Danmarks Nationalbank

Monetary Review 3rd Quarter 2008

DANMARKS NATIONAL BANK 2008

MONETARY REVIEW 3rd QUARTER 2008

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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Managing Editor: Jens Thomsen
Editor: Hugo Frey Jensen

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The Monetary Review can be ordered from:
Danmarks Nationalbank,
Communications,
Havnegade 5,
DK-1093 Copenhagen K.
Telephone +45 33 63 70 00 (direct) or +45 33 63 63 63.
Inquiries: Monday-Friday 9.00 a.m.-4 p.m.
E-mail: kommunikation@nationalbanken.dk

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Contents

Recent Economic and Monetary Trends

This review covers the period from mid-June to mid-September 2008

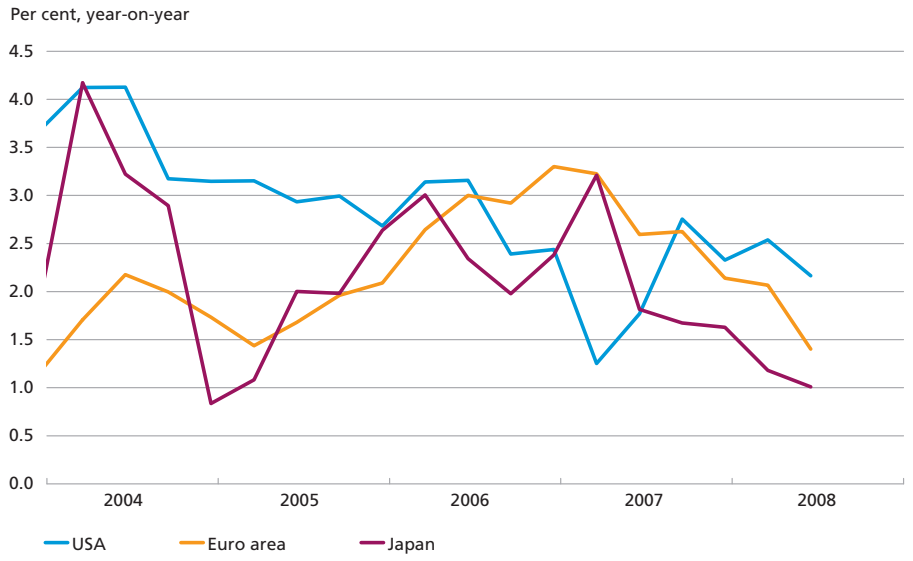
The economy is slowing down worldwide. In the industrialised countries, the main factor is declining growth in domestic demand, while in the emerging market economies weakening export markets play a major role. The slowdown in growth is driven by continued financial turmoil, negative developments in the housing markets in a number of countries and high commodity prices. The prices of oil and other commodities have fallen in recent months, but inflation remains high in most parts of the world. The lower commodity prices and weakening economy reduce price pressures, but the risk that the high inflation is reflected in permanently elevated inflation expectations limits the scope for boosting demand via expansionary economic policies.

The Danish economy is slowing down at a very high level. This reflects a gradual adaptation of the economy to a more sustainable level of activity after some years of strong growth. Nevertheless, the labour market remains tight with high employment, and unemployment down to a level not seen since the early 1970s. Output is still considerably above the level that is compatible with wage and price stability in the longer term. Consumer prices are surging, and the rate of wage increase is high. In such a situation, fiscal policy should not stimulate demand and thereby postpone the adaptation process. This would increase the risk of a wage and price spiral, which could ultimately lead to an unnecessarily strong and prolonged rise in unemployment.

THE GLOBAL ECONOMY

Global economic growth is slowing down, cf. Chart 1. In the industrialised countries, the main factor is declining growth in domestic demand, while in the emerging market economies weakening export markets play a major role. The most recent assessment by the International Monetary Fund, IMF, predicts a fall in global GDP from 5.0 per cent in 2007 to 4.1 per cent in 2008 and 3.9 per cent in 2009, cf. Table 1. The downturn reflects strong inflation driven by high commodity prices, notably in the energy and agricultural sectors, as well as continued financial turmoil in the wake of the subprime crisis in the USA. The housing markets are also weak in a number of countries. The IMF expects a turnaround in 2009, when economic growth will pick up again.

REAL GDP GROWTH Chart 1



Source: EcoWin.

Global inflationary pressures

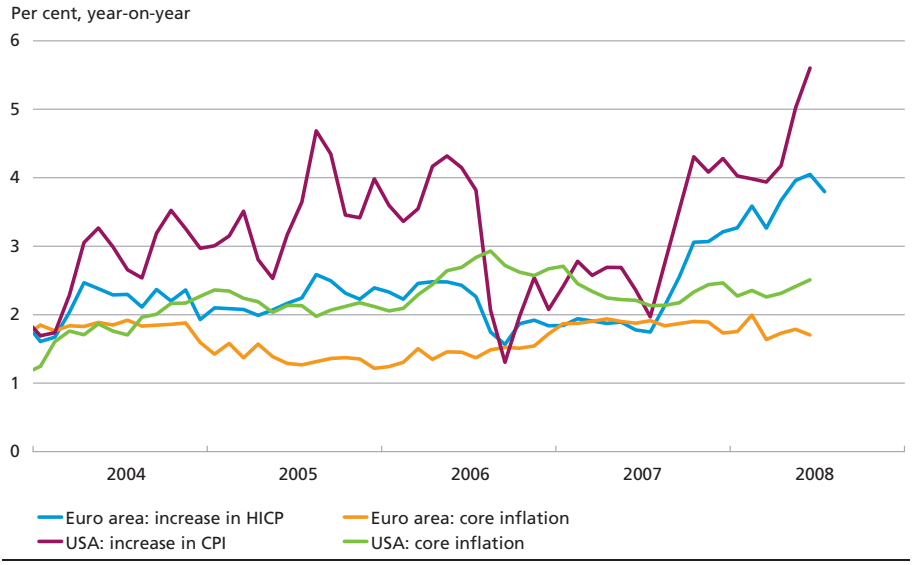
Global inflationary pressures are strong. The IMF expects consumer prices in industrialised countries and emerging market economies to rise by 3.4 and 9.1 per cent, respectively, in 2008 compared with 2.2 and 6.4 per cent in 2007. In the industrialised world, the upward trend in inflation has been particularly evident in the USA, where consumer prices in July were 5.6 per cent above the level one year earlier, cf. Chart 2. Inflation is more subdued, but still high by historical standards, in the euro area, where consumer prices rose by 3.8 per cent year-on-year in August according to preliminary Eurostat data.

ESTIMATES OF REAL GDP GROWTH IN SELECTED AREAS AND COUNTRIES Table 1

	2008				2009	
Per cent	EU	IMF	OECD	OECD(i)	IMF	OECD
USA	…	1.3	1.2	1.8	0.8	1.1
Euro area	1.3	1.7	1.7	1.3	1.2	1.4
Germany	1.8	2.0	1.9	1.5	1.0	1.1
Japan	…	1.5	1.7	1.2	1.5	1.5
China	…	9.7	10.0	…	9.8	9.5
India	…	8.0	7.8	…	8.0	8.0
World	…	4.1	…	…	3.9	…

Note: *EU*: European Commission's interim forecast, September (only available for 2008). *IMF:* World Economic Outlook Update, July 2008. *OECD:* Economic Outlook, No. 83, June 2008. *OECD(i)*: OECD interim forecast, September 2008 (only available for 2008). The European Commission's most recent full forecast from April has not been included.
Source: European Commission, IMF and OECD.

CONSUMER PRICE INCREASES IN THE USA AND THE EURO AREA Chart 2



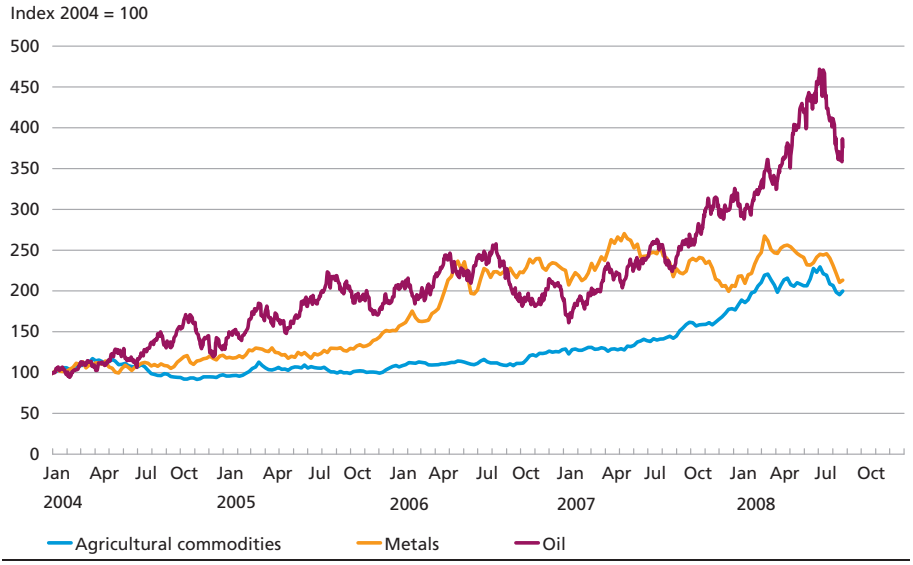
Note: Core inflation indicates the rise in consumer prices excluding energy and food (for the USA) and excluding energy, food, alcohol and tobacco (for the euro area). The most recent observation is from August for the euro area HICP and from July for the other series.
Source: EcoWin.

The rising consumer prices reflect higher world-market prices for commodities, especially energy and food. The derived effect on inflation has been particularly strong in the emerging market economies, where a relatively large share of income is spent on food. In the USA, core inflation – a measure of the development in consumer prices excluding energy and food – has shown a slight upward trend since last autumn, while core inflation has declined a little in the euro area.

By early September, the price of a barrel of crude oil (Brent) had fallen to just under 105 dollars from a peak of 143 dollars at the beginning of July. The prices of metals and agricultural commodities have also fallen, cf. Chart 3. The development in commodity prices will dampen consumer price increases in the autumn. Combined with the weakening of the economy, the decline in oil and commodity prices should initially mitigate the risk of a permanent increase in inflation expectations and second-round effects on consumer prices, cf. Box 1, but the risk is still there.

The falling commodity prices are mainly attributable to slower growth in the global economy, but at this point there are no indications that prices will return to the very low levels seen in previous years. The market for crude oil will remain tight as it takes time to expand production capacity. Strong demand, especially for food, from the emerging market economies will also buoy up prices until global supplies can be increased in the slightly longer term. FAO assesses the outlook for the 2008-09 crop to be good.

PRICES OF OIL AND OTHER COMMODITIES Chart 3



Note: Commodity prices in dollars. The Economist's commodity-price indices for agricultural commodities and metals. Brent crude oil. The most recent observations are from 5 September 2008.
Source: EcoWin.

SECOND-ROUND EFFECTS AND INFLATION Box 1

The pronounced rise in inflation resulting from surging energy and food prices has reduced consumers' purchasing power. This has increased the risk of "second-round effects", which occur when wage demands are affected by the development in consumer prices. In such a situation, higher commodity prices may have both a first-round effect (i.e. a direct impact on consumer prices, as well as an indirect impact via higher producer input prices) and a second-round effect (via higher payroll costs) on overall consumer prices. Both the Federal Reserve and the European Central Bank, ECB, have expressed serious concerns about the risk of second-round effects that could lead to permanently higher inflation.

The scope and duration of second-round effects depend on inflation expectations among employees and employers. If inflation expectations rise, employees will demand higher pay rises to compensate for the expected reduction in real wages. Business enterprises are more likely to accept these demands if they expect to be able to pass on the additional costs by way of higher prices, i.e. if they expect competitors to do the same, thereby bringing about a general increase in the level of prices. Conversely, if inflation expectations are firmly anchored and governed less by very recent price developments, the risk of second-round effects is lower.

