coin in ordinary circulation in an edition of 1.2 million. The face of the coin shows a profile of the Queen by the sculptor, Professor Mogens Møller.

The new ship coin with the Frigate Jylland can be purchased from banks, Danmarks Nationalbank (Banking Services) and the website of The Royal Mint, www.kgl-moent.dk, from 10 September 2007. Pictures of the coin can also be found on the website of The Royal Mint. The next ship coin is expected to be issued in the spring of 2008.

## 6 SEPTEMBER 2007: FINAL FAIRY TALE COIN INSPIRED BY THE NIGHTINGALE

The fifth and final coin in the fairy tale series will be issued on 25 October 2007, inspired by The Nightingale. In that connection, a coin set with all five fairy tale coins will be issued.

The Nightingale coin is presented today at Hans Christian Andersen's House in Odense, which will also receive models of the five fairy tale coins.

The motif is designed by the sculptor, Professor Torben Ebbesen. Since The Nightingale is set in China, the coin shows the two Chinese characters for nightingale.

"The motif shows the nightingale perched on a blossoming cherry branch. It is both inside and outside a golden cage. The cherry branch is naturalistic, and the nightingale is one-dimensional like a Chinese paper cutting, but it comes alive when it flies in and out of another golden cage - your pocket," Torben Ebbesen explains.

The 10-krone Nightingale coin is issued in three versions: a gold coin in an edition of maximum 3,000, a silver coin in an edition of maximum 30,000 and an ordinary 10-krone coin. The prices are DKK 2,000 for the gold coin and DKK 200 for the silver coin. The ordinary 10-krone coin is minted in an edition of 1.2 million for ordinary circulation. The face of the coin shows a profile of the Queen by the sculptor, Professor Mogens Møller.

The coins in the fairy tale coin set are made in a proof edition minted with two strokes instead of one. The coin set is issued in an edition of maximum 30,000 at a price of DKK 250 per set. The coin set, and the new fairy tale coin, can be purchased from banks, Danmarks Nationalbank (Banking Services) and the website of The Royal Mint, www.kglmoent.dk, from 25 October 2007. Pictures of the coin can be downloaded from the website of The Royal Mint, which also contains a statement by Torben Ebbesen.

# Tables

**Symbols and Sources**

0 Magnitude nil or less than one half of unit employed.

… Data not available or of negligible interest.

Some of the most recent statistics may be provisional. Due to rounding-off there may be small differences between the sum of the individual figures and the totals stated.

Date of going to press: 16 October 2007.

The Tables section of this publication is thus based on more recent information than the equivalent section of the Danish edition.

Danmarks Nationalbank is the source for Tables 1-14, 16-18 and 23-24, while the Copenhagen Stock Exchange is the source for series of bond yields and the share-price index in Table 1. Statistics Denmark is the source for Tables 15 and 19-22. The calculations in Tables 20 and 24 have been made by Danmarks Nationalbank on the basis of data from Statistics Denmark and OECD.

INTEREST RATES AND SHARE-PRICE INDEX Table 1

| Effective end-of-year/ from | The Nationalbank's interest rates | | | End of period | Inter-bank interest rate, 3-months uncollat-eralized | Bond yields | | Share-price index OMXC20 (prev.KFX) |
|---|---|---|---|---|---|---|---|---|
| | Discount rate | Lending and certifi-cates of deposit | The ECB's minimum bid rate | | | 10-year central-govern-ment bond | 30-year mort-gage-credit bond | |
| | Per cent per annum | | | | Per cent per annum | | | 3.7.89 =100 |
| 2002 ..... | 2.75 | 2.95 | 2.75 | 2002 ..... | 3.00 | 4.45 | 5.47 | 199.49 |
| 2003 ..... | 2.00 | 2.15 | 2.00 | 2003 ..... | 2.16 | 4.46 | 5.45 | 244.35 |
| 2004 ..... | 2.00 | 2.15 | 2.00 | 2004 ..... | 2.16 | 3.87 | 5.07 | 286.66 |
| 2005 ..... | 2.25 | 2.40 | 2.25 | 2005 ..... | 2.46 | 3.30 | 4.39 | 393.52 |
| 2006 ..... | 3.50 | 3.75 | 3.50 | 2006 ..... | 3.81 | 3.95 | 5.24 | 441.48 |
| 2006 8 Dec .. | 3.50 | 3.75 | 3.50 | Mar 07 ..... | 4.06 | 4.05 | 5.23 | 466.59 |
| 2007 9 Mar .. | 3.75 | 4.00 | 3.75 | Apr 07 ..... | 4.16 | 4.23 | 5.33 | 485.46 |
| 7 Jun ... | 4.00 | 4.25 | 4.00 | May 07 ..... | 4.28 | 4.49 | 5.48 | 500.57 |
| | | | | Jun 07 ..... | 4.31 | 4.61 | 5.63 | 483.69 |
| | | | | Jul 07 ..... | 4.37 | 4.42 | 5.59 | 499.66 |
| | | | | Aug 07 ..... | 4.60 | 4.37 | 5.54 | 496.30 |
| 16 Oct ... | 4.00 | 4.25 | 4.00 | Sep 07 ..... | 4.65 | 4.51 | 5.56 | 499.93 |

SELECTED ITEMS FROM THE NATIONALBANK'S BALANCE SHEET — Table 2

| End of period | The foreign-exchange reserve (net) | Notes and coin in circulation | The central government's account with the Nationalbank | The banks' and the mortgage-credit institutes' net position with the Nationalbank | | | |
|---|---|---|---|---|---|---|---|
| | | | | Certificates of deposit | Deposits (current account) | Loans | Total net position |
| | Kr. billion | | | | | | |
| 2002 | 193.2 | 47.7 | 50.3 | 160.7 | 10.1 | 81.2 | 89.6 |
| 2003 | 224.2 | 49.7 | 44.0 | 157.3 | 12.9 | 48.0 | 122.2 |
| 2004 | 217.6 | 52.0 | 60.8 | 160.4 | 6.9 | 72.6 | 94.6 |
| 2005 | 212.3 | 56.2 | 56.4 | 207.6 | 12.8 | 135.3 | 85.1 |
| 2006 | 171.7 | 59.8 | 73.8 | 163.2 | 8.8 | 153.7 | 18.2 |
| Apr 07 | 170.6 | 58.7 | 53.7 | 151.5 | 19.8 | 129.9 | 41.4 |
| May 07 | 171.7 | 59.8 | 59.1 | 126.4 | 19.1 | 109.7 | 35.8 |
| Jun 07 | 178.2 | 60.0 | 59.4 | 143.6 | 6.9 | 109.2 | 41.3 |
| Jul 07 | 184.3 | 59.7 | 35.3 | 153.4 | 21.0 | 103.0 | 71.5 |
| Aug 07 | 194.1 | 59.1 | 61.8 | 197.1 | 4.7 | 147.7 | 54.1 |
| Sep 07 | 184.7 | 58.8 | 70.4 | 185.2 | 7.6 | 155.4 | 37.4 |

FACTORS AFFECTING THE BANKS' AND THE MORTGAGE-CREDIT INSTITUTES' NET POSITION WITH THE NATIONALBANK

Table 3

| | Central-government finance | | | Net purchase of foreign exchange by the National-bank | The National-bank's net bond purchases | Other factors | The banks' and the mortgage-credit institutes' net position with the Nationalbank | |
|---|---|---|---|---|---|---|---|---|
| | Domestic gross financing require-ment | Sales of domestic central-govern-ment securities | Liquidity effect | | | | Change in net position | End of period |
| | Kr. billion | | | | | | | |
| 2002 | 115.5 | 121.9 | -6.4 | 45.4 | -0.9 | -2.4 | 35.7 | 89.6 |
| 2003 | 99.7 | 94.1 | 5.6 | 31.0 | -1.0 | -3.1 | 32.5 | 122.2 |
| 2004 | 75.5 | 92.6 | -17.1 | -6.4 | -2.6 | -1.2 | -27.3 | 94.6 |
| 2005 | 39.5 | 30.9 | 8.6 | -15.4 | -2.2 | -0.5 | -9.5 | 85.1 |
| 2006 | -14.5 | 16.2 | -30.6 | -30.0 | -4.9 | -1.2 | -66.7 | 18.2 |
| Apr 07 | 5.6 | 1.4 | 4.2 | -0.2 | -0.1 | -0.6 | 3.3 | 41.4 |
| May 07 | -5.6 | -0.9 | -4.6 | 0.4 | -0.1 | -1.3 | -5.6 | 35.8 |
| Jun 07 | 5.1 | 5.1 | 0.0 | 5.4 | -0.5 | 0.5 | 5.5 | 41.3 |
| Jul 07 | 27.6 | 3.5 | 24.1 | 6.2 | 0.1 | -0.1 | 30.2 | 71.5 |
| Aug 07 | -30.8 | -4.3 | -26.5 | 9.8 | -0.1 | -0.5 | -17.4 | 54.1 |
| Sep 07 | -6.2 | 3.8 | -10.0 | -8.4 | 0.8 | 0.9 | -16.7 | 37.4 |