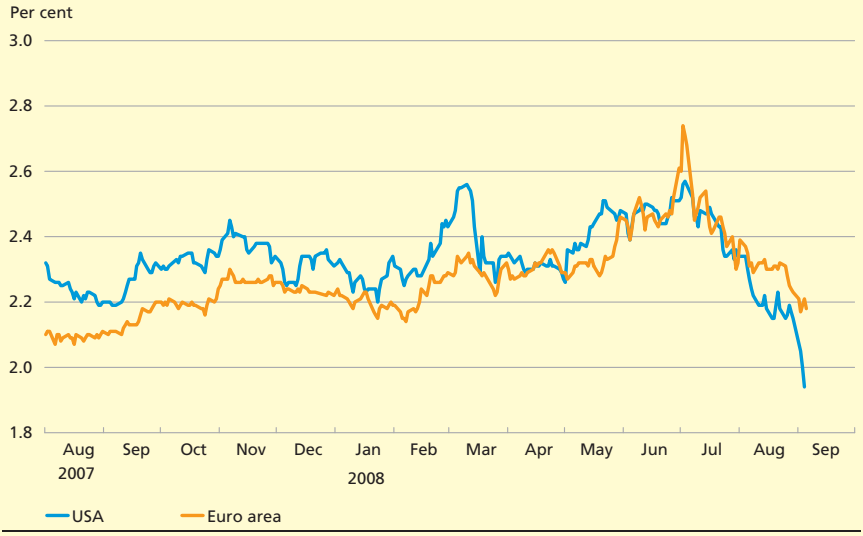
This risk is increased by mechanisms for automatic regulation of wages to match inflation, such as the Danish cost-of-living adjustment ("dyrtidsregulering") that was abolished in the early 1980s. Inflation-linked indexation of wages has become less prevalent since the 1970s, but is still in widespread use in several European countries,

CONTINUED Box 1

e.g. Belgium and Spain and, to a lesser extent, France. Several studies indicate that oil-price shocks have a more lasting impact on inflation in Europe than in the USA as a consequence of the greater prevalence of inflation-linked indexation of wages.

Inflation expectations cannot be observed directly, but are measured indirectly, e.g. via questionnaire surveys among consumers and business enterprises or via the gap between the yield on nominal bonds and the yield on index-linked bonds, known as "break-even inflation". Applying the latter measure, long-term inflation expectations in both the euro area and the USA have declined somewhat in recent months, but remain above 2 per cent in the euro area, cf. Chart 4.

10-YEAR BREAK-EVEN INFLATION Chart 4



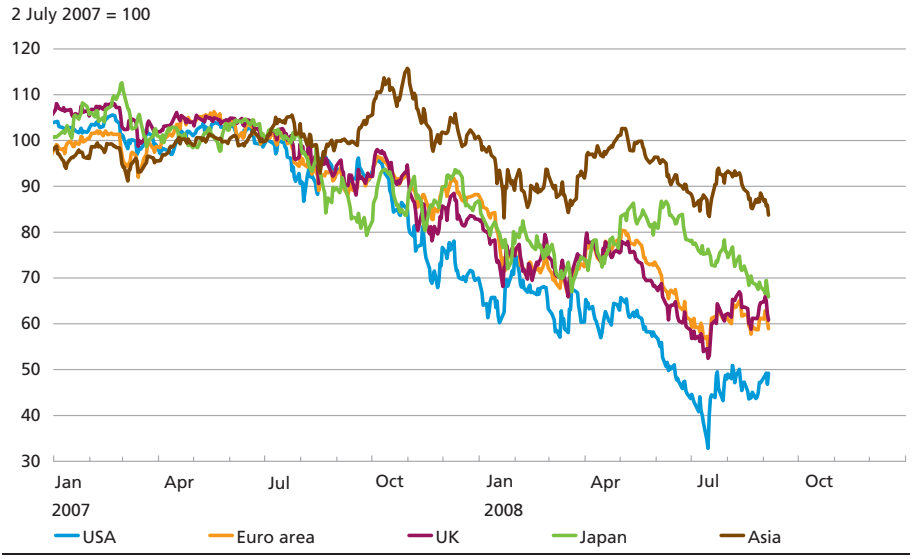
Note: The 10-year break-even inflation indicates the difference between the yield to maturity on a 10-year nominal government bond and the equivalent yield on a 10-year inflation-linked government bond. The most recent observations are from 4-5 September 2008.

Source: EcoWin.

Financial markets

The financial crisis triggered by the US market for subprime mortgages in the summer of 2007 is still affecting the global financial system. A number of large financial institutions in the USA, Switzerland, Germany and France have adjusted losses on lending and investments in securities and financial derivatives upwards. The largest banks and stockbrokers have written down their assets by more than 500 billion dollars since the onset of the crisis. At the same time, the banks have received capital injections in the range of 350 billion dollars. A sustained fall in equity prices, cf. Chart 5, has made capital increases more expensive. Consequently, the financial system is under strong pressure to reduce balance sheets, which amplifies the economic slowdown.

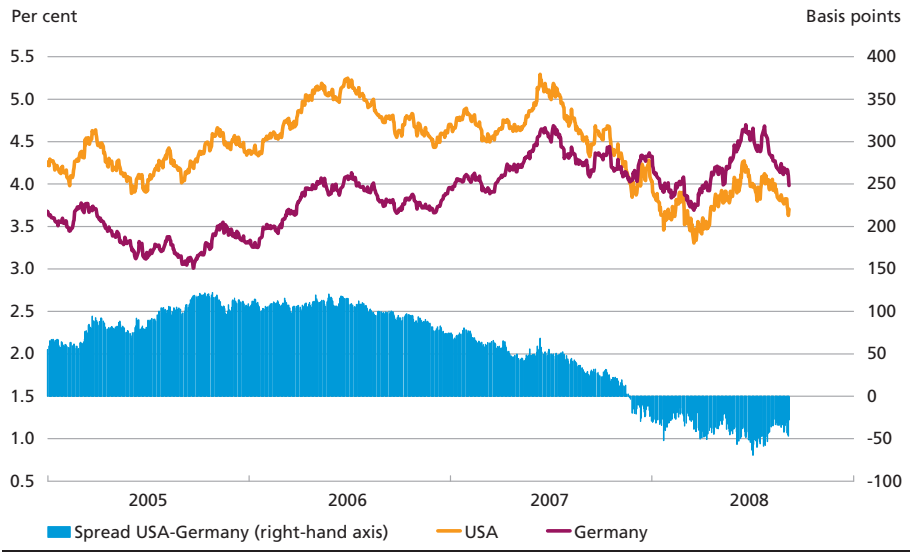
BANK EQUITY INDICES Chart 5



Note: *USA*: Standard & Poor's, 500 Industry Group, Banks; *euro area*: FTSE, E300 Eurobloc Industry Sectors, Banks; *UK:* FTSE, All-Share Industry Sector, Banks; *Japan*: Nikkei, 500, Banking Index; *Asia*: FTSE/Hang Seng, Banks Index. The most recent observations are from 5 September 2008.
Source: EcoWin.

The yields on 10-year US and German government bonds fell by around 0.5 per cent from mid-June to early September, and the yield spread has stabilised at a level where the German bond yield is approximately 0.5 per cent higher than its US counterpart, cf. Chart 6. The course and level

10-YEAR GOVERNMENT BOND YIELDS IN THE USA AND GERMANY Chart 6



Note: The most recent observations are from 5 September 2008.
Source: EcoWin.

of long-term yields do not indicate that the financial markets expect inflation to remain at the current high level in the longer term.

Following a prolonged weakening of the dollar vis-à-vis the euro and the yen, a reversal was seen in mid-July. By the beginning of September, the dollar had strengthened by 9 per cent against the euro, to 1.45 dollars per euro, against the background of military action in the Caucasus region and clearer signs of a slowdown in the euro area, among other factors.

INTERNATIONAL ECONOMIC DEVELOPMENT

USA

Growth in the US economy was relatively robust in the 1st half of 2008, but the underlying cyclical position is weak. Growth was underpinned by a positive trend in private consumption, supported by federal pay-outs following the homeowner initiatives launched by the administration in February. These pay-outs ceased in July, a fact that is expected to have a negative impact on consumption in the 3rd quarter. Retail trade fell slightly in July. The housing market remains weak, and non-agricultural employment has declined by 600,000 since December 2007. Unemployment rose to 6.1 per cent in August – nearly 1.5 percentage points higher than one year earlier. At the same time, wage inflation has fallen to 3.4 per cent from over 4 per cent in mid-2007. Coupled with high price increases and rising unemployment, this entails lower real disposable incomes. The Federal Reserve has maintained the fed funds target rate at 2.0 per cent since April 2008, citing a trade-off between the risks of lower growth and rising inflation.

The turmoil in the money and capital markets has not diminished. At the end of July, the Federal Reserve extended access to its existing credit facilities to include stockbrokers, and the maturity of the newly introduced Term Auction Facility was extended. During 2008, the federal authorities have wound up a number of banks, including IndyMac, the third-largest bank to fail in the USA. The negative development in the housing market has continued. According to the Case-Shiller index, the price of owner-occupied housing was down by more than 15 per cent in June compared with the same month of 2007. The instance of defaulted mortgages and foreclosures has risen. This development has undermined the capital base of the two US mortgage giants Fannie Mae and Freddie Mac. Combined, they account for almost half of all mortgage loans in the USA, and there have been widespread concerns about their continued ability to provide home financing. Against that background, the federal authorities in early September assumed control of the two mortgage institutions, cf. Box 2.

FANNIE MAE AND FREDDIE MAC Box 2

At the beginning of September, the US Treasury announced that the newly established Federal Housing Finance Agency, FHFA, would take over control of the two mortgage giants, Fannie Mae and Freddie Mac. The decision was made against the background of mortgage losses that had reduced the capital base of the two institutions, thereby raising concerns about their continued soundness. The bailout and other, related measures are based on legislation to support the housing market that was adopted at the end of July.

Fannie Mae and Freddie Mac are private limited liability companies established by federal charter and are Government Sponsored Enterprises, GSE. Among other things, this means that they are subject to favourable equity capital requirements and are tax-exempt. Fannie Mae was established as a government enterprise in 1938 and privatised in 1968. Freddie Mac was established in 1970 to promote competition in the mortgage market.

The purpose of the two mortgage institutions is to help to make homeownership affordable, particularly for low and medium-income families. This is achieved by investing directly in mortgage deeds or other housing-related loans, or by providing guarantees for mortgage deeds meeting certain conditions, which form the basis for issuance of mortgage-backed bonds. Combined, Fannie Mae and Freddie Mac own or guarantee almost half of the outstanding volume of mortgage loans in the USA, which totals 12 trillion dollars. For new mortgages, the share is even higher. Bonds are the primary source of financing for the two mortgage institutions.

The decision to place Fannie Mae and Freddie Mac into conservatorship is aimed at stabilising developments in the financial markets and supporting continued access to mortgage financing in the USA, including supporting confidence in bonds issued or guaranteed by the two institutions. More specifically, the FHFA will take control of the boards and managements of the companies. In addition, the rescue plan includes three measures to secure their capital and financing bases. Firstly, the US Treasury will provide supplementary capital under a Treasury Senior Preferred Stock Purchase Agreement. This stock is issued as required up to a limit of 100 billion dollars for each mortgage institution. Secondly, the Treasury will open an unlimited GSE Credit Facility for supply of liquidity if necessary. Thirdly, the Treasury will purchase mortgage-backed securities guaranteed by the institutions under a GSE Mortgage Backed Securities Purchase Program.

The conservatorship is intended as a temporary measure and the Credit Facility and Mortgage Backed Securities Purchase Program formally expire in December 2009. Subsequently, the mortgage institutions must gradually reduce their exposures. In the slightly longer term it is envisaged that more fundamental changes will be introduced in the US mortgage market, as Fannie Mae and Freddie Mac are not expected to be able to continue in their present form.

Europe

Following relatively strong developments in the 1st quarter, the slowdown is beginning to be reflected in the European data releases, and both the euro area and the EU overall are likely to see stagnation in the 2nd half of 2008.

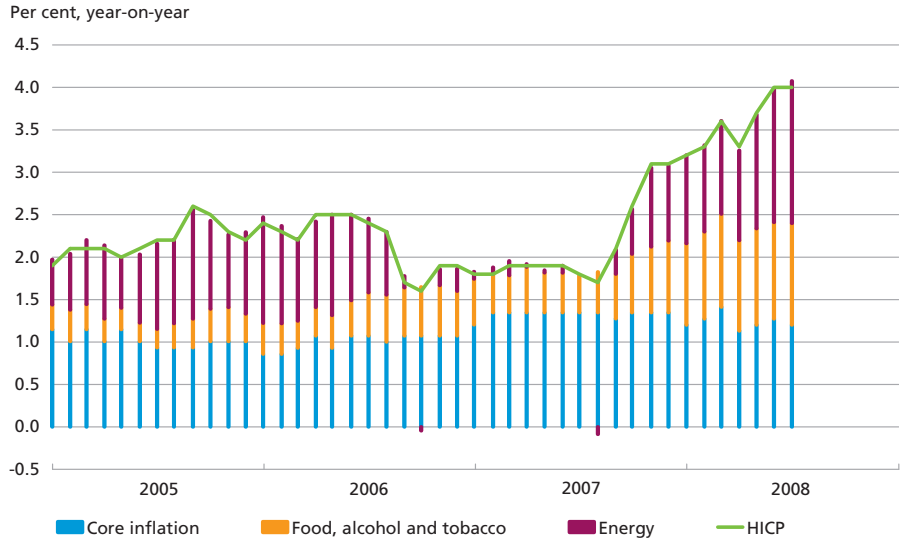
Euro area GDP declined by 0.2 per cent in the 2nd quarter compared with the 1st quarter, equivalent to an increase of 1.4 per cent on the 2nd quarter of 2007. This was the first time GDP fell since the introduction of the euro in 11 EU member states in 1999. Growth was negative in all of the large euro area member states (Germany, France and Italy).

Lower retail sales and declining consumer confidence point to lower consumption in the 2nd half of 2008. The confidence indicators for the business sector and industrial production have fallen in the context of the global slowdown in growth, financial turmoil and a relatively strong euro. The level of investment is low as a result of less optimistic earnings expectations in the corporate sector, tighter borrowing conditions and weak housing markets in several member states. Euro area employment increased by just over 440,000 in the 1st quarter, while unemployment rose a little in the 2nd quarter, to stand at 7.3 per cent in July.

Consumer prices, measured by the Harmonised Index of Consumer Prices, HICP, increased by 4.0 per cent year-on-year in July. The increase was mainly attributable to rapidly rising energy and food prices, cf. Chart 7. According to preliminary Eurostat data, HICP rose by 3.8 per cent in August.

The ECB's index of compensation per employee rose by 2.9 per cent in the 1st quarter compared with the same period of 2007. This was a somewhat higher rate of increase than in previous quarters. To prevent

CONSUMER PRICE COMPONENTS IN THE EURO AREA — Chart 7



Note: Contributions from the components shown to the increase in HICP. Due to rounding, the contributions may not add up to the overall increase in HICP. Core inflation is the increase in HICP excluding energy, food, alcohol and tobacco. The most recent observations are from July 2008.
Source: EcoWin and own calculations.

second-round effects and stem the tide of inflation, the ECB in July raised its minimum bid rate by 25 basis points to 4.25 per cent.

In the *UK*, GDP remained unchanged in the 2nd quarter compared with the previous quarter. The dampening primarily reflected lower construction activity. In August, housing prices were more than 10 per cent down on the same month of 2007. The economic slowdown is beginning to show in the labour market, with unemployment rising to 5.4 per cent in May. Consumer prices were up by 4.4 per cent in July compared with the same month of 2007, which is considerably above the upper inflation target of 3 per cent. The bank rate has remained unchanged since April, when it was lowered to 5 per cent. The Bank of England expects inflation to subside in the medium term as the energy, food and import price increases ease off and the weak cyclical development dampens inflationary pressures.

In *Sweden*, Sveriges Riksbank has raised the repo rate by 50 basis points in two increments, to stand at 4.75 per cent. Sveriges Riksbank saw these steps as necessary in order to prevent persistent high inflation. In *Norway*, Norges Bank in late June raised its key policy rate by 25 basis points to 5.75 per cent in view of higher-than-expected price increases.

In *Iceland*, Seðlabanki Íslands has kept its interest rates unchanged. The financing costs of the Icelandic banks have increased, and the credit default swap spread widened considerably from mid-June. From mid-June to early September the Icelandic krona weakened by almost 6 per cent against the euro. Inflation rose to 14.5 per cent year-on-year in August, and wage inflation rose above 9 per cent year-on-year. The terms and conditions for access to housing loans from the publicly owned Housing Financing Fund, HFF, have been eased, a step that was criticised by the IMF in connection with an Article IV consultation in July. On the same occasion, the IMF called on the Icelandic authorities to tighten fiscal policy.

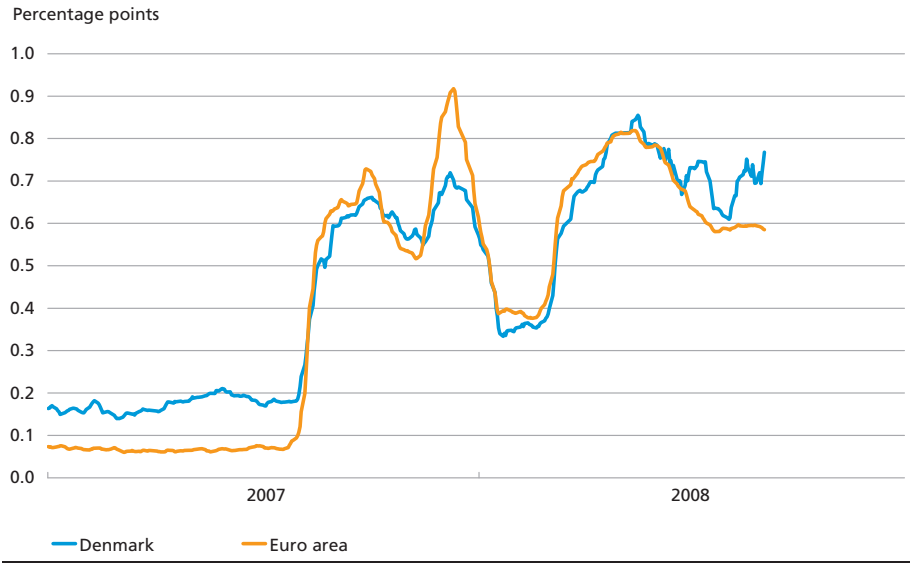
THE DANISH ECONOMY: MONETARY AND EXCHANGE-RATE CONDITIONS

The money and foreign-exchange markets

The Danish krone has been stable around its central rate in ERM II, and Danmarks Nationalbank has not intervened in the foreign-exchange market. The foreign-exchange reserve was kr. 165 billion at end-August.

On 4 July, Danmarks Nationalbank, mirroring the ECB, raised its monetary policy interest rates by 0.25 per cent. Since then the lending rate and rate of interest on certificates of deposit have been 4.6 per cent, while the discount and current-account rates have been 4.25 per cent.

SPREAD BETWEEN UNCOLLATERALISED AND COLLATERALISED 3-MONTH MONEY-MARKET INTEREST RATES IN DENMARK AND THE EURO AREA Chart 8



Note: 5-day moving averages. The spread between 3-month Cibor and repo rates for Denmark; the spread between 3-month Euribor and repo rates for the euro area. The most recent observations are from 5 September 2008.
Source: Danmarks Nationalbank and EcoWin.

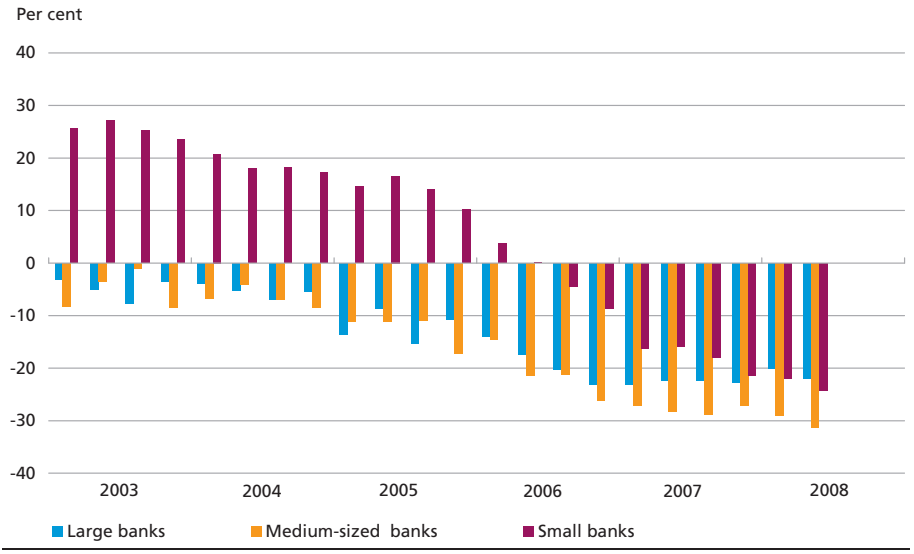
The spread between uncollateralised and collateralised money-market interest rates has fluctuated around a somewhat higher level than before the onset of the financial turmoil in the summer of 2007, cf. Chart 8. At the same time, uncertainty in the money markets has caused considerable volatility in the spread. A similar pattern has been observed in the euro area.

Overall, the banks' deposit deficit has increased since the end of 2004, although at a more moderate pace in 2007 and 2008 than in the preceding two years.[1] This development masks considerable differences within the sector, reflecting diverging lending growth patterns, as well as different business models. The large and medium-sized banks have had deposit deficits for quite a few years, while deposit surpluses have recently given way to deposit deficits in the small banks, cf. Chart 9. As financing opportunities have become more scarce and more costly in the wake of the financial turmoil, some small and medium-sized banks have increasingly had to make use of Danmarks Nationalbank's monetary-policy instruments. Since mid-2007 there has been a tendency for a larger group of banks to raise loans from Danmarks Nationalbank.

The net position of the banks and mortgage-credit institutes vis-à-vis Danmarks Nationalbank was reduced by kr. 51 billion from the end of

[1] See also Danmarks Nationalbank, *Financial stability*, 2008.

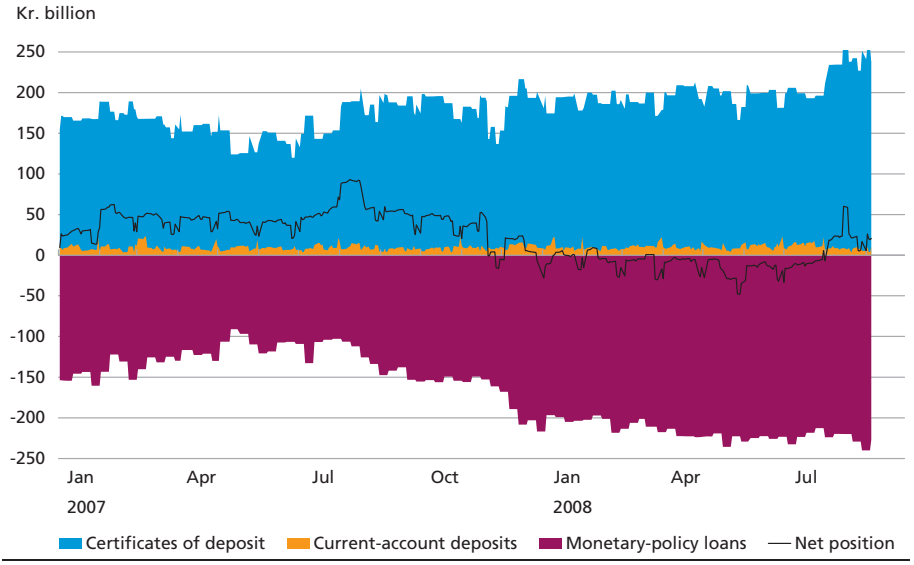
THE BANKS' DEPOSIT SURPLUSES AS PERCENTAGES OF LENDING, BY BANK SIZE Chart 9



Note: Quarterly observations. Lending and deposits have been consolidated with foreign units of Danish banks. Large banks are the Danish Financial Supervisory Authority's group 1, medium-sized banks are group 2, and small banks are group 3.
Source: Danmarks Nationalbank.

July 2007 to the beginning of September 2008, cf. Chart 10. In the same period, these financial institutions increased their borrowing from Danmarks Nationalbank by kr. 124 billion, while their current-account de-

NET POSITION OF BANKS AND MORTAGE-CREDIT INSTITUTES VIS-À-VIS DANMARKS NATIONALBANK Chart 10



Note: The most recent observations are from 5 September 2008.
Source: Danmarks Nationalbank.

posits and certificates of deposit grew by a total of kr. 73 billion. Overall the financial institutions have thus increased their contingency liquidity since the financial turmoil set in.

The temporary lending facility at Danmarks Nationalbank that came into force on 23 May 2008, cf. Monetary Review, 2nd Quarter 2008, pp. 15ff, has been extended by one year until 21 May 2010, giving banks the opportunity to take the facility into account in their liquidity management over a slightly longer horizon. By mid-September loan bills had been issued for an amount of kr. 5 billion. A considerable share of these loan bills have been pledged as collateral to other banks.

The yield on 10-year government bonds has decreased by 0.7 per cent since mid-June, to stand at 4.2 per cent at the beginning of September. The yield spread to the corresponding German government bonds has been stable at around 0.25 per cent over the same period.