SELECTED ITEMS FROM THE CONSOLIDATED BALANCE SHEET OF THE MFI SECTOR

Table 4

| End of period | Total balance | Assets | | | | Liabilities | | Foreign assets, net [1] |
|---|---|---|---|---|---|---|---|---|
| | | Domestic lending | | Domestic securities | | | | |
| | | Public sector | Private sector | Bonds, etc. | Shares, etc. | Domestic deposits | Bonds, etc. issued | |
| | Kr. billion | | | | | | | |
| 2002 | 3,198.5 | 79.9 | 1,944.6 | 142.8 | 36.5 | 723.3 | 1,125.9 | -66.8 |
| 2003 | 3,359.0 | 89.6 | 2,062.0 | 123.3 | 43.3 | 754.7 | 1,157.9 | -70.7 |
| 2004 | 3,684.5 | 97.5 | 2,246.2 | 100.8 | 46.3 | 848.9 | 1,222.1 | -65.7 |
| 2005 | 4,228.2 | 107.8 | 2,584.2 | 75.9 | 53.5 | 971.3 | 1,318.2 | -172.9 |
| 2006 | 4,682.1 | 116.8 | 2,956.0 | 51.8 | 60.3 | 1,077.0 | 1,433.7 | -222.8 |
| Mar 07 | 4,871.4 | 115.7 | 3,056.8 | 42.0 | 65.9 | 1,130.9 | 1,456.8 | -261.1 |
| Apr 07 | 4,925.1 | 114.9 | 3,068.0 | 41.8 | 65.4 | 1,114.5 | 1,465.6 | -263.9 |
| May 07 | 5,007.8 | 115.1 | 3,091.4 | 46.9 | 66.3 | 1,129.3 | 1,451.1 | -283.7 |
| Jun 07 | 5,081.2 | 118.2 | 3,143.0 | 43.2 | 63.7 | 1,140.5 | 1,451.9 | -261.6 |
| Jul 07 | 5,081.1 | 117.1 | 3,142.9 | 44.9 | 62.4 | 1,154.2 | 1,472.6 | -245.2 |
| Aug 07 | 5,149.5 | 115.9 | 3,172.7 | 56.0 | 62.4 | 1,179.8 | 1,469.2 | -288.5 |
| | Change compared with previous year, per cent | | | | | | | |
| 2002 | ... | 6.6 | 5.1 | 7.3 | -1.4 | 5.4 | 7.4 | ... |
| 2003 | ... | 12.1 | 6.0 | -13.7 | 18.6 | 4.3 | 2.8 | ... |
| 2004 | ... | 8.8 | 8.9 | -18.2 | 7.0 | 12.5 | 5.5 | ... |
| 2005 | ... | 10.6 | 15.0 | -24.7 | 15.4 | 14.4 | 7.9 | ... |
| 2006 | ... | 8.3 | 14.4 | -31.8 | 12.8 | 10.9 | 8.8 | ... |
| Mar 07 | ... | 6.5 | 13.9 | -5.0 | 21.3 | 14.1 | 9.9 | ... |
| Apr 07 | ... | 3.2 | 13.3 | -16.3 | 18.7 | 10.5 | 11.5 | ... |
| May 07 | ... | 3.8 | 13.0 | -13.6 | 21.1 | 11.5 | 9.4 | ... |
| Jun 07 | ... | 2.5 | 13.0 | -22.9 | 15.6 | 11.4 | 8.9 | ... |
| Jul 07 | ... | 2.7 | 12.7 | -29.3 | 14.0 | 11.7 | 8.6 | ... |
| Aug 07 | ... | 3.8 | 12.5 | 1.9 | 12.4 | 12.6 | 7.9 | ... |

Note: The MFI sector includes Danish monetary financial institutions, i.e. banks and mortgage-credit institutes, other credit institutions, money-market funds and Danmarks Nationalbank.

[1] The net foreign assets of the MFI sector has been compiled as the difference between all assets and liabilities vis-a-vis non-residents.

MONEY STOCK Table 5

| End of period | Bank-notes and coin in circula-tion[1] | Deposits on demand | M1 | Time deposits with original maturity =<2 years | Deposits at notice with original maturity =< 3 months | M2 | Repur-chase agree-ments | Bonds, etc. issued with orginal maturity =< 2 years | M3 |
|---|---|---|---|---|---|---|---|---|---|
| | Kr. billion | | | | | | | | |
| 2002 ..... | 39.0 | 399.1 | 438.1 | 102.7 | 18.5 | 559.3 | 6.6 | 45.2 | 611.2 |
| 2003 ..... | 41.0 | 428.1 | 469.1 | 112.2 | 19.2 | 600.5 | 2.7 | 77.3 | 680.5 |
| 2004 ..... | 43.7 | 492.8 | 536.5 | 119.2 | 21.0 | 676.7 | 2.0 | 20.2 | 699.0 |
| 2005 ..... | 47.3 | 596.3 | 643.5 | 114.1 | 18.4 | 776.0 | 14.2 | 8.4 | 798.7 |
| 2006 ..... | 50.7 | 648.6 | 699.3 | 143.0 | 17.9 | 860.2 | 8.0 | 21.3 | 889.5 |
| Mar 07 ..... | 49.9 | 669.8 | 719.7 | 174.1 | 16.5 | 910.3 | 9.9 | 28.9 | 949.2 |
| Apr 07 ..... | 50.2 | 679.6 | 729.8 | 164.2 | 16.7 | 910.7 | 7.7 | 25.5 | 944.1 |
| May 07 ..... | 50.5 | 677.6 | 728.2 | 174.2 | 16.7 | 919.0 | 11.1 | 25.0 | 955.3 |
| Jun 07 ..... | 51.1 | 696.5 | 747.6 | 168.4 | 16.6 | 932.6 | 7.0 | 27.1 | 966.9 |
| Jul 07 ..... | 50.6 | 715.1 | 765.7 | 187.3 | 16.3 | 969.4 | 8.1 | 28.0 | 1,005.7 |
| Aug 07 ..... | 50.9 | 698.3 | 749.2 | 201.1 | 16.2 | 966.5 | 11.7 | 27.7 | 1,006.1 |
| | Change compared with previous year, per cent | | | | | | | | |
| 2002 ..... | ... | ... | 3.9 | ... | ... | 4.6 | ... | ... | 11.8 |
| 2003 ..... | ... | ... | 8.8 | ... | ... | 8.8 | ... | ... | 11.3 |
| 2004 ..... | ... | ... | 14.4 | ... | ... | 12.7 | ... | ... | 2.7 |
| 2005 ..... | ... | ... | 19.9 | ... | ... | 14.7 | ... | ... | 14.3 |
| 2006 ..... | ... | ... | 8.7 | ... | ... | 10.8 | ... | ... | 11.4 |
| Mar 07 ..... | ... | ... | 10.4 | ... | ... | 11.7 | ... | ... | 12.7 |
| Apr 07 ..... | ... | ... | 8.9 | ... | ... | 10.4 | ... | ... | 11.1 |
| May 07 ..... | ... | ... | 7.3 | ... | ... | 9.9 | ... | ... | 11.2 |
| Jun 07 ..... | ... | ... | 8.8 | ... | ... | 11.0 | ... | ... | 12.5 |
| Jul 07 ..... | ... | ... | 10.8 | ... | ... | 13.2 | ... | ... | 14.8 |
| Aug 07 ..... | ... | ... | 10.5 | ... | ... | 13.6 | ... | ... | 15.6 |

[1] Notes and coin in circulation, excluding the banks' holdings.

SELECTED ITEMS FROM THE BALANCE SHEET OF THE BANKS Table 6

| End of period | Total balance | Assets | | | | | Liabilities | |
|---|---|---|---|---|---|---|---|---|
| | | Lending to MFIs | Domestic lending | | | Holdings of securities | Loans from MFIs | Deposits |
| | | | Total | of which: | | | | |
| | | | | Households, etc. | Non-financial companies | | | |
| | Kr. billion | | | | | | | |
| 2002 | 2,040.1 | 419.8 | 599.2 | 253.5 | 231.3 | 620.9 | 685.6 | 764.7 |
| 2003 | 2,204.4 | 468.7 | 662.9 | 271.5 | 285.7 | 764.4 | 823.8 | 795.1 |
| 2004 | 2,418.4 | 495.6 | 754.8 | 324.8 | 309.6 | 780.3 | 823.1 | 908.0 |
| 2005 | 2,867.3 | 652.0 | 920.1 | 396.6 | 370.0 | 862.1 | 975.7 | 1,065.6 |
| 2006 | 3,242.0 | 715.0 | 1,124.3 | 475.0 | 458.0 | 889.6 | 1,133.8 | 1,148.3 |
| Mar 07 | 3,440.1 | 758.6 | 1,181.5 | 487.7 | 487.1 | 976.7 | 1,222.0 | 1,191.9 |
| Apr 07 | 3,466.1 | 764.8 | 1,178.7 | 489.0 | 488.4 | 965.5 | 1,171.5 | 1,198.0 |
| May 07 | 3,522.4 | 804.3 | 1,187.7 | 492.5 | 489.4 | 945.2 | 1,205.8 | 1,205.8 |
| Jun 07 | 3,591.3 | 825.3 | 1,222.1 | 507.9 | 511.5 | 943.1 | 1,187.5 | 1,264.4 |
| Jul 07 | 3,567.0 | 822.9 | 1,204.1 | 509.0 | 496.4 | 940.0 | 1,118.3 | 1,306.7 |
| Aug 07 | 3,663.9 | 787.9 | 1,216.2 | 513.0 | 508.3 | 1,023.4 | 1,208.0 | 1,297.8 |
| | Change compared with previous year, per cent | | | | | | | |
| 2002 | ... | 18.9 | 1.9 | 0.1 | 1.1 | 7.2 | 9.3 | 6.5 |
| 2003 | ... | 10.7 | 2.5 | 7.1 | 3.1 | 21.8 | 18.8 | 3.9 |
| 2004 | ... | 5.6 | 13.8 | 19.6 | 8.4 | 2.1 | -0.1 | 14.2 |
| 2005 | ... | 31.7 | 21.9 | 22.1 | 19.5 | 10.5 | 18.5 | 17.3 |
| 2006 | ... | 9.7 | 22.2 | 19.8 | 23.8 | 3.2 | 16.2 | 7.8 |
| Mar 07 | ... | 23.2 | 21.4 | 19.4 | 24.0 | 9.4 | 26.4 | 10.7 |
| Apr 07 | ... | 26.2 | 19.5 | 19.1 | 22.1 | 7.4 | 19.1 | 11.9 |
| May 07 | ... | 26.1 | 19.2 | 18.7 | 20.1 | 3.1 | 17.1 | 10.8 |
| Jun 07 | ... | 30.5 | 18.3 | 18.4 | 21.7 | 4.4 | 13.6 | 14.7 |
| Jul 07 | ... | 26.7 | 18.0 | 18.2 | 19.4 | 5.8 | 7.6 | 18.6 |
| Aug 07 | ... | 19.9 | 17.7 | 18.0 | 21.7 | 18.0 | 21.2 | 17.2 |

Note: Excluding Danish banks' units abroad. As from 2003 the lending is affected by an addition to the group of banks. The calculation of the rate of increase has been amended accordingly.

SELECTED ITEMS FROM THE BALANCE SHEET OF THE MORTGAGE-CREDIT INSTITUTES

Table 7

| End of period | Total balance | Assets | | | | | Liabilities | |
|---|---|---|---|---|---|---|---|---|
| | | Lending to MFIs | Domestic lending | | | Holdings of securities | Loans from MFIs | Bonds, etc. issued |
| | | | Total | of which: | | | | |
| | | | | House-holds, etc. | Non-financial compa-nies | | | |
| | Kr. billion | | | | | | | |
| 2002 | 1,721.8 | 77.3 | 1,285.1 | 988.0 | 259.2 | 338.5 | 58.9 | 1,584.2 |
| 2003 | 1,863.8 | 100.9 | 1,394.6 | 1,072.1 | 284.4 | 342.6 | 32.6 | 1,729.0 |
| 2004 | 2,097.4 | 91.2 | 1,489.9 | 1,141.3 | 307.9 | 481.2 | 26.1 | 1,952.5 |
| 2005 | 2,519.9 | 101.4 | 1,664.4 | 1,281.5 | 334.2 | 645.0 | 151.7 | 2,237.0 |
| 2006 | 2,699.9 | 245.1 | 1,834.8 | 1,407.7 | 370.8 | 574.1 | 226.5 | 2,297.9 |
| Mar 07 | 2,281.5 | 227.6 | 1,875.1 | 1,436.8 | 381.0 | 148.1 | 191.0 | 1,929.9 |
| Apr 07 | 2,283.8 | 208.4 | 1,888.8 | 1,446.7 | 384.9 | 146.8 | 191.5 | 1,921.7 |
| May 07 | 2,322.3 | 219.8 | 1,904.0 | 1,458.3 | 388.9 | 152.3 | 201.1 | 1,921.5 |
| Jun 07 | 2,370.0 | 248.9 | 1,920.9 | 1,469.8 | 392.5 | 163.0 | 209.5 | 1,933.6 |
| Jul 07 | 2,378.4 | 237.1 | 1,937.9 | 1,482.0 | 397.4 | 160.1 | 214.2 | 1,945.8 |
| Aug 07 | 2,419.5 | 262.1 | 1,954.4 | 1,493.1 | 401.1 | 152.1 | 231.9 | 1,970.1 |
| | Change compared with previous year, per cent | | | | | | | |
| 2002 | ... | -12.5 | 7.8 | 8.9 | 5.0 | 20.6 | 6.7 | 11.5 |
| 2003 | ... | 30.6 | 8.5 | 8.5 | 9.7 | 1.2 | -44.8 | 9.1 |
| 2004 | ... | -9.6 | 6.8 | 6.5 | 8.3 | 40.4 | -19.9 | 12.9 |
| 2005 | ... | 11.1 | 11.7 | 12.3 | 8.5 | 34.0 | 481.5 | 14.6 |
| 2006 | ... | 141.7 | 10.2 | 9.9 | 10.9 | -11.0 | 49.3 | 2.7 |
| Mar 07 | ... | 44.2 | 9.7 | 9.3 | 9.8 | -4.2 | 65.8 | 7.6 |
| Apr 07 | ... | 65.6 | 9.6 | 9.1 | 10.1 | 4.3 | 78.8 | 8.9 |
| May 07 | ... | 82.4 | 9.4 | 8.9 | 10.8 | 4.4 | 76.2 | 7.9 |
| Jun 07 | ... | 54.1 | 9.5 | 8.9 | 10.9 | 2.1 | 73.4 | 7.6 |
| Jul 07 | ... | 80.0 | 9.4 | 8.8 | 10.4 | 3.2 | 76.9 | 7.0 |
| Aug 07 | ... | 69.8 | 9.4 | 8.9 | 10.8 | -4.4 | 72.2 | 6.7 |

LENDING TO RESIDENTS BY THE BANKS AND THE MORTGAGE-CREDIT INSTITUTES Table 8

| End of period | Total lending | | | The banks' lending | | | The mortgage-credit institutes' lending | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | Households, etc. | Business | Total | Households, etc. | Business | Total | Households, etc. | Business |
| | Kr. billion | | | | | | | | |
| 2002 ..... | 1,917.0 | 1,241.6 | 619.2 | 631.8 | 253.5 | 353.0 | 1,285.1 | 988.0 | 266.2 |
| 2003 ..... | 2,087.7 | 1,343.6 | 683.1 | 693.2 | 271.5 | 392.3 | 1,394.6 | 1,072.1 | 290.9 |
| 2004 ..... | 2,276.0 | 1,466.1 | 741.0 | 786.0 | 324.8 | 426.8 | 1,489.9 | 1,141.3 | 314.2 |
| 2005 ..... | 2,614.5 | 1,678.0 | 852.2 | 950.2 | 396.6 | 510.4 | 1,664.4 | 1,281.5 | 341.7 |
| 2006 ..... | 3,000.8 | 1,882.7 | 1,015.2 | 1,166.0 | 475.0 | 636.9 | 1,834.8 | 1,407.7 | 378.3 |
| Mar 07 ..... | 3,092.7 | 1,924.5 | 1,065.6 | 1,217.6 | 487.7 | 676.6 | 1,875.1 | 1,436.8 | 389.0 |
| Apr 07 ..... | 3,102.2 | 1,935.6 | 1,065.1 | 1,213.4 | 489.0 | 672.2 | 1,888.8 | 1,446.7 | 392.9 |
| May 07 ..... | 3,126.4 | 1,950.7 | 1,074.2 | 1,222.5 | 492.5 | 677.6 | 1,904.0 | 1,458.3 | 396.7 |
| Jun 07 ..... | 3,177.7 | 1,977.6 | 1,095.6 | 1,256.8 | 507.9 | 695.3 | 1,920.9 | 1,469.8 | 400.3 |
| Jul 07 ..... | 3,176.8 | 1,991.0 | 1,082.3 | 1,238.9 | 509.0 | 676.4 | 1,937.9 | 1,482.0 | 405.9 |
| Aug 07 ..... | 3,205.3 | 2,006.1 | 1,095.2 | 1,250.9 | 513.0 | 685.1 | 1,954.4 | 1,493.1 | 410.1 |
| | Change compared with previous year, per cent | | | | | | | | |
| 2002 ..... | 5.7 | 6.9 | 4.1 | 1.5 | 0.1 | 3.1 | 7.8 | 8.9 | 5.5 |
| 2003 ..... | 6.1 | 8.2 | 2.7 | 1.5 | 7.1 | -1.7 | 8.5 | 8.5 | 9.3 |
| 2004 ..... | 9.0 | 9.1 | 8.5 | 13.4 | 19.6 | 8.8 | 6.8 | 6.5 | 8.0 |
| 2005 ..... | 14.9 | 14.5 | 15.0 | 20.9 | 22.1 | 19.6 | 11.7 | 12.3 | 8.8 |
| 2006 ..... | 14.8 | 12.2 | 19.1 | 22.7 | 19.8 | 24.8 | 10.2 | 9.9 | 10.7 |
| Mar 07 ..... | 14.0 | 11.7 | 17.8 | 21.4 | 19.4 | 23.0 | 9.7 | 9.3 | 9.7 |
| Apr 07 ..... | 13.1 | 11.4 | 16.2 | 19.2 | 19.1 | 20.1 | 9.6 | 9.1 | 10.0 |
| May 07 ..... | 12.9 | 11.2 | 16.1 | 18.9 | 18.7 | 19.6 | 9.4 | 8.9 | 10.5 |
| Jun 07 ..... | 12.8 | 11.2 | 16.0 | 18.1 | 18.4 | 19.2 | 9.5 | 8.9 | 10.7 |
| Jul 07 ..... | 12.4 | 11.1 | 15.1 | 17.5 | 18.2 | 18.1 | 9.4 | 8.8 | 10.4 |
| Aug 07 ..... | 12.3 | 11.1 | 14.9 | 17.3 | 18.0 | 17.4 | 9.4 | 8.9 | 10.9 |