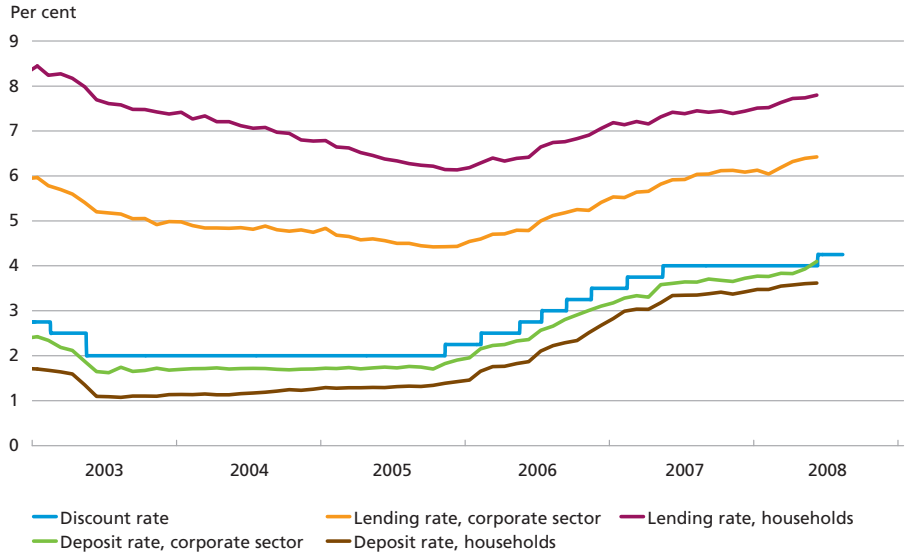
In July, the Ecofin Council accepted Slovakia as a member of the euro area from 1 January 2009. The Slovak koruna will be replaced by the euro at a rate that is equivalent to the central rate in ERM II. Since the end of May 2008, the central rate of the koruna has been 30.1260 korunas per euro. From the turn of the year, Slovakia will no longer participate in ERM II. The conditions for the rest of the ERM II currencies, including the Danish krone, remain unchanged.

Bank interest rates and credit

Since the turn of the year, the banks have increased their deposit and lending rates, citing higher financing costs in the money and capital markets in connection with the financial turmoil. Since the onset of the turmoil in the summer of 2007, the average interest rate for loans to the corporate sector has risen by 0.5 per cent, while the equivalent increase for household lending is 0.4 per cent, cf. Chart 11. Average deposit rates have risen by more or less the same over this period.

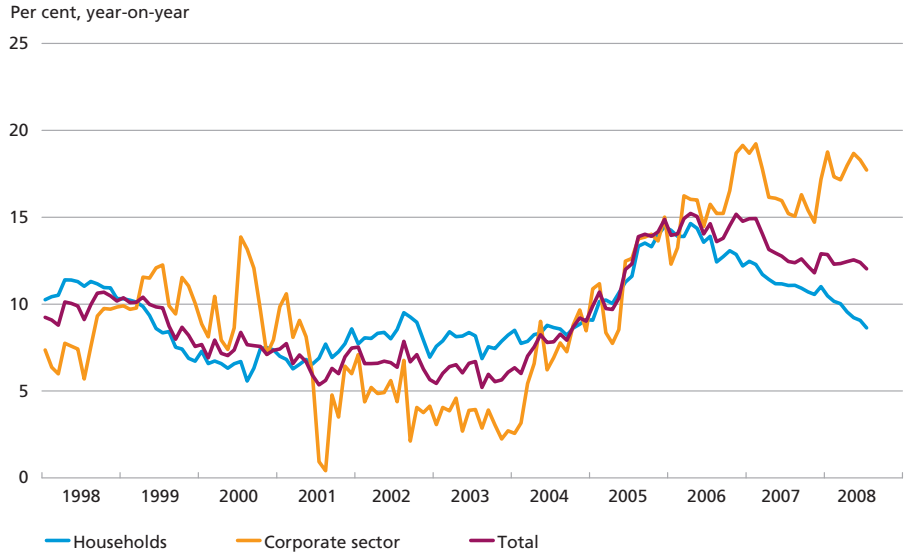
Total growth in lending by banks and mortgage-credit institutes has by and large been stable since July 2007 at a high level of around 12 per cent year-on-year, cf. Chart 12. This is slightly lower than in the preceding years, reflecting more subdued domestic demand, among other factors. Demand for loans normally varies with the business cycle. If growth in lending slows down more than warranted by the cyclical position, and lending rates are rising, this could indicate a "credit squeeze", i.e. a situation in which the banks reduce their supply of credit excessively. Lending rates have indeed been rising, but the lending pattern does not point to a credit squeeze in Denmark at the moment, cf. Box 3.

THE DISCOUNT RATE AND THE BANKS' AVERAGE INTEREST RATES — Chart 11



Note: The discount rate is on a daily basis. Other interest rates are monthly averages for outstanding business. The most recent observation is from 5 September 2008 for the discount rate and July 2008 for the other interest rates.
Source: Danmarks Nationalbank.

GROWTH IN LENDING BY BANKS AND MORTGAGE-CREDIT INSTITUTES — Chart 12



Note: Including lending by foreign units of Danish banks. Adjusted for the inclusion of FIH in the balance-sheet statistics for banks since January 2003. The corporate sector includes financial undertakings (except MFIs). The total includes the public sector and lending not broken down by sector. The most recent observations are from July 2008.
Source: Danmarks Nationalbank.

LENDING GROWTH, FINANCIAL TURMOIL AND CREDIT SQUEEZE Box 3

The financial turmoil affects economic activity in Denmark, e.g. via higher bank lending rates. At the international level, there has also been focus on the risk of a "credit squeeze", i.e. a situation in which the banks reduce their supply of credit excessively.[1]

The line of thought underlying the supply effects is that higher interest rates have a negative impact on the finances of borrowers and banks. When interest rates rise, borrowers may suffer a loss of wealth that reduces their ability to repay the loan or provide collateral. In reaction to the customers' reduced ability to pay, a bank may tighten its credit terms so that some customers cannot raise the desired loans, or their loan costs may rise more than the underlying increase in interest rates would warrant. Higher interest rates may also affect the banks' balance sheets, e.g. by reducing their capital adequacy. If the latter becomes low or falls below the statutory minimum, the banks may wish to reduce their lending portfolio, e.g. by tightening the extension of credit to some customers. Overall, this "credit channel" amplifies the impact of the higher interest rates on investments and private consumption.[2] If the banks suffer unusually large losses or have difficulty in obtaining financing via deposits or in the financial markets, this may lead to a particularly serious credit squeeze (a "credit crunch") with scarce financing opportunities, even for creditworthy projects.

The credit channel may also be triggered by cyclical developments. For example, banks may tighten credit terms and reduce the supply of lending in a downturn since the risk of default is heightened.

Normally the credit channel does not seem to play any major role in Denmark. The scope for a credit channel is limited, partly because households and business enterprises are able to obtain alternative financing from mortgage-credit institutes, where the credit channel plays a minor role, except what follows from changes in the value of the mortgaged property. The balance principle for mortgage-credit institutes means that there are no significant supply effects via the mortgage-credit institutes' balance sheets. Unlike their counterparts in a number of other countries, Danish mortgage-credit institutes have been able to continue to issue bonds without any major problems for borrowers over the last year.

The demand for loans also varies with the business cycle. Generally, demand for and growth in bank lending typically rise in an upswing and decline in a downturn. It is difficult to identify the exact extent to which slower growth in lending reflects lower demand for loans due to cyclical developments or a credit squeeze. If growth in lending is lower than normally warranted by cyclical developments and credit terms are tightened by way of higher lending rates, this could indicate a credit squeeze. In 2007, growth in total lending by the banks was at the highest level seen since the mid-1980s. It has only fallen slightly since then. The cyclical development can be measured by e.g. GDP. The banks' lending ratio, i.e. lending in relation to GDP, has been increasing steadily during this upswing and had reached a very high level in mid-2008. This does not indicate that overall lending growth has been lower than usual in the current cyclical situation.

The development in lending also depends on the size of the banks, cf. Chart 13 (left). Lending growth was particularly strong for small and medium-sized banks prior to the financial turmoil and then took a sharp downturn. In contrast, the largest banks, which account for almost two thirds of total lending, have seen a rise in lend ing growth. The lending growth rates for the various categories of banks are now

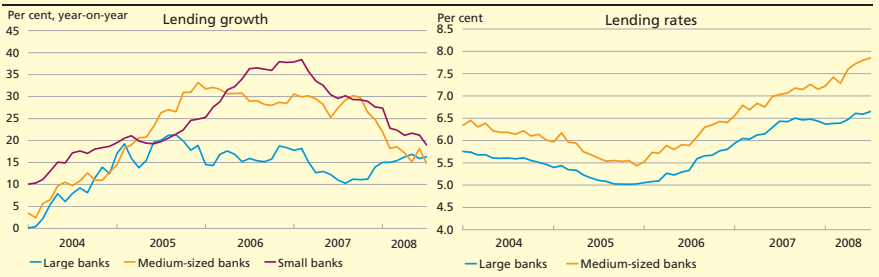
CONTINUED Box 3

relatively close to each other. It should be noted that lending growth in the small banks began to decline already at the beginning of 2007, i.e. before the onset of the financial turmoil. It is possible that small banks are more exposed to small business enterprises than large banks are. Such enterprises are often more sensitive to economic fluctuations than their larger counterparts.

Large and medium-sized banks have also shown different interest-rate patterns, the latter having raised their lending rates most significantly, cf. Chart 13 (right).[3] The medium-sized banks have also raised deposit rates by more than the large banks, which indicates that the smaller banks have used interest rates more actively to try to attract new deposits and dampen lending growth. No large increases have been observed in the banks' average interest rates, partly because the large banks carry more weight in the statistics.

In step with the economic slowdown and the financial turmoil, credit terms have been tightened, particularly by the small banks. This is a normal element of the transmission mechanism. However, the capacity of the financial system is so great and the finances of the corporate and household sectors so sound that in the current situation there is no actual credit squeeze that amplifies the downturn.

BANK LENDING GROWTH AND INTEREST RATES, BY BANK SIZE Chart 13



Note: Lending growth and lending rates for all counterparty sectors except MFIs. Grouped in accordance with the Danish Financial Supervisory Authority's groups 1-3. The most recent observations are from July 2008.
Source: Danmarks Nationalbank.

[1] See e.g. IMF, World Economic Outlook, April 2008.
[2] The credit channel is described in Anders Mølgaard Pedersen, The Credit Channel in Monetary-Policy Analyses, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2003.
[3] The small banks do not report deposit and lending rates for statistical purposes.

Danmarks Nationalbank and the Danish Financial Supervisory Authority encourage transparency

At the end of June, Danmarks Nationalbank and the Danish Financial Supervisory Authority published a joint statement concerning the need for new European legislation on the disclosure of the banks' and mortgage-credit institutes' individual capital requirements.[1] The sustained international financial turmoil has, among other things, reflected lack of information as to which banks were at risk of suffering losses, as well as

[1] See www.nationalbanken.dk.

the size of any such losses. This has highlighted the need for international initiatives to promote greater transparency concerning the risks incurred by individual banks. In their statement, Danmarks Nationalbank and the Danish Financial Supervisory Authority emphasise the importance of ensuring transparency about the actual financial strength of the banks, and thus their ability to absorb losses.

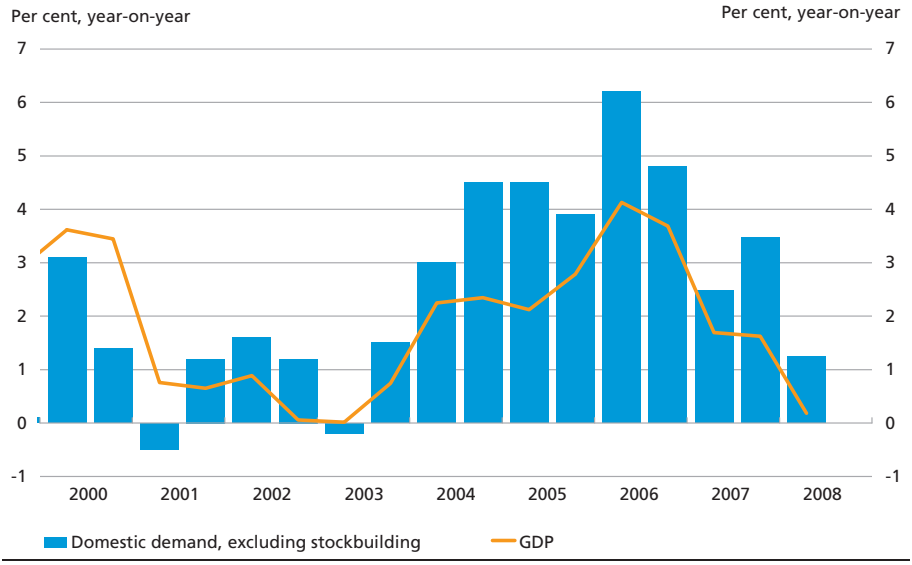
Under the Basel II Capital Accord, the individual banks and mortgage-credit institutes must review their total risks with a view to assessing their capital requirements. The capital requirements may exceed the statutory 8 per cent. In their statement, Danmarks Nationalbank and the Danish Financial Supervisory Authority specifically suggest an amendment to the European rules to the effect that such internal assessments are made available to investors and lenders.