Note: Including lending in Danish banks' units abroad. As from 2003 the banks' lending is affected by an addition to the group of banks. The calculation of the rate of increase has been amended accordingly.

THE MORTGAGE-CREDIT INSTITUTES' LENDING BROKEN DOWN BY TYPE Table 9

| End of period | Index-linked lending | Fixed-rate lending | Adjustable-rate lending | | Total | of which: | |
|---|---|---|---|---|---|---|---|
| | | | Total | of which =<1 year | | Lending in foreign currency | Instalment-free lending [1] |
| | Kr. billion | | | | | | |
| 2002 | 103.6 | 816.0 | 365.0 | 200.4 | 1,284.6 | 82.5 | ... |
| 2003 | 99.5 | 795.0 | 499.0 | 250.0 | 1,393.5 | 85.7 | 44.4 |
| 2004 | 94.6 | 737.6 | 656.1 | 378.4 | 1,488.4 | 84.9 | 170.5 |
| 2005 | 88.6 | 760.1 | 814.1 | 576.2 | 1,662.8 | 80.5 | 315.5 |
| 2006 | 83.5 | 878.4 | 870.7 | 639.5 | 1,832.7 | 85.7 | 432.2 |
| Mar 07 | 84.2 | 904.9 | 883.8 | 654.5 | 1,872.9 | 90.8 | 456.7 |
| Apr 07 | 84.4 | 939.5 | 862.7 | 632.4 | 1,886.6 | 92.4 | 464.6 |
| May 07 | 84.1 | 920.3 | 898.0 | 665.9 | 1,902.4 | 93.9 | 474.2 |
| Jun 07 | 81.7 | 934.1 | 902.8 | 669.2 | 1,918.6 | 96.8 | 486.4 |
| Jul 07 | 81.6 | 1,006.3 | 847.3 | 612.5 | 1,935.2 | 99.8 | 498.2 |
| Aug 07 | 81.6 | 1,018.2 | 851.8 | 615.3 | 1,951.6 | 102.6 | 507.9 |

Note: The Table includes the mortgage-credit lending to residents only, whereas Tables 7 and 8 include the institutes' total lending to residents.

[1] The mortgage-credit institutes' instalment-free lending to owner-occupied dwellings.

THE BANKS' EFFECTIVE INTEREST RATES Table 10

| | Lending | | | | Deposits | | | |
|---|---|---|---|---|---|---|---|---|
| | All sectors | Households, etc. | Non-financial companies | Financial companies | All sectors | Households, etc. | Non-financial companies | Financial companies |
| | Per cent, per annum | | | | | | | |
| Q1 05 | 5.1 | 6.7 | 4.8 | 2.8 | 1.7 | 1.3 | 1.7 | 2.1 |
| Q2 05 | 4.9 | 6.5 | 4.6 | 2.7 | 1.7 | 1.3 | 1.7 | 2.1 |
| Q3 05 | 4.8 | 6.3 | 4.5 | 2.6 | 1.7 | 1.3 | 1.7 | 2.2 |
| Q4 05 | 4.7 | 6.2 | 4.4 | 2.6 | 1.7 | 1.3 | 1.8 | 2.2 |
| Q1 06 | 4.8 | 6.2 | 4.5 | 2.8 | 1.9 | 1.5 | 2.0 | 2.4 |
| Q2 06 | 5.0 | 6.4 | 4.7 | 3.1 | 2.1 | 1.8 | 2.3 | 2.6 |
| Q3 06 | 5.2 | 6.6 | 5.0 | 3.3 | 2.4 | 2.1 | 2.5 | 2.8 |
| Q4 06 | 5.4 | 6.8 | 5.2 | 3.5 | 2.7 | 2.4 | 2.9 | 3.2 |
| Q1 07 | 5.7 | 7.1 | 5.5 | 3.6 | 3.1 | 2.8 | 3.2 | 3.4 |
| Q2 07 | 5.9 | 7.2 | 5.7 | 4.0 | 3.4 | 3.1 | 3.4 | 3.8 |
| Mar 07 | 5.7 | 7.1 | 5.5 | 3.8 | 3.3 | 3.0 | 3.3 | 3.6 |
| Apr 07 | 5.9 | 7.2 | 5.6 | 4.0 | 3.3 | 3.0 | 3.3 | 3.7 |
| May 07 | 5.9 | 7.2 | 5.7 | 4.0 | 3.3 | 3.0 | 3.3 | 3.7 |
| Jun 07 | 6.0 | 7.3 | 5.8 | 4.1 | 3.5 | 3.2 | 3.6 | 3.9 |
| Jul 07 | 6.1 | 7.4 | 5.9 | 4.2 | 3.6 | 3.3 | 3.6 | 3.9 |
| Aug 07 | 6.1 | 7.4 | 5.9 | 4.0 | 3.6 | 3.3 | 3.6 | 4.0 |

SELECTED ITEMS FROM THE BALANCE SHEET OF THE INVESTMENT ASSOCIATIONS

Table 11

| End of period | Total balance | Assets: Holdings of securities: Bonds, etc. | Assets: Holdings of securities: Shares, etc. | Liabilities: Certificates issued by investment associations by owner: Households, etc. | Liabilities: Certificates issued by investment associations by owner: Insurance companies and pension funds | Liabilities: Certificates issued by investment associations by owner: Other residents | Liabilities: Certificates issued by investment associations by owner: Abroad |
|---|---|---|---|---|---|---|---|
| | Kr. billion | | | | | | |
| 2002 | 288.9 | 180.8 | 89.5 | 153.6 | 68.9 | 52.7 | 8.9 |
| 2003 | 367.1 | 237.2 | 108.7 | 188.2 | 103.2 | 60.4 | 12.3 |
| 2004 | 574.2 | 326.5 | 164.6 | 213.1 | 163.4 | 180.1 | 15.3 |
| 2005 | 794.7 | 412.1 | 286.4 | 265.7 | 236.5 | 263.0 | 24.4 |
| 2006 | 924.7 | 431.8 | 385.4 | 294.3 | 289.4 | 305.3 | 28.8 |
| Q2 06 | 835.0 | 404.0 | 327.8 | 269.6 | 259.1 | 277.0 | 24.6 |
| Q3 06 | 879.0 | 424.7 | 351.6 | 282.4 | 272.6 | 292.6 | 25.9 |
| Q4 06 | 924.7 | 431.8 | 385.4 | 294.3 | 289.4 | 305.3 | 28.8 |
| Q1 07 | 952.2 | 437.2 | 393.6 | 297.2 | 302.6 | 312.0 | 29.6 |
| Q2 07 | 980.2 | 429.8 | 426.7 | 299.4 | 319.8 | 321.0 | 30.0 |
| | Quarterly transactions, kr. billion | | | | | | |
| Q2 06 | ... | 5.0 | 14.6 | 3.4 | 11.7 | 4.7 | -1.8 |
| Q3 06 | ... | 9.7 | 5.8 | 4.6 | 1.0 | 3.8 | 0.2 |
| Q4 06 | ... | 9.2 | 5.3 | 1.7 | 3.3 | 0.0 | 1.2 |
| Q1 07 | ... | 7.5 | 1.3 | -0.1 | 9.9 | 5.5 | 0.5 |
| Q2 07 | ... | 5.5 | 9.2 | 2.6 | 12.8 | 6.8 | -3.4 |

SECURITIES ISSUED BY RESIDENTS BY OWNER'S HOME COUNTRY — Table 12

| End of period | Bonds, etc. | | | | | | Shares | |
|---|---|---|---|---|---|---|---|---|
| | Total | | of which: | | | | | |
| | | | Central-government securities | | Mortgage-credit bonds | | | |
| | Denmark | Abroad | Denmark | Abroad | Denmark | Abroad | Denmark | Abroad |
| | Market value, kr. billion | | | | | | | |
| 2002 | 1,999.0 | 414.6 | 476.3 | 224.3 | 1,413.0 | 188.1 | 384.3 | 162.3 |
| 2003 | 2,143.3 | 400.0 | 505.9 | 191.1 | 1,524.7 | 207.2 | 488.1 | 208.6 |
| 2004 | 2,379.2 | 434.4 | 498.8 | 213.6 | 1,766.4 | 218.1 | 593.1 | 243.5 |
| 2005 | 2,559.7 | 461.2 | 434.8 | 205.1 | 2,002.9 | 252.5 | 827.1 | 298.2 |
| 2006 | 2,548.0 | 457.9 | 380.3 | 172.2 | 2,041.2 | 279.5 | 950.9 | 352.5 |
| Apr 07 | 2,099.7 | 450.9 | 343.2 | 170.8 | 1,631.1 | 272.3 | 1,032.4 | 407.7 |
| May 07 | 2,088.7 | 452.4 | 332.2 | 173.1 | 1,632.1 | 270.2 | 1,072.1 | 432.3 |
| Jun 07 | 2,093.3 | 461.5 | 327.8 | 176.4 | 1,640.0 | 275.8 | 1,037.2 | 427.7 |
| Jul 07 | 2,189.5 | 474.0 | 338.3 | 170.9 | 1,725.9 | 293.0 | 1,072.3 | 417.7 |
| Aug 07 | 2,230.7 | 451.8 | 337.5 | 167.0 | 1,766.8 | 275.4 | 1,057.7 | 410.9 |
| Sep 07 | 2,270.8 | 426.9 | 326.8 | 176.9 | 1,815.5 | 240.8 | 1,053.8 | 416.0 |

HOUSEHOLDS' FINANCIAL ASSETS AND LIABILITIES — Table 13

| End of period | Assets | | | | | Liabilities | | |
|---|---|---|---|---|---|---|---|---|
| | Currency and bank deposits, etc. | Bonds, etc. | Shares and certificates issued by investment associations, etc. | Life-insurance and pension-scheme savings, etc. | Total | Loans, etc. | Net financial assets | Total |
| | Kr. billion | | | | | | | |
| 2002 | 583 | 188 | 319 | 1,171 | 2,261 | 1,426 | 835 | 2,262 |
| 2003 | 620 | 166 | 399 | 1,262 | 2,448 | 1,505 | 944 | 2,449 |
| 2004 | 668 | 174 | 472 | 1,403 | 2,718 | 1,639 | 1,080 | 2,718 |
| 2005 | 753 | 172 | 612 | 1,616 | 3,153 | 1,827 | 1,327 | 3,153 |
| 2006 | 805 | 180 | 709 | 1,681 | 3,375 | 2,025 | 1,350 | 3,375 |
| Q2 06 | 786 | 169 | 629 | 1,555 | 3,140 | 1,917 | 1,223 | 3,140 |
| Q3 06 | 789 | 175 | 672 | 1,643 | 3,278 | 1,972 | 1,306 | 3,278 |
| Q4 06 | 805 | 180 | 709 | 1,681 | 3,375 | 2,025 | 1,350 | 3,375 |
| Q1 07 | 822 | 177 | 727 | 1,699 | 3,426 | 2,078 | 1,348 | 3,426 |
| Q2 07 | 855 | 181 | 743 | 1,687 | 3,467 | 2,104 | 1,363 | 3,467 |

COMPANIES' FINANCIAL ASSETS AND LIABILITIES — Table 14

| End of period | Assets | | | | Liabilities | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Debt | | | | |
| | Currency, bank deposits and granted credits, etc. | Bonds, etc. | Shares and certificates issued by investment associations, etc. | Total | Loans, etc. | Bonds, etc. issued | Shares, etc. issued | Net financial assets | Total |
| | Kr. billion | | | | | | | | |
| 2002 | 531 | 117 | 640 | 1,288 | 1,138 | 96 | 941 | -886 | 1,288 |
| 2003 | 664 | 121 | 643 | 1,428 | 1,159 | 109 | 1,131 | -971 | 1,428 |
| 2004 | 652 | 164 | 746 | 1,562 | 1,221 | 142 | 1,249 | -1,050 | 1,562 |
| 2005 | 739 | 167 | 972 | 1,876 | 1,354 | 143 | 1,491 | -1,111 | 1,876 |
| 2006 | 754 | 147 | 1,077 | 1,978 | 1,569 | 140 | 1,569 | -1,300 | 1,978 |
| Q2 06 | 800 | 142 | 979 | 1,922 | 1,485 | 146 | 1,431 | -1,140 | 1,922 |
| Q3 06 | 785 | 147 | 1,029 | 1,961 | 1,530 | 145 | 1,499 | -1,213 | 1,961 |
| Q4 06 | 754 | 147 | 1,077 | 1,978 | 1,569 | 140 | 1,569 | -1,300 | 1,978 |
| Q1 07 | 796 | 141 | 1,103 | 2,040 | 1,645 | 139 | 1,631 | -1,375 | 2,041 |
| Q2 07 | 886 | 134 | 1,167 | 2,188 | 1,661 | 134 | 1,754 | -1,361 | 2,188 |

Note: Companies are defined as non-financial companies.

CURRENT ACCOUNT OF THE BALANCE OF PAYMENTS (NET REVENUES) Table 15

| | Goods (fob) | Services | Goods and services | Wages and property income | Current transfers | Total current account |
|---|---|---|---|---|---|---|
| | Kr. billion | | | | | |
| 2002 | 64.3 | 17.8 | 82.1 | -24.7 | -23.3 | 34.1 |
| 2003 | 65.9 | 23.2 | 89.2 | -16.8 | -24.0 | 48.3 |
| 2004 | 54.5 | 19.8 | 74.4 | -2.4 | -27.7 | 44.2 |
| 2005 | 44.7 | 38.3 | 83.0 | 9.9 | -24.7 | 68.2 |
| 2006 | 16.0 | 38.8 | 54.8 | 15.5 | -26.9 | 43.4 |
| Sep 05 - Aug 06 | 27.5 | 41.5 | 68.9 | 16.8 | -26.1 | 59.6 |
| Sep 06 - Aug 07 | 1.7 | 33.4 | 35.1 | 14.7 | -26.0 | 23.8 |
| Mar 07 | 0.6 | 1.4 | 2.0 | -2.5 | -2.7 | -3.3 |
| Apr 07 | -1.4 | 3.5 | 2.1 | 2.4 | -2.1 | 2.4 |
| May 07 | -1.1 | 2.3 | 1.2 | 4.3 | -1.6 | 3.9 |
| Jun 07 | 2.0 | 2.8 | 4.8 | 2.3 | -1.5 | 5.6 |
| Jul 07 | 0.3 | 3.3 | 3.6 | 2.1 | -1.6 | 4.1 |
| Aug 07 | 0.1 | 6.3 | 6.4 | 1.5 | -1.4 | 6.5 |

Note: As of 2005 the compilation is based on new sources and methodologies resulting in breaks in data.