THE DANISH ECONOMY: REAL ECONOMY

Economic activity

Economic activity has slowed down a little in the year so far. According to the available national accounts, the seasonally adjusted gross domestic product, GDP, in volume terms fell by 0.5 per cent from the 2nd half of 2007 to the 1st half of 2008. Output was thus more or less in line with the level in the same period of 2007, cf. Chart 14. Growth has been declining in recent years, reflecting high capacity utilisation in the Danish

REAL GROWTH IN GDP AND DOMESTIC DEMAND — Chart 14



Note: Biannual observations.
Source: Statistics Denmark.

economy, to an extent that further increases in output have been restricted by shortages of labour and capital.

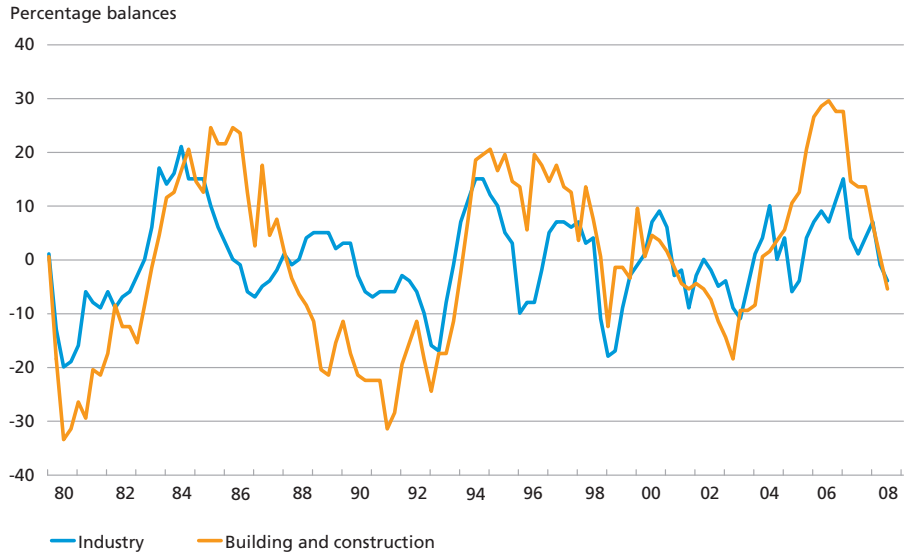
Domestic demand showed a weak trend in the 1st half of 2008, with private consumption and fixed capital formation remaining almost flat compared with the 2nd half of 2007, while public consumption decreased by 0.5 per cent. Exports continued their positive trend. The development in public consumption should be seen against the backdrop of strikes in the public sector, as well as the late adoption of the 2008 Finance Act in April 2008.

The stagnating private consumption in the 1st half of 2008 was attributable to, inter alia, rising interest rates, as well as surging consumer prices for products such as energy and food, which have eroded the purchasing power of the households. The slowdown in the housing market with falling prices has also dampened consumption. The weak development in private consumption is reflected in retail sales and consumer confidence, with the latter at a very low level in August. Car sales, on the other hand, have remained at a high level in the year to date.

Overall, household finances are sound. Net worth has deteriorated over the last year or so on account of capital losses on housing and equities, but in a longer-term perspective the decline has been modest. The households' total wealth is substantially above the level in 2003, when the upswing gained momentum. The households' disposable real incomes have risen steadily this year in spite of increasing interest payments on loans and higher prices for energy and food in particular. Incomes are set to rise at a faster pace in 2009 due to factors such as a considerable increase in real wages and planned tax cuts. Overall growth in the households' disposable real incomes is expected to be 1.5 per cent in 2008 and 2.5 per cent in 2009.

The corporate sector generally takes a less optimistic view of the future. According to Statistics Denmark's business confidence indicators, confidence in the industrial and building and construction sectors has been falling since late 2006, when the Danish economy began to slacken its pace, cf. Chart 15. A similar trend is seen in the service sectors. The change of sentiment has been particularly evident in the building and construction sector, one of the most cyclically sensitive sectors. The confidence indicators are typically used as indicators of developments in activity over the next 3-6 months and are calculated on the basis of expected output, turnover and/or employment. In recent months the confidence indicators have been close to the average over a longer historical horizon, reflecting that the situation in the business sector is normalising with more subdued expectations of future growth in activity. Confidence in the industrial and building and construction sectors is

BUSINESS CONFIDENCE INDICATORS Chart 15



Note: Quarterly observations (1st month of the quarter for which monthly observations are available). Deviation from the historical average for the period since 1980. Seasonally adjusted. The most recent observations are from the 3rd quarter (July) of 2008.
Source: Statistics Denmark.

well above the level seen during the two slumps in the early 1980s and early 1990s, respectively.

For a number of years, the Danish economy has been characterised by very strong growth in domestic demand and considerable capacity pressures, with further output growth being curbed by supply-side factors, not least a shortage of labour. This situation cannot persist in the long term, and the current low growth points to a return to a more sustainable situation in which demand pressures ease and business enterprises gradually approach a normal level of capacity utilisation. This does not mean that the Danish economy is in a recession, not to mention a slump, cf. Box 4. The current cyclical situation is best characterised as the late stage of a boom, with economic activity at a high level and continued pressure on the labour market. Developments do not indicate that the Danish economy will be severely affected by the international economic slowdown.

The housing market

According to the Association of Danish Mortgage Banks, the price per square metre for single-family and terraced houses fell by 2.1 per cent in the 2nd quarter in relation to the previous quarter. For Denmark overall, housing prices have been relatively stable since early 2006, cf. Chart 17.

ASSESSMENT OF BUSINESS CYCLES Box 4

In July, Statistics Denmark published national accounts showing negative quarterly GDP growth in both the 4th quarter of 2007 and the 1st quarter of 2008. This triggered a discussion of whether the Danish economy was in a recession. The background was that, in popular terms, the economy is in a "technical recession" if growth is negative for (at least) two successive quarters. This is a simplified definition that is frequently used in the financial markets, among other places. Subsequently Statistics Denmark published the national accounts for the 2nd quarter, which show that growth was positive in that quarter. Based on the above definition, the recession, if any, must be said to have been very brief. This illustrates the weaknesses of the definition. More generally speaking, an assessment of the current cyclical position requires a broader and more in-depth review of the economy.

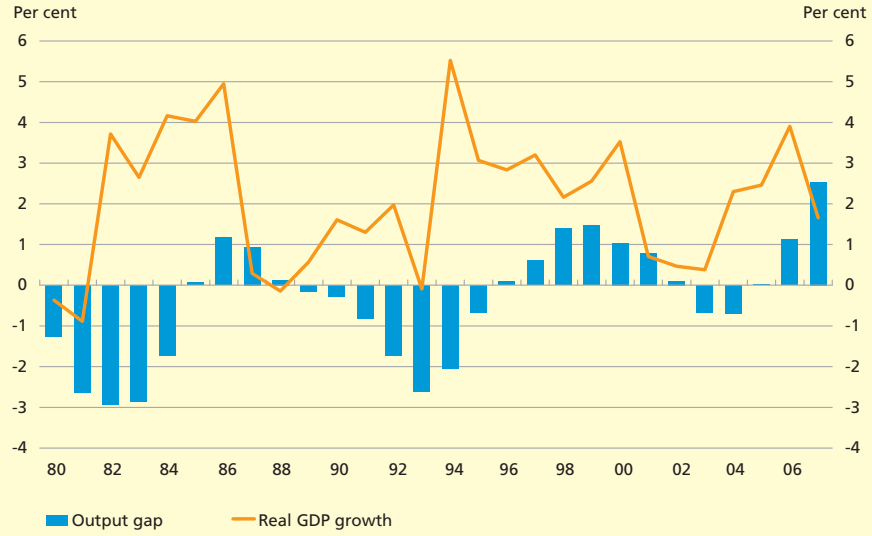
In the USA, the Business Cycle Dating Committee under the National Bureau of Economic Research, NBER, officially determines the peaks and troughs of the US business cycle. A recession requires a *significant* decline in economic activity *across the economy*. This is measured using a number of different indicators, of which real GDP is merely one. Other factors taken into account include employment, personal income and industrial production, but there is no exact definition of how to weight these factors. Thus, a certain element of estimate applies. Using the NBER definition, it can be concluded that the Danish economy is not in a recession at present. The decline in GDP was temporary and relatively limited, employment has risen in the year to date, and personal income is rising. There are no clear signs of a reduction of industrial production either.

When assessing the cyclical position it is also important to make a distinction between growth rates and the level of economic activity. According to the NBER, a recession is simply a *decline* in activity, not necessarily a low level of activity. A situation with a low level of economic activity is referred to by the NBER as a slump. The level of activity can be measured in several ways, unemployment and capacity utilisation being core elements. A frequently used measure of capacity pressures and thus the level of activity is the "output gap", which is calculated as the gap between the actual output level and the level that is compatible with wage and price stability in the longer term. It is obvious that the Danish economy is not in a slump. Unemployment is at the lowest level seen since the 1970s, and according to calculations by the Ministry of Finance the output gap in 2007 was the largest since 1980, cf. Chart 16. Capacity utilisation in industry is at a level corresponding to the historical average.

Denmark's current cyclical position can best be defined as the late stage of a boom, with activity having declined slightly in recent quarters from a very high level. The economy is still characterised by severe capacity pressures, with a tight labour market, and the gradual adjustment towards more sustainable capacity utilisation will also contribute to relatively low economic growth in a future perspective.

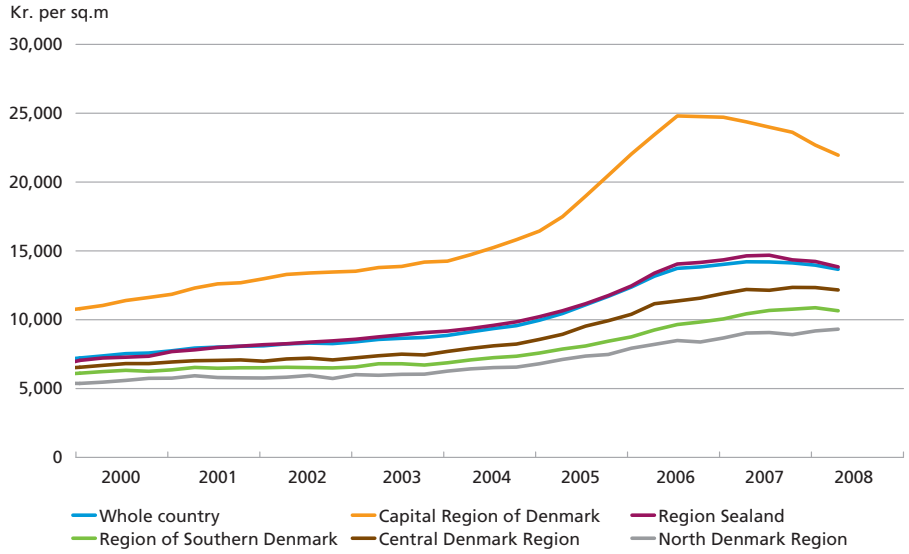
CONTINUED Box 4

OUTPUT GAP AND ECONOMIC GROWTH Chart 16



Note: Output gap as a percentage of potential GDP.
Source: Statistics Denmark and Ministry of Finance, Economic Survey, August 2008.

PRICE PER SQUARE METRE FOR SINGLE-FAMILY AND TERRACED HOUSES Chart 17



Source: Association of Danish Mortgage Banks.

Over the past year prices have, however, shown a slight receding trend, in the 2nd quarter standing 3.9 per cent below the level in the 2nd quarter of 2007 when the prices of single-family and terraced houses peaked. Nevertheless, prices are still more than 50 per cent above the level at the beginning of 2004, when they really began to soar. Prices of owner-occupied flats have generally fallen somewhat more than house prices, in the 2nd quarter by 1.3 per cent on average compared with the preceding quarter, bringing them down to a level 13 per cent below the peak in mid-2006 for Denmark overall. Leisure cottages have also been declining a little in price over the past year or so and fell by 2.1 per cent in the 2nd quarter compared with the 1st quarter.

Price developments for single-family and terraced houses are subject to considerable regional differences, cf. Chart 17. The sharpest declines are still seen in Sealand, mainly Greater Copenhagen, while house prices rose in the 2nd quarter in the North Denmark Region. Recent developments confirm previous patterns, i.e. that the largest price drops are registered in the parts of the country where the price per square metre is highest, while price developments are more stable in the less expensive areas of the country. However, in the 2nd quarter house prices did tend to fall in more parts of the country than previously.

The slowdown in the housing market still affects turnover. The transaction volume is relatively low and the number of homes for sale is high, particularly for single-family and terraced houses. This is reflected in long "for sale" periods. The number of enforced sales has also been rising. In August almost 300 enforced sales were announced, which is somewhat higher than the year before, but still low in a longer-term perspective. In comparison, the number of enforced sales per month was in the range of 1,700 during the housing crisis in the early 1990s.