FINANCIAL ACCOUNT OF THE BALANCE OF PAYMENTS
(NET PAYMENTS FROM ABROAD) Table 16

| | Current account and capital account, etc., total | Capital import | | | | Other [1] | Danmarks Nationalbank's transactions with abroad [2] |
|---|---|---|---|---|---|---|---|
| | | Direct investments | | Portfolio investments | Other capital import | | |
| | | Danish abroad | Foreign in Denmark | | | | |
| | Kr. billion | | | | | | |
| 2002 | 35.3 | -44.9 | 52.3 | 1.2 | 21.3 | -19.8 | 45.4 |
| 2003 | 48.3 | -8.0 | 17.8 | -98.3 | 72.5 | -1.5 | 30.8 |
| 2004 | 44.4 | 62.1 | -62.6 | -87.1 | -22.5 | 59.5 | -6.2 |
| 2005 | 69.8 | -97.1 | 77.3 | -67.6 | 23.7 | -17.9 | -11.8 |
| 2006 | 43.2 | -50.5 | 21.5 | -110.9 | 82.3 | -23.9 | -38.3 |
| Sep 05 - Aug 06 | 58.9 | -100.6 | 64.2 | -46.0 | 1.0 | -25.4 | -47.9 |
| Sep 06 - Aug 07 | 23.5 | -64.6 | 5.3 | -14.9 | 31.3 | 34.8 | 15.4 |
| Mar 07 | -3.3 | -16.3 | 5.5 | 82.8 | -58.5 | -6.3 | 3.9 |
| Apr 07 | 2.4 | -11.7 | 3.6 | 1.4 | -18.4 | 12.3 | -10.4 |
| May 07 | 3.9 | -4.5 | 6.7 | -10.7 | -1.4 | 7.4 | 1.4 |
| Jun 07 | 5.6 | -7.9 | -5.6 | 40.6 | -31.4 | 5.3 | 6.6 |
| Jul 07 | 4.1 | -5.6 | -10.5 | -8.2 | 16.4 | 9.9 | 6.1 |
| Aug 07 | 6.5 | -3.8 | 4.1 | -13.8 | 17.7 | -0.5 | 10.2 |

[1] Including errors and omissions and until end-December 2004 unrecorded trade credits.

[2] As from 2005 transactions on *all* Danmarks Nationalbank's accounts with abroad. Until end-2004 only transactions on accounts included by compilation of the foreign-exchange reserve, published by press release on the 2nd banking day of each month and included in Table 2 of this section.

PORTFOLIO INVESTMENTS OF THE BALANCE OF PAYMENTS
(NET PAYMENTS FROM ABROAD) Table 17

| | Danish securities | | | Foreign securities | | |
|---|---|---|---|---|---|---|
| | Krone-denominated bonds, etc. | Foreign currency denominated bonds, etc. | Shares | Bonds, etc. | Shares | Total |
| | Kr. billion | | | | | |
| 2002 | 8.5 | 24.0 | 4.9 | -34.8 | -1.4 | 1.2 |
| 2003 | -30.3 | 66.3 | 9.1 | -121.5 | -21.9 | -98.3 |
| 2004 | -6.2 | 56.9 | 9.7 | -104.4 | -43.0 | -87.1 |
| 2005 | 20.8 | 122.5 | -19.2 | -107.5 | -84.3 | -67.6 |
| 2006 | 9.4 | 69.3 | -34.6 | -21.8 | -133.2 | -110.9 |
| Mar 07 | 13.1 | 30.8 | -1.1 | 46.0 | -6.0 | 82.8 |
| Apr 07 | -3.9 | 9.4 | 7.8 | -6.7 | -5.2 | 1.4 |
| May 07 | 7.1 | 0.9 | 2.7 | -16.6 | -4.8 | -10.7 |
| Jun 07 | 15.5 | 2.8 | 4.0 | -9.9 | 28.2 | 40.6 |
| Jul 07 | 8.8 | -20.6 | 7.3 | 0.4 | -4.0 | -8.2 |
| Aug 07 | -22.0 | 15.5 | -5.8 | 9.4 | -10.8 | -13.8 |

Note: A negative sign (-) indicates residents' net purchase of foreign securities, or non-residents' net sale of Danish securities.

DENMARK'S EXTERNAL ASSETS AND LIABILITIES — Table 18

| End of period | Direct investments | | Portfolio investments | | Financial derivatives, net | Other investments | | | Danmarks Nationalbank | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | Equity | Inter-company debt, etc. | Shares, etc. | Bonds, etc. | | Trade credits | Loans and deposits | Other | | |
| | Kr. billion | | | | | | | | | |
| **Assets** | | | | | | | | | | |
| 2002 ..... | 465 | 148 | 253 | 359 | 14 | 57 | 451 | 34 | 199 | 1,979 |
| 2003 ..... | 413 | 198 | 309 | 446 | 17 | 57 | 518 | 31 | 230 | 2,220 |
| 2004 ..... | 471 | 220 | 369 | 547 | 48 | 34 | 584 | 20 | 223 | 2,515 |
| 2005 ..... | 567 | 253 | 556 | 684 | 85 | 37 | 720 | 19 | 217 | 3,136 |
| 2006 ..... | 589 | 255 | 739 | 669 | 47 | 41 | 826 | 30 | 178 | 3,374 |
| Q2 06 ..... | 562 | 288 | 638 | 609 | 37 | 43 | 742 | 26 | 186 | 3,131 |
| Q3 06 ..... | 580 | 308 | 675 | 641 | 60 | 40 | 809 | 27 | 185 | 3,325 |
| Q4 06 ..... | 589 | 255 | 739 | 669 | 47 | 41 | 826 | 30 | 178 | 3,374 |
| Q1 07 ..... | 624 | 255 | 802 | 653 | 19 | 46 | 881 | 31 | 185 | 3,496 |
| Q2 07 ..... | 642 | 272 | 817 | 675 | -2 | 49 | 945 | 29 | 181 | 3,609 |
| **Liabilities** | | | | | | | | | | |
| 2002 ..... | 393 | 194 | 146 | 756 | • | 30 | 669 | 13 | 4 | 2,206 |
| 2003 ..... | 434 | 162 | 186 | 762 | • | 28 | 801 | 13 | 4 | 2,391 |
| 2004 ..... | 429 | 208 | 241 | 857 | • | 20 | 816 | 20 | 2 | 2,593 |
| 2005 ..... | 503 | 231 | 311 | 1,019 | • | 27 | 968 | 22 | 3 | 3,082 |
| 2006 ..... | 496 | 270 | 358 | 1,059 | • | 32 | 1,138 | 34 | 4 | 3,391 |
| Q2 06 ..... | 519 | 249 | 274 | 1,012 | • | 29 | 1,062 | 29 | 1 | 3,177 |
| Q3 06 ..... | 519 | 277 | 298 | 1,055 | • | 30 | 1,107 | 33 | 2 | 3,322 |
| Q4 06 ..... | 496 | 270 | 358 | 1,059 | • | 32 | 1,138 | 34 | 4 | 3,391 |
| Q1 07 ..... | 504 | 277 | 387 | 1,125 | • | 33 | 1,221 | 35 | 1 | 3,583 |
| Q2 07 ..... | 524 | 265 | 428 | 1,141 | • | 35 | 1,236 | 34 | 1 | 3,665 |
| **Net assets** | | | | | | | | | | |
| 2002 ..... | 73 | -45 | 106 | -397 | 14 | 27 | -218 | 20 | 195 | -225 |
| 2003 ..... | -21 | 36 | 123 | -315 | 17 | 29 | -283 | 19 | 226 | -170 |
| 2004 ..... | 42 | 12 | 128 | -310 | 48 | 14 | -233 | 0 | 221 | -78 |
| 2005 ..... | 64 | 22 | 245 | -335 | 85 | 10 | -248 | -3 | 214 | 54 |
| 2006 ..... | 93 | -15 | 381 | -390 | 47 | 9 | -312 | -4 | 174 | -17 |
| Q2 06 ..... | 43 | 39 | 364 | -403 | 37 | 14 | -320 | -3 | 185 | -46 |
| Q3 06 ..... | 62 | 31 | 377 | -414 | 60 | 10 | -298 | -6 | 182 | 3 |
| Q4 06 ..... | 93 | -15 | 381 | -390 | 47 | 9 | -312 | -4 | 174 | -17 |
| Q1 07 ..... | 120 | -22 | 415 | -472 | 19 | 13 | -340 | -4 | 184 | -87 |
| Q2 07 ..... | 118 | 7 | 388 | -466 | -2 | 15 | -291 | -5 | 180 | -56 |

Note: As a key principle, the market value has been used for the compilation.

GDP BY TYPE OF EXPENDITURE — Table 19

| | GDP | Final domestic demand | | | | | Exports of goods and services | Imports of goods and services |
|---|---|---|---|---|---|---|---|---|
| | | Private consumption | General-government consumption | Gross fixed capital formation | Change in inventories | Total | | |
| | Kr. billion | | | | | | | |
| 2002 | 1,372.7 | 652.3 | 360.2 | 270.8 | 9.3 | 1,292.6 | 648.3 | 568.2 |
| 2003 | 1,400.7 | 666.9 | 371.2 | 271.8 | 3.2 | 1,313.1 | 635.1 | 547.6 |
| 2004 | 1,459.4 | 708.5 | 388.5 | 285.5 | 4.9 | 1,387.4 | 666.8 | 594.8 |
| 2005 | 1,552.0 | 754.1 | 401.4 | 319.2 | 3.9 | 1,478.6 | 757.1 | 683.8 |
| 2006 | 1,642.2 | 793.5 | 419.6 | 370.8 | 9.6 | 1,593.6 | 853.1 | 804.5 |
| Q2 06 | 415.5 | 199.6 | 104.4 | 94.1 | 3.2 | 401.2 | 213.0 | 198.8 |
| Q3 06 | 410.2 | 193.8 | 104.8 | 91.4 | 3.7 | 393.6 | 217.3 | 200.7 |
| Q4 06 | 426.6 | 207.7 | 108.8 | 102.7 | 0.6 | 419.8 | 222.4 | 215.6 |
| Q1 07 | 408.3 | 199.8 | 106.1 | 95.7 | 4.8 | 406.4 | 212.1 | 210.2 |
| Q2 07 | 423.6 | 204.6 | 108.6 | 100.2 | 3.0 | 416.4 | 215.3 | 208.1 |
| | Real growth compared with previous year, per cent | | | | | | | |
| 2002 | 0.5 | 1.5 | 2.1 | 0.1 | ... | 1.7 | 4.1 | 7.5 |
| 2003 | 0.4 | 1.0 | 0.7 | -0.2 | ... | 0.0 | -1.0 | -1.6 |
| 2004 | 2.1 | 4.7 | 1.6 | 5.6 | ... | 4.1 | 2.2 | 7.0 |
| 2005 | 3.1 | 4.2 | 1.1 | 9.6 | ... | 4.4 | 7.3 | 10.8 |
| 2006 | 3.5 | 3.1 | 1.5 | 13.0 | ... | 5.3 | 10.1 | 14.4 |
| Q2 06 | 2.5 | 3.2 | 1.1 | 12.4 | ... | 4.6 | 8.4 | 13.4 |
| Q3 06 | 3.0 | 1.5 | 1.3 | 13.0 | ... | 5.5 | 7.9 | 13.3 |
| Q4 06 | 3.5 | 2.6 | 1.9 | 12.1 | ... | 5.1 | 9.6 | 13.2 |
| Q1 07 | 2.7 | 1.9 | 1.8 | 12.5 | ... | 5.1 | 5.4 | 9.9 |
| Q2 07 | 0.6 | 0.8 | 1.8 | 2.6 | ... | 1.4 | 1.1 | 2.8 |
| | Real growth compared with previous quarter (seasonally adjusted), per cent | | | | | | | |
| Q2 06 | 1.6 | 1.4 | 0.2 | 6.2 | ... | 2.2 | 2.8 | 4.5 |
| Q3 06 | 0.2 | -1.0 | 0.6 | 1.1 | ... | -0.1 | 0.1 | 0.8 |
| Q4 06 | 0.5 | 0.6 | 0.8 | 2.2 | ... | 1.1 | 1.9 | 3.4 |
| Q1 07 | 0.3 | 0.9 | 0.2 | 2.4 | ... | 1.1 | 0.4 | 0.8 |
| Q2 07 | -0.4 | 0.2 | 0.3 | -2.9 | ... | -0.6 | -1.3 | -2.2 |

EU-HARMONIZED INDEX OF CONSUMER PRICES (HICP) AND UNDERLYING INFLATION (IMI) Table 20

| | HICP | | | | | | | Index of net retail prices[1] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Subcomponents: | | | | | | | | |
| | | | | | Administered prices | | HICP excl. energy, food and administered prices[3] | Index of net retail prices excl. energy, food and administered prices[3] | Split into[4]: | |
| | Total | Energy | Food | Core inflation[2] | Rent | Public services | | | Import content[5] | IMI[6] |
| | Weights, per cent | | | | | | | | | |
| | 100 | 10.8 | 19.6 | 69.6 | 7.7 | 4.5 | 57.4 | 50.7 | 16.2 | 34.5 |
| | Year-on-year growth, per cent | | | | | | | | | |
| 2002 | 2.4 | 2.1 | 1.8 | 2.6 | 2.6 | 5.0 | 2.5 | 2.5 | 0.1 | 3.6 |
| 2003 | 2.0 | 0.9 | 0.7 | 2.6 | 2.7 | 8.1 | 2.1 | 1.9 | 0.4 | 2.6 |
| 2004 | 0.9 | 2.6 | -2.1 | 1.5 | 2.8 | 4.8 | 1.1 | 0.8 | 1.1 | 0.6 |
| 2005 | 1.7 | 7.6 | 1.0 | 1.0 | 2.4 | 3.2 | 0.6 | 0.7 | 3.4 | -0.6 |
| 2006 | 1.9 | 5.3 | 2.2 | 1.2 | 2.1 | 0.9 | 1.1 | 1.3 | 3.1 | 0.4 |
| Q1 05 | 1.1 | 4.6 | 0.3 | 0.7 | 2.4 | 4.0 | 0.2 | 0.3 | 2.8 | -0.9 |
| Q2 05 | 1.6 | 6.7 | 0.6 | 1.0 | 2.3 | 3.2 | 0.7 | 0.7 | 3.5 | -0.6 |
| Q3 05 | 2.2 | 10.1 | 1.5 | 1.1 | 2.3 | 3.0 | 0.8 | 0.8 | 3.9 | -0.6 |
| Q4 05 | 2.0 | 8.9 | 1.5 | 1.0 | 2.3 | 2.6 | 0.7 | 0.9 | 3.3 | -0.2 |
| Q1 06 | 2.0 | 8.9 | 0.9 | 1.2 | 2.2 | 2.6 | 1.0 | 1.1 | 3.7 | -0.1 |
| Q2 06 | 2.0 | 8.3 | 1.9 | 1.0 | 2.0 | 0.4 | 1.0 | 1.1 | 3.8 | -0.2 |
| Q3 06 | 1.8 | 3.9 | 2.6 | 1.3 | 2.0 | 0.2 | 1.2 | 1.6 | 3.2 | 0.8 |
| Q4 06 | 1.6 | 0.4 | 3.5 | 1.3 | 2.0 | 0.4 | 1.3 | 1.3 | 1.9 | 1.0 |
| Q1 07 | 1.9 | 1.1 | 4.1 | 1.3 | 2.0 | 0.3 | 1.3 | 1.3 | 1.7 | 1.1 |
| Q2 07 | 1.5 | -1.7 | 3.6 | 1.5 | 2.1 | 0.2 | 1.5 | 1.4 | 0.9 | 1.7 |

Note: The weights reflect the weighting basis as of January 2006.

[1] Prices in the index of net retail prices are compiled excluding indirect taxes and subsidies.

[2] Core inflation is defined as the increase in HICP excluding energy and food.

[3] Goods and services excluding energy, food and administered prices constitute 57.4 per cent of HICP's weight basis and 51.7 per cent of the index of net retail prices. The difference reflects that the same goods and services do not count equally in the two indices, and does not express the indirect taxation content of the consumer prices.

[4] The division of the index of net retail prices into import and IMI is based on Statistics Denmark's input-output table.

[5] The indirect energy content is included in the import content.

[6] IMI expresses the domestic market-determined inflation. For a detailed presentation of IMI, see Bo William Hansen and Dan Knudsen, Domestic Market-Determined Inflation, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2005.

SELECTED MONTHLY ECONOMIC INDICATORS Table 21

| | Unemployment | Quantity index | | Forced sales of real property | New passenger car registrations | Consumer confidence indicator | Composite cyclical indicator for | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Manufacturing industry [1] | Retail trade | | | | Manufacturing industry | Building and construction | Service |
| | Per cent of labour force | 2000=100 | 2000=100 | Number | | Balance per cent | | | |
| 2002 | 5.2 | 102.9 | 103.6 | 3,041 | 111,598 | 1 | -4 | -14 | 5 |
| 2003 | 6.2 | 102.5 | 107.8 | 3,039 | 96,501 | 1 | -6 | -18 | -2 |
| 2004 | 6.4 | 102.1 | 113.4 | 2,640 | 122,543 | 7 | 3 | -5 | 13 |
| 2005 | 5.7 | 103.8 | 120.1 | 1,874 | 148,578 | 9 | 1 | 7 | 20 |
| 2006 | 4.5 | 108.0 | 124.0 | 1,231 | 156,717 | 10 | 9 | 21 | 24 |
| | | | | Seasonally adjusted | | | | | |
| Apr 07 | 3.7 | 112.0 | 125.4 | 130 | 12,260 | 8 | 3 | 7 | 20 |
| May 07 | 3.6 | 109.6 | 123.6 | 120 | 12,743 | 8 | 5 | 5 | 20 |
| Jun 07 | 3.5 | 111.4 | 126.4 | 149 | 12,699 | 10 | -1 | 6 | 20 |
| Jul 07 | 3.3 | 113.6 | 127.6 | 122 | 14,103 | 9 | 1 | 8 | 15 |
| Aug 07 | 3.3 | 110.7 | 126.3 | 120 | 13,819 | 4 | 3 | 8 | 18 |
| Sep 07 | ... | ... | ... | 135 | ... | 7 | 1 | 8 | 20 |

[1] Excluding shipbuilding.