The weak development in the housing market reflects factors such as the general slowdown in the economy, rising interest rates and excessively high housing prices in some parts of the country. The housing market can still be expected to be weak in the near future in view of the large supply of homes for sale. In a longer perspective, the strong labour market and the sound household finances will, however, buoy up prices at the national level.

Foreign trade and balance of payments

In spite of the international slowdown in growth, exports of goods have been robust in the year to date. Particularly industrial exports have been strong, including exports to the traditionally large export markets, i.e. Germany, the UK and Norway. Fuel exports have also increased against the background of rising oil prices. Looking ahead, exports can be ex-

pected to develop at a more measured pace as the slowdown hits Denmark's trading partners, although the intake of orders from export markets is high.

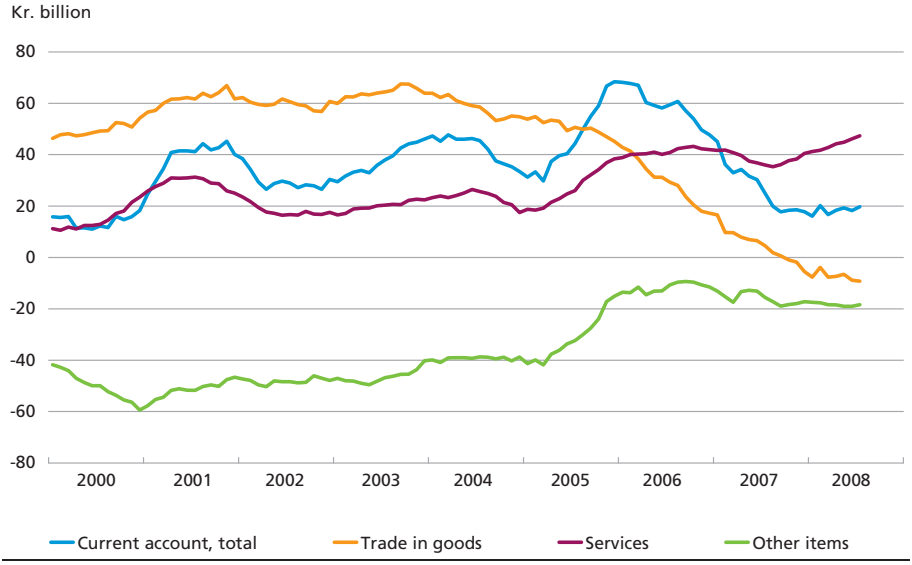
Growth in imports of goods for the corporate sector and for consumption has moderated as a result of subdued domestic demand. The development in exports and imports means that the seasonally adjusted monthly trade surplus (excluding ships, etc.) has been around kr. 3-4 billion from April to June. This is somewhat higher than at the beginning of the year.

The balance of payments has stabilised after pronounced deterioration of the current-account surplus in 2006 and the 1st half of 2007. For the 12-month period until July, the current-account surplus has been calculated at kr. 19.7 billion, cf. Chart 18. The stabilisation primarily reflects that the deterioration of the balance of goods has ceased. This is taken to indicate that the slowdown in growth has been stronger in Denmark than in its trading partner countries. The current-account surplus is supported by large surpluses on trade in services, including sea freight in particular.

Labour market

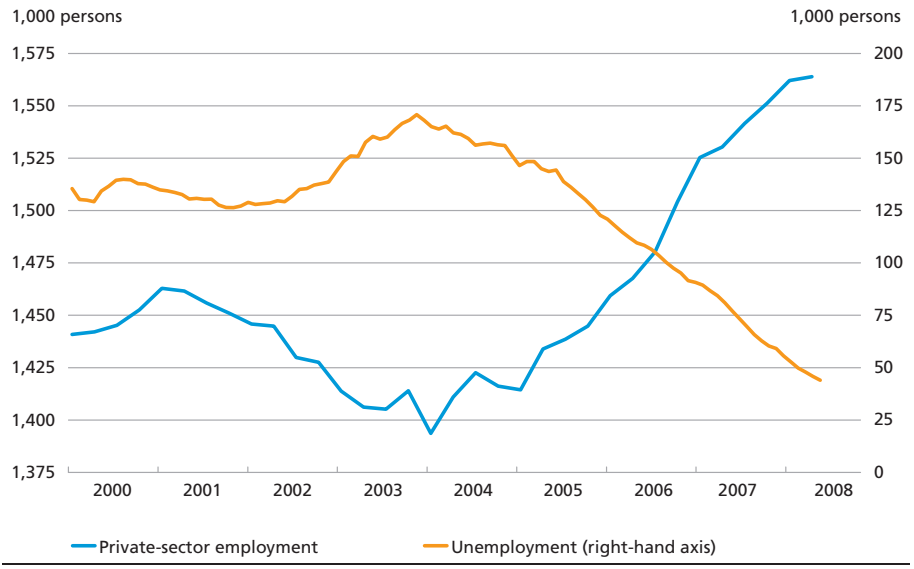
Output growth has declined, but the labour market nevertheless remains strong. Private-sector employment is at a very high level and has continued to increase in 2008 to date. According to data from Statistics

CURRENT ACCOUNT OF THE BALANCE OF PAYMENTS — Chart 18



Note: 12-month moving sums. The most recent observations are from July 2008.
Source: Statistics Denmark.

EMPLOYMENT AND UNEMPLOYMENT Chart 19



Note: Full-time equivalent employment based on ATP statistics. The most recent observation is from the 2nd quarter for employment and from July for unemployment.
Source: Statistics Denmark.

Denmark compiled on the basis of payments to ATP (Labour Market Supplementary Pension), full-time equivalent employment in the private sector was almost 15,000 higher in the 2nd quarter of 2008 than in the 4th quarter of 2007, corresponding to an increase by 1 per cent, cf. Chart 19. This is mainly attributable to pronounced growth in employment at the beginning of the year. Employment has primarily risen in the private service sectors, including the financial sector, while it has been more stable in the industrial and building and construction sectors. The ATP statistics show that public-sector employment declined in the 2nd quarter. However, this is because no ATP payments were made during the public-sector labour conflict in the spring, and thus the statistics do not reflect underlying developments in public-sector employment.

Unemployment has continued to fall. In July, seasonally adjusted unemployment was 44,000 on a full-time basis, equivalent to 1.6 per cent of the labour force. This is the lowest level since the early 1970s. On average, unemployment has fallen by more than 2,000 persons a month since the reversal at the end of 2003, and this trend has continued at an almost unabated pace in recent months.

There are still indications of a shortage of labour in certain sectors although the more subdued growth means that the shortage is not as pronounced as previously. In the industrial sector the number of business enterprises reporting a shortage of labour has returned to a more nor-

mal level. Just under 10 per cent of building enterprises are short-staffed, which is a substantially lower number than earlier in the upswing, but nevertheless high in a longer-term historical perspective. According to the Dansk Jobindex indicator, the number of new jobs advertised on the Internet also remains high, although it has declined since the turn of the year. In July the number of new job advertisements was approximately 32,000, which is estimated to correspond to 48,000 vacancies. The number of vacancies is confirmed by a survey performed by the Danish Labour Market Authority, which has looked into the recruitment situation of business enterprises in the first months of 2008.[1] Particularly the public and private service sectors have had difficulty in attracting labour, and positions for both skilled and unskilled labour have remained unfilled.

Employment and unemployment usually react to a slowdown in activeity with a certain lag. The substantial number of vacancies suggests that unemployment will remain very low for some time yet, but in the slightly longer term it can be expected gradually to rise to a more sustainable level. The labour market will remain tight, reflecting demographic changes that will reduce the labour force as the population groups with the highest participation rates diminish. An increase in unemployment could also entail a reduction in labour market participation, notably in the older age groups, and the supply of foreign labour may also fall. This will curb the rise in unemployment. If labour-market pressures are to be eased further, reforms are required that will increase the supply of labour. This is a challenge to the Danish economy also in the longer term.[2]

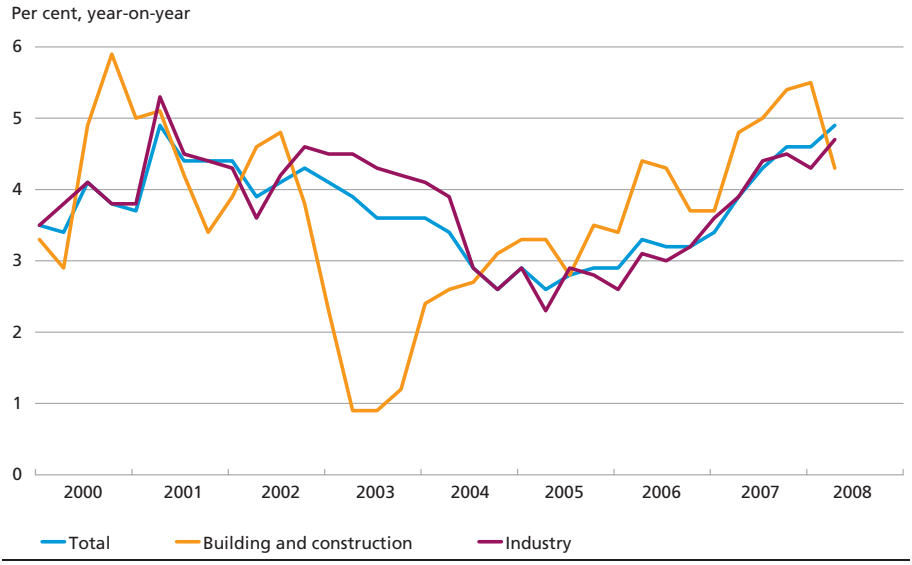
Wages and prices

Labour-market pressures are reflected in strong wage increases. According to the Confederation of Danish Employers (DA), hourly earnings in the 2nd quarter of 2008 were 4.9 per cent higher than in the same quarter of 2007, cf. Chart 20. Wage increases have thus picked up compared to the 1st quarter. Wage developments were particularly strong in service-oriented sectors and industry, in which the rates of increase in the 2nd quarter were the highest seen in this upswing. In the construction sector, on the other hand, wage increases slowed down markedly from the high level in the preceding quarters. According to

[1] Cf. the Danish Labour Market Authority, Recruitment 1st half of 2008 (in Danish only), a survey of recruitment of labour by business enterprises in the period from the end of 2007 to the beginning of April 2008.

[2] Erik Haller Pedersen and Johanne Dinesen Riishøj, Growth, Public Finances and Immigration, in this issue of the Monetary Review, discusses the challenges resulting from demographic changes in relation to future economic growth and fiscal sustainability.

WAGE INCREASES IN THE SECTORS COVERED BY DA Chart 20



Source: Confederation of Danish Employers (DA).

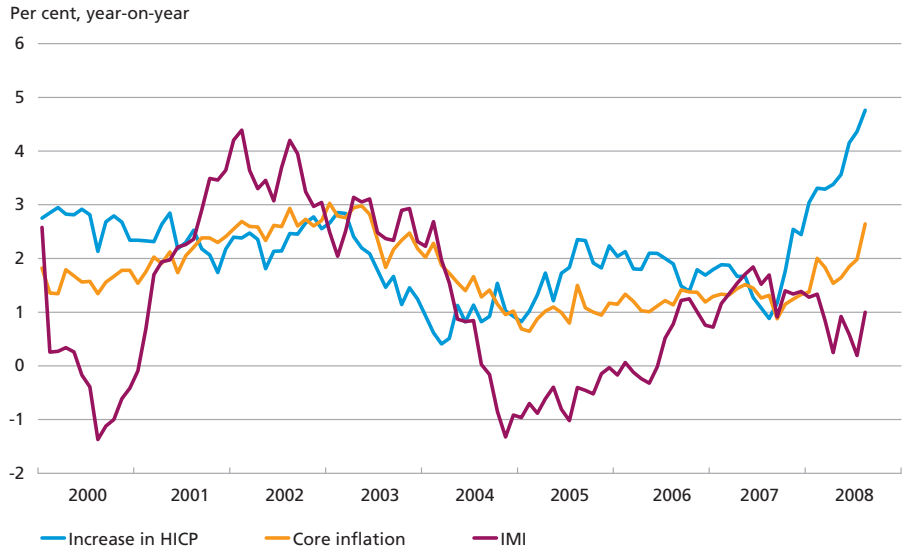
DA, the rate of wage increase in the 2nd quarter may be slightly overestimated as more local wage bargaining had been concluded when the statistical data was collected than was the case in 2007.

The rapid wage developments put pressure on the international competitiveness of Danish enterprises. In the industrial sector, Danish wage increases have significantly exceeded those of Denmark's trading partners in recent years. Pressure on wage competitiveness has been intensified by significant appreciation of the Danish krone against the currencies of Denmark's trading partners over the last year or so. In the 2nd quarter, the real effective exchange rate of the krone, based on hourly wages, was 4.5 per cent above the level in the same quarter of 2007, indicating equivalent deterioration of wage competitiveness.

The results of the collective bargaining in the spring entail a substantial wage boost for public-sector employees, with wage increases in excess of 5 per cent in 2008. Wages in the public sector are thus rising considerably faster than previously. In the current situation where private-sector wage increases are already high in an international context it is essential that the increases in the public sector do not have a rub-off effect on the private sector.

Consumer prices are surging. In August, the Harmonised Index of Consumer Prices, HICP, was 4.8 per cent higher than in the same month of 2007. Price increases have gained considerable momentum since the late

CONSUMER PRICE INCREASES AND DOMESTIC INFLATION Chart 21



Note: IMI: Domestic market-determined inflation. Core inflation is the rate of increase in HICP excluding energy, food, alcohol and tobacco. The most recent observations are from August 2008.
Source: Statistics Denmark and own calculations.

summer of 2007 and this trend has continued in recent months, cf. Chart 21. The strong inflation primarily reflects the soaring energy and food prices. Core inflation, which is defined as the increase in HICP excluding energy and food, has also risen, however, to 2.6 per cent year-on-year in August. This was somewhat higher than one month earlier and substantially higher than in the late summer of 2007.

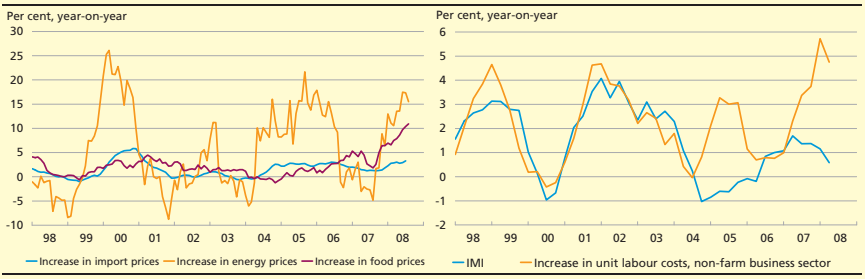
Domestic inflationary pressures have been moderate so far, particularly in view of the cyclical position. Domestic market-determined inflation, IMI, was 1.0 per cent year-on-year in August. This was also markedly higher than one month earlier, but still below the level in 2007 and early 2008. IMI differs from core inflation in that it is stripped of the development in, inter alia, import prices and certain administered prices, including rent, and is a measure of developments in domestic payroll costs and profit margins. The relatively low level of IMI reflects reduced corporate profit margins. Initially, business enterprises absorb price rises on production factors such as energy by cutting profit margins, rather than letting the additional costs be fully reflected in sales prices, cf. Box 5. On the other hand, stronger domestic inflationary pressures can be expected in future, as profit margins are adjusted upwards again.

PRICE DEVELOPMENTS Box 5

The rate of price increase has risen sharply from the trough of 0.9 per cent year-on-year in August 2007 to 4.8 per cent year-on-year in August 2008. This is not a purely Danish phenomenon, but reflects considerable and strongly increasing global inflationary pressures.

The steep increase in the overall index of consumer prices is chiefly driven by surging energy and food prices, cf. Chart 22 (left). Measured in Danish kroner, the price of crude oil almost doubled from the beginning of 2007 to August 2008, and the net retail price (consumer price stripped of taxes) of energy goods overall rose by around 20 per cent over the same period. The reason why higher oil prices are not fully reflected in Danish energy prices is that the latter also comprise e.g. electricity and district heating, which are not to the same extent affected by international oil prices. Food prices have increased by around 10 per cent since the autumn of 2007 as a result of substantially higher international commodity prices. Imported goods are also rising more steeply than last year, and the year-on-year rate of increase in import prices has been in the range of 3 per cent throughout most of 2008.

NET PRICES, IMI AND UNIT LABOUR COSTS Chart 22



Note: 4-quarter moving averages of increases in unit labour costs in the non-farm business sector (right).
Source: Statistics Denmark and own calculations.

Headline inflation has been curbed by moderate domestic market-determined inflation, IMI, cf. Chart 22 (right). IMI is a measure of the price development for value added in domestic industries manufacturing and supplying consumer goods and services. IMI thus captures changes in Danish payroll costs and profit margins.

The relatively low level of IMI is not attributable to developments in payroll costs, as the high rate of wage increase has not been accompanied by an equivalent rise in productivity according to the available national accounts. This has led to a clear upward trend in unit labour costs, which is not seen in IMI. Instead, the low IMI is likely to reflect lower profit margins in the business sector since the rising costs for e.g. energy have not initially been passed on to customers by way of higher prices. A similar pattern was seen in 2004-06 and 1999-2000, when increasing prices for energy and imported goods coincided with a fall in IMI.

Looking ahead, profit margins can be expected to rebound, which will contribute to higher domestic inflationary pressures. This has also been the case on previous occasions, e.g. in 2001-03 and to a lesser extent in 2006-07, when the inflation contribution from IMI increased when energy and import prices had stopped rising. The outlook for price developments in the near future is discussed in the article The Danish Economy 2008-10.

Economic outlook

Denmark is in the late stage of a boom with continued high pressure on the labour market. This pressure will ease in the coming years as unemployment begins to rise, but for some time yet activity will be above the level that is compatible with wage and price stability in the longer term, cf. the article The Danish Economy 2008-10. Consumer prices have risen steeply, and it is essential to sustainable development that the surge in consumer prices is not channelled into wage acceleration. Persistent capacity pressures in the Danish economy entail a risk of a wage and price spiral that could ultimately lead to an unnecessarily high and protracted increase in unemployment. This risk is amplified if fiscal policy stimulates demand in 2009. If economic policy is aimed at maintaining the current low level of unemployment, there is an imminent risk that it will be unsuccessful, at considerable cost to society and to individual citizens.

The Danish Economy 2008-10

INTRODUCTION AND SUMMARY

This article reviews Danmarks Nationalbank's forecast for the Danish economy in the years 2008-10. The forecast has been produced 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 2008[2].

The Danish economy has shifted to a lower gear over the past year after some years of high growth. Higher interest rates and weaker development in the housing market have contributed to dampening residential investments and private consumption, while the pace of global economic growth has slackened due to the turmoil in the financial markets and high commodity prices. The moderation of economic growth in Denmark is expected to continue in the coming years. The forecast operates with a gradual decline in annual GDP growth from 1.7 per cent in 2007 to 0.5 per cent in 2010, cf. Table 1.

Following the period of high growth since 2003, capacity pressures in the Danish economy have built up to a higher level than in the euro area and the USA, which points to a more pronounced slowdown in Denmark. In 2008, as in 2007, GDP growth is expected to underperform that of the euro area and the USA, cf. Chart 1. The growth estimates for 2009 are almost on a par, but while growth is expected to bottom out in the euro area and the USA in 2009, growth in the Danish economy is expected to remain low in 2010.

So far, the slowdown has had no effect on the labour market. Recent years' strong growth has brought employment to a record-high level, and unemployment has declined steadily to well below the level that is compatible with wage and price stability without any signs of reversal as yet. The labour shortage has eased in certain sectors, e.g. construction and manufacturing, but it is still pronounced in many services, including the public sector. As a result, capacity pressures remain strong. The output gap, calculated as the difference between actual GDP and GDP on

[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 the beginning of September 2008.

KEY ECONOMIC VARIABLES — Table 1

Real growth on previous year, per cent	2007	2008	2009	2010
GDP	1.7	0.9	1.0	0.5
Private consumption	2.3	1.8	1.1	0.7
Public consumption	1.6	1.8	1.6	1.4
Residential investments	4.5	-1.4	-5.9	-3.3
Public investments	-9.0	2.2	3.8	3.5
Business investments	9.1	0.9	-0.9	-0.9
Inventory investments[1]	-0.4	-0.1	0.0	-0.2
Exports	1.9	2.4	1.2	2.0
Industrial exports	2.1	1.0	2.6	2.7
Imports	3.8	3.3	0.4	1.5
Consumer prices, per cent year-on-year	1.7	3.8	2.6	1.9
Unemployment, 1,000 persons	77.4	47.3	60.4	95.3
Balance of payments, per cent of GDP	1.0	1.3	2.0	2.5
Government balance, per cent of GDP	4.8	3.8	2.9	1.6
Hourly wages, per cent year-on-year	3.9	4.6	4.7	4.2

[1] Contribution to GDP growth.

normal resource utilisation, peaked in 2007, but is forecast to remain wider in 2008 than in the most recent booms.

Recent quarters have seen weak development in domestic demand after high growth rates for a number of years. Both consumption and investment in the private sector have declined in the 1st half of 2008, whereas exports have shown substantial growth. The projection shows continued moderate development in domestic demand as well as lower

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

Note: Estimates after the broken line.
Source: Statistics Denmark, EcoWin, IMF World Economic Outlook, July 2008 update, and own forecast.

export growth against the backdrop of competitive pressures and a weak economic outlook for Denmark's trading partners. This results in a gradual narrowing of the output gap and a considerable dampening of import growth.

Wage inflation has picked up in recent years due to the tight labour market. Wage inflation is considerably higher than in most of Denmark's trading partners, and productivity growth has been weak, causing competitive pressures to intensify. This trend is expected to continue in the next few years as the pressure on the labour market will ease only gradually. Consumer price inflation has increased rapidly since the 3rd quarter of 2007, primarily driven by surging energy and food prices, but dampened by domestic market-determined inflation, IMI, which reflects the development in wages and profit margins. Against this background, it is by no means certain that recent months' moderate price falls from a high level in the international commodity markets will substantially dampen consumer price inflation in Denmark. This is described in more detail in Box 1, which reviews the risk of wage and price pressures remain-

ALTERNATIVE SCENARIOS — Box 1

The international economic outlook has weakened, and the central estimate of export market growth has been reduced from the estimate in the March forecast. Growth in domestic demand seems to be declining more strongly than estimated in March, as evidenced by the data releases of recent months. The dampening is expected to continue, and the forecast operates with decreasing consumption-to-income and investment ratios.

The assessment of the international slowdown and declining growth in domestic demand is inherently uncertain. The possible consequences of a stronger international slowdown and dampening of consumption and investment growth in Denmark sooner than envisaged in the central estimates of the forecast are illustrated by means of an alternative scenario below. In the alternative scenario, export market growth is lower as from the 3rd quarter of 2008, and the consumption ratio and the investment ratio (plant and equipment) decline faster. The changed assumptions give a different scenario than the base scenario of the forecast.

Weaker growth in demand in the alternative scenario leads to lower GDP growth in 2009, and in 2010 GDP will fall by 0.3 per cent, cf. the Table below. This entails more rapid growth in unemployment, which will average 117,000 in 2010 compared with 95,000 at the baseline. The current-account surplus will be slightly higher despite the dampening of export market growth as import growth will fall below zero in 2009 and 2010, when business investments will fall and private consumption will show weak development.

HICP inflation in recent months, which reached 4.8 per cent year-on-year in August due to surging energy and food prices, entails a risk of stronger price pressures in the future. The strong price increases have undermined growth in household income, and the profit margins of many business enterprises have been squeezed by energy price inflation, among other factors. This implies a risk of second-round effects, i.e. that

CONTINUED Box 1

energy and food price inflation will spill over into wage inflation and the development in other domestic or imported goods. It is thus a normal trend for IMI to be relatively high when energy and import price inflation is low.

Another alternative scenario therefore operates with an increase in IMI as from the 3rd quarter of 2008 and slightly stronger growth in hourly wages than in the central estimate of the forecast. It is also assumed that the prices for food and imported goods grow a little more than in the central estimate.

The stronger price and wage pressure is reflected in HICP inflation already this year with inflation remaining above 4 per cent year-on-year in the 4th quarter, followed by a gradual decline. This decline will, however, be considerably slower than in the base scenario, i.e. to 2.7 per cent in 2010. The higher price inflation undermines the real disposable incomes of the households despite the assumed higher rate of wage increase, and growth in private consumption is considerably lower than in the forecast. Weaker growth in demand leads to lower GDP growth, and unemployment is around 4,000 persons higher by 2010. The current account remains unchanged since the increase in import prices and the deterioration of competitiveness are offset by a reduction in import volumes.

In the latter scenario, which combines lower growth in demand and stronger price and wage pressures, GDP growth is considerably lower than the central estimate of the forecast – only 0.3 per cent in 2009, while a decline by 0.4 per cent is envisaged for 2010. This reflects how higher price inflation tends to amplify the assumed dampening of demand. This scenario also entails a pronounced increase in unemployment, which will more than double, to 121,000 in 2010. HICP inflation is clearly higher than in the base scenario, and the current-account surplus reaches a higher level due to the stronger downward trend in demand in Denmark than abroad.