SELECTED QUARTERLY ECONOMIC INDICATORS — Table 22

| | Employment | | Hourly earnings | | | Property prices (purchase sum, one-family dwellings) |
|---|---|---|---|---|---|---|
| | Total | Private | All sectors in Denmark, total | Manufacturing industry in Denmark | Manufacturing industry abroad | As a percentage of property value 1995 |
| | 1,000 persons | | 1996=100 | | | |
| 2002 | 2,784 | 1,932 | 128.5 | 128.5 | 120.4 | 168.0 |
| 2003 | 2,748 | 1,909 | 133.3 | 133.8 | 124.1 | 173.2 |
| 2004 | 2,748 | 1,908 | 137.4 | 138.0 | 127.5 | 188.6 |
| 2005 | 2,767 | 1,930 | 141.4 | 141.8 | 130.7 | 221.9 |
| 2006 | 2,822 | 1,987 | 145.8 | 146.2 | 134.0 | 268.7 |
| | | | Seasonally adjusted | | | |
| Q2 06 | 2,809 | 1,974 | 144.9 | 145.5 | 133.5 | 270.3 |
| Q3 06 | 2,828 | 1,993 | 146.5 | 146.7 | 134.3 | 276.3 |
| Q4 06 | 2,855 | 2,020 | 147.4 | 147.9 | 135.1 | 273.5 |
| Q1 07 | 2,884 | 2,049 | 148.9 | 149.3 | 136.0 | 273.6 |
| Q2 07 | 2,884 | 2,048 | 150.2 | 151.0 | 136.5 | ... |
| | | | Change compared with previous year, per cent | | | |
| 2002 | -0.1 | -0.4 | 3.9 | 4.0 | 2.9 | 3.7 |
| 2003 | -1.3 | -1.2 | 3.7 | 4.2 | 3.0 | 3.1 |
| 2004 | 0.0 | 0.0 | 3.1 | 3.1 | 2.7 | 8.9 |
| 2005 | 0.7 | 1.2 | 2.9 | 2.7 | 2.5 | 17.6 |
| 2006 | 2.0 | 2.9 | 3.1 | 3.1 | 2.5 | 21.1 |
| Q2 06 | 1.8 | 2.7 | 3.2 | 3.2 | 2.8 | 25.4 |
| Q3 06 | 2.0 | 2.9 | 3.1 | 3.2 | 2.6 | 21.2 |
| Q4 06 | 2.5 | 3.5 | 3.1 | 3.2 | 2.6 | 13.8 |
| Q1 07 | 3.2 | 4.6 | 3.3 | 3.4 | 2.2 | 7.4 |
| Q2 07 | 2.7 | 3.7 | 3.7 | 3.8 | 2.2 | ... |

EXCHANGE RATES — Table 23

| | EUR | GBP | SEK | NOK | USD | JPY | CHF |
|---|---|---|---|---|---|---|---|
| | Kroner per 100 units | | | | | | |
| | Average | | | | | | |
| 2002 | 743.04 | 1,182.10 | 81.12 | 99.03 | 788.12 | 6.2969 | 506.47 |
| 2003 | 743.07 | 1,074.99 | 81.45 | 93.03 | 658.99 | 5.6840 | 488.88 |
| 2004 | 743.98 | 1,096.69 | 81.54 | 88.90 | 598.93 | 5.5366 | 481.96 |
| 2005 | 745.19 | 1,090.02 | 80.29 | 93.11 | 600.34 | 5.4473 | 481.30 |
| 2006 | 745.91 | 1,094.32 | 80.62 | 92.71 | 594.70 | 5.1123 | 474.22 |
| Apr 07 | 745.29 | 1,097.13 | 80.70 | 91.80 | 551.11 | 4.6359 | 455.05 |
| May 07 | 745.18 | 1,093.81 | 80.95 | 91.55 | 551.24 | 4.5669 | 451.53 |
| Jun 07 | 744.51 | 1,102.19 | 79.81 | 92.40 | 555.08 | 4.5245 | 449.98 |
| Jul 07 | 744.10 | 1,103.37 | 81.02 | 93.74 | 542.54 | 4.4627 | 449.15 |
| Aug 07 | 744.29 | 1,098.33 | 79.84 | 93.35 | 546.40 | 4.6817 | 454.32 |
| Sep 07 | 745.06 | 1,081.78 | 80.26 | 95.15 | 536.25 | 4.6629 | 452.26 |

EFFECTIVE KRONE RATE

Table 24

| Average | Nominal effective krone rate | Consumer-price indices | | Real effective krone rate based on consumer prices | Real effective krone rate based on hourly earnings | Consumer-price index in the euro area |
|---|---|---|---|---|---|---|
| | | Denmark | Abroad | | | |
| | 1980=100 | | | | | 2005=100 |
| 2002 | 97.7 | 229.9 | 216.5 | 103.8 | 103.5 | 93.8 |
| 2003 | 101.2 | 234.7 | 220.3 | 107.9 | 108.4 | 95.8 |
| 2004 | 102.2 | 237.4 | 224.0 | 108.3 | 109.8 | 97.9 |
| 2005 | 101.6 | 241.7 | 228.2 | 107.6 | 109.4 | 100.0 |
| 2006 | 101.6 | 246.2 | 232.7 | 107.7 | 110.2 | 102.2 |
| Apr 07 | 103.1 | 250.6 | 237.1 | 108.8 | ... | 104.2 |
| May 07 | 103.1 | 251.1 | 237.6 | 108.8 | ... | 104.4 |
| Jun 07 | 103.1 | 250.8 | 237.9 | 108.7 | 113.2 | 104.5 |
| Jul 07 | 103.2 | 249.7 | 237.8 | 108.3 | ... | 104.3 |
| Aug 07 | 103.2 | 249.3 | 238.0 | 108.0 | ... | 104.3 |
| Sep 07 | 103.4 | ... | ... | ... | ... | ... |
| | Change compared with previous year, per cent | | | | | |
| 2002 | 0.9 | 2.4 | 1.7 | 1.6 | 2.0 | 2.2 |
| 2003 | 3.6 | 2.1 | 1.7 | 3.9 | 4.7 | 2.1 |
| 2004 | 1.0 | 1.2 | 1.7 | 0.4 | 1.3 | 2.2 |
| 2005 | -0.6 | 1.8 | 1.9 | -0.6 | -0.3 | 2.2 |
| 2006 | 0.0 | 1.9 | 2.0 | 0.0 | 0.7 | 2.2 |
| Apr 07 | 1.6 | 1.7 | 2.1 | 1.0 | ... | 1.9 |
| May 07 | 1.3 | 1.8 | 2.0 | 1.0 | ... | 1.9 |
| Jun 07 | 1.2 | 1.4 | 2.0 | 0.5 | 2.8 | 1.9 |
| Jul 07 | 1.3 | 1.2 | 1.9 | 0.4 | ... | 1.8 |
| Aug 07 | 1.3 | 1.1 | 1.8 | 0.4 | ... | 1.7 |
| Sep 07 | 1.4 | ... | ... | ... | ... | ... |

Note: The nominal effective krone rate index is a geometric weighting of the development in the Danish krone rate against currencies of Denmark's 27 most important trading partners. However, only 25 countries are included in the calculation of consumer prices abroad and the real effective krone rate based on consumer prices and hourly earnings, respectively.
The weights are based on trade in manufactured goods in 2002.
An increase in the index reflects a nominal or a real appreciation of the krone.

# Danmarks Nationalbank's Statistical Publications

**Periodical publications (electronic publications)**
Upon compilation of financial statistics, Danmarks Nationalbank releases these to the public in electronic publications. The publication of new statistics on a specific topic comprises 2 elements:

- **"Nyt" (News)** with text and charts to illustrate key development trends, as well as a 1-2 page tables section. The contents of the "Nyt" publications will also include in-depth commentary in order to give users greater scope to interpret and apply the statistics.
- **Tabeltillæg (Tables Supplement)** containing tables with detailed specifications and descriptions of the sources and methodologies applied in the compilation of the statistics.

The text of all tables and charts as well as the descriptions of the sources and methodologies are translated into English.

**Statistics databank**
The above statistical publications are supplemented by a statistics database that comprises all time series included in the financial statistics. When a topic is published the corresponding time series are updated, and they include data as far back in time as possible. As from 1 October 2007 Statistics Denmark and Danmarks Nationalbank have entered into a cooperation according to which the statistical data from Danmarks Nationalbank are published through Statistics Denmark's "StatBank Denmark". Danmarks Nationalbank's part of the "StatBank Denmark" is available directly via: nationalbanken.statbank.dk.

**Special Reports**
In Special Reports are published statistics of a thematic character that are not prepared on a regular basis.

**Release calendar**
A release calendar for the statistical publications, covering the current month and the following quarter, is shown on the website.