ALTERNATIVE SCENARIOS Table

	Base scenario	1: Weaker growth in demand	2: Intensified price and wage pressure	Total, 1+2
2008				
GDP, year-on-year	0.9	0.8	0.8	0.8
Unemployment, 1,000 persons	47	48	47	47
Balance of payments, kr. billion	23	23	21	21
HICP, per cent year-on-year	3.8	3.8	4.0	4.0
2009				
GDP, year-on-year	1.0	0.5	0.8	0.3
Unemployment, 1,000 persons	60	67	61	68
Balance of payments, kr. billion	36	37	36	37
HICP, per cent year-on-year	2.6	2.6	3.6	3.6
2010				
GDP, year-on-year	0.5	-0.3	0.4	-0.4
Unemployment, 1,000 persons	95	117	99	121
Balance of payments, kr. billion	47	51	47	52
HICP, per cent year-on-year	1.9	1.8	2.7	2.7

ing high, as well as the risk of a stronger downturn in the event of a more pronounced decline in private consumption, investment or the international economy.

The revisions of the forecast compared with the March 2008 forecast are outlined below, followed by a more detailed review of the forecast, including its underlying assumptions.

REVISIONS IN RELATION TO THE PREVIOUS FORECAST

The estimate of GDP growth in 2008 has been adjusted downwards compared with the March 2008 forecast, cf. Table 2. The downward adjustment is mainly attributable to weaker-than-expected growth in the first quarters of 2008, according to the available national accounts, including a setback in domestic demand. In a forward-looking perspective, the differences diminish. In recent months, unemployment has fallen more than expected, resulting in a slight tightening of the labour market at the outset, and the reversal is now expected in the 4th quarter of 2008. The current-account surplus has been adjusted upwards partly in view of the upward revision of the balance in the last quarters of 2007 and the development in the current year.

Since the spring, consumer price inflation has been stronger than predicted in the March 2008 forecast. Consequently, the estimates for 2008 and 2009 have been adjusted upwards. The longer-term estimates are close to the March forecast.

ASSUMPTIONS IN THE PROJECTION

The projection is based on a number of assumptions concerning the international economy, the financial conditions and fiscal policy, cf. Table 3.

REVISIONS IN RELATION TO THE PREVIOUS FORECAST Table 2

	Actual	This forecast			Previous forecast		
	2007	2008	2009	2010	2008	2009	2010
GDP, year-on-year	1.7	0.9	1.0	0.5	1.9	1.0	0.4
Unemployment, 1,000 persons	77.4	47.3	60.4	95.3	54.9	65.7	95.2
Balance of payments, kr. billion	17.8	23.0	35.7	46.8	1.8	6.4	19.2
HICP, per cent year-on-year	1.7	3.8	2.6	1.9	3.3	2.4	2.0

Note: The previous forecast was published in March 2008.

OVERVIEW OF FORECAST ASSUMPTIONS Table 3

	2007	2008	2009	2010
International economy				
Export market growth, per cent year-on-year	7.9	6.0	5.7	5.9
Export market price, per cent year-on-year	0.4	1.8	2.6	2.0
Foreign price, per cent year-on-year	0.9	2.3	3.7	2.0
Foreign hourly wages, per cent year-on-year .	2.3	3.3	2.8	3.0
Financial conditions, etc.				
3-month money-market interest rate, per cent per annum	4.1	4.5	4.3	4.2
Average bond yield, per cent per annum	4.7	5.0	5.2	5.2
Effective krone rate, 1980 = 100	103.2	105.9	105.7	105.7
Dollar exchange rate, DKK per USD	5.4	4.9	5.1	5.1
Oil price, Brent, USD per barrel	72.7	113.7	118.9	119.5
Fiscal policy				
Public consumption, per cent year-on-year	1.6	1.8	1.6	1.4
Public investment, per cent year-on-year	-9.0	2.2	3.8	3.5
Public-sector employment, 1,000 persons	825.7	824.2	831.8	834.1

The international economy

After a period of high global economic growth, a slowdown has been observed over the past year. This can be attributed to higher commodity prices, weaker housing markets in several countries and effects of the turmoil in the financial markets. So far, the slowdown has been most pronounced in the USA, but it has also affected several other countries that are among Denmark's major trading partners. The growth outlook for Denmark's major trading partners overall has deteriorated since the March forecast. Consequently, export market growth has been revised downwards in the projection to a level below the long-term average.

Price increases for imported goods are expected to gain momentum in the near future in response to the higher commodity prices. This also applies to price increases in the industrial export markets. Foreign wage increases are expected to peak in the current year and then to decline in the light of lower economic growth.

Interest rates, exchange rates and oil prices

In the forecast, developments in short-term and long-term interest rates are based on the expectations that can be derived from the yield curves in the financial markets. The projection assumes a slight decrease in the short-term interest rate, which has shown a rising trend since the end of 2005. The long-term interest rate has also increased since 2005, reaching just over 5 per cent in the 2nd quarter of 2008. In the projection, the long-term interest rate remains close to this level.

Recent years have seen considerable strengthening of the krone vis-à-vis the currencies of Denmark's trading partners, particularly the dollar, entailing an increase in the nominal effective exchange rate of the krone. At the end of August, the effective krone rate had returned to a level close to that of the March forecast, having been slightly higher from mid-March to the beginning of August. In the projection, the dollar rate and the effective krone rate are assumed to be unchanged from the level at end-August.

Oil prices fell from a high level from July to end-August, to stand at approximately 112 dollars per barrel. In the projection, oil prices are assumed to follow futures prices, which rise a little from the current level. The oil price is approximately 20 per cent higher in this forecast than in the March forecast.[1]

Fiscal assumptions

The fiscal assumptions in the forecast reflect the fiscal-policy stance as presented in Economic Survey, August 2008. Real growth in public consumption is expected to be 1.8 per cent in 2008, 1.6 per cent in 2009 and 1.4 per cent in 2010. The forecast growth in public consumption can be attributed primarily to increased expenditure for goods and services. The reduction in public-sector employment in 2008 can be explained by the strikes in the 2nd quarter. Growth in public consumption is higher than the estimate in Economic Survey, reflecting the normal tendency to exceed the target. Average annual growth in public investments is expected to be approximately 3 per cent in the forecast period. Overall, fiscal policy is expected to stimulate economic activity in 2008-10.

FORECAST FOR THE DANISH ECONOMY 2008-10

Output and employment

Output growth has slowed down from its annual average of almost 3 per cent in 2004-06. The growth rate fell to 1.7 per cent in 2007 and is expected to dampen further in the forecast period. This is a normal reaction after a period of high growth and mounting wage and price pressures.

The strong growth in 2004-06 has entailed intensified pressure on resources and the build-up of a substantial output gap. In view of the diminishing pace of both external and domestic demand, the pressure will ease in the near future, and the output gap is expected to close towards the end of the forecast period.

[1] After the cut-off date for this forecast, the oil price has fallen further, while the krone has weakened against the dollar.

The strong capacity pressures at the outset are emphasised by the continued decline in unemployment to well below the level that is compatible with price and wage stability in the medium term. Unemployment is projected to bottom out in 2008, followed by an increase as businesses adjust the number of employees to the weaker demand development. Unemployment will stay below its structural level until 2010, implying that the labour market will remain tight for some time to come.

The forecast operates with a reduction of the labour force by 9,000 people, cf. Table 4, reflecting fewer persons in the prime age groups and an increased outflow from the labour force due to poorer employment opportunities. This implies a lower participation rate. The favourable employment opportunities in recent years have led to an increase in the labour force, and the expected fall can be regarded as a return to a more normal level.

In view of the low unemployment rate and shrinking labour force, productivity growth will be the determining factor for output growth in the next few years. Productivity, measured as output per employee, fell in the 1st half of 2008 according to the available national accounts. This masks a continued increase in employment and a reduction in output. In the forecast, the slower pace of economic growth is expected gradually to spill over into the labour market, and employment is expected to fall by 56,000, or 2 per cent, from 2008 to 2010. Since output is projected to grow a little over the same period, annual growth in productivity will pick up and rise to around the average level observed since 1990, i.e. approximately 1.8 per cent.

Wages and prices

The decline in unemployment to a very low level has led to a significant upturn in wage inflation since 2005. Against the backdrop of sustained pressure on the labour market and high consumer price inflation, annual wage inflation in industry is expected to exceed 4.5 per cent in both 2008 and 2009. Towards the end of the forecast period, with unemployment approaching its structural level, wage inflation is expected to decline to around 4 per cent, cf. Table 5.

THE LABOUR MARKET — Table 4

1,000 persons, annual averages	2007	2008	2009	2010
Total employment	2,814	2,835	2,818	2,779
Of which private sector	1,988	2,011	1,987	1,945
Unemployed	77	47	60	95
Labour force	2,891	2,883	2,879	2,874

WAGES, ETC. IN NON-AGRICULTURAL SECTORS Table 5

Per cent, year-on-year	2007	2008	2009	2010
Hourly wages	3.9	4.6	4.7	4.2
Hourly wage costs	4.7	4.0	4.8	4.1
Hourly productivity	0.9	-0.3	1.5	2.1
Wage share, per cent of gross value added	65.9	67.8	68.5	67.9

In the euro area, wage inflation seems to have gained considerable momentum in 2008, without reaching the Danish level, however. In the projection, the economic slowdown contributes to sustaining a moderate pace of wage development in the euro area and Denmark's trading partners taken as one. Growth in hourly wages in industry is thus likely to remain stronger in Denmark than abroad. Wage competitiveness is expected to deteriorate further in the forecast period, accompanied by declining export market shares for Denmark.

Hourly wage costs are projected to mirror the development in wages in the absence of significant changes in business enterprises' other labour costs. Unit labour costs are projected to increase due to the lower rate of growth in hourly productivity than in hourly wage costs.

In 2008 and 2009, expected price increases for manufactured goods will not fully counterbalance the growth in unit labour costs, resulting in a further rise in the wage share. A higher wage share is normal when the labour market is tight. The wage share is expected to recede a little in the final year of the forecast when the pressure has subsided.

Price increases have picked up considerably since last autumn. In August 2008, annual HICP inflation was 4.8 per cent. The higher price inflation is primarily attributable to surging energy and food prices. At the same time, prices for imported goods and rent have shown stronger trends.

Domestic market-determined inflation, IMI, has been low in 2008, reflecting the normal pattern of weak IMI development in a situation with accelerating import and energy prices since business enterprises do not fully pass on price increases to consumers, cf. Box 5, p. 28. In a forward-looking perspective, profit margins are expected to recover, which will contribute to reinforcing domestic price pressures. The latter are expected to be significant as a result of higher payroll costs and rapidly increasing wholesale prices.

The substantial price inflation is expected to continue in the coming months due to the high energy and food prices and accelerating price increases for imported goods as well as higher IMI, cf. Table 6. Annual price inflation will then decline somewhat as the hikes in energy and food prices in the autumn of 2007 are eliminated from the calculation.

CONSUMER PRICES Table 6

Per cent, year-on-year	Weight[1]	2007	2008	2009	2010	2008					
						Q2	Q3	Q4	Aug.	Sep.	Oct.
HICP		1.7	3.8	2.6	1.9	3.7	4.6	3.6	4.8	4.5	4.0
Index of net retail prices	100.0	1.9	3.9	2.8	2.0	3.9	4.5	3.9	4.7	4.4	4.3
Exogenous:											
Energy	7.1	0.5	13.4	3.7	0.9	14.9	15.6	11.6	15.5	14.1	16.8
Food	14.4	4.3	8.1	2.3	0.9	8.7	10.4	6.2	10.9	9.8	7.6
Adm. prices	4.7	0.6	3.7	4.9	3.8	4.0	3.9	4.6	3.8	4.1	4.3
Rent	24.3	2.2	3.1	3.3	2.8	2.8	3.4	3.3	3.5	3.2	3.2
Excl. exogenous	49.5	1.4	1.7	2.4	1.9	1.3	1.7	2.1	1.9	2.0	2.0
Imports	15.0	1.5	3.4	3.0	1.9	2.9	3.7	4.2	3.8	4.0	4.1
IMI	34.5	1.4	0.9	2.2	1.9	0.6	0.8	1.2	1.0	1.1	1.0

Note: The most recent actual data cover August 2008.
[1] Weight in the index of net retail prices, per cent.

Energy price inflation is projected to be notably weaker in 2009 and 2010 than this year due to virtually unchanged oil prices, among other factors, cf. Table 3, while a clear slowdown in food price inflation is also expected. On the other hand, the recovery of profit margins and higher wage inflation are expected to entail an increase in IMI, and the rate of growth in the overall consumer-price index is projected to decline only gradually. Inflation will fall back to below 2 per cent towards the end of the forecast period.

Domestic demand

Growth in private consumption was weak in the 1st half of 2008. For the full year, growth is expected to be 1.8 per cent year-on-year, which is somewhat lower than the annual growth rates of 4-5 per cent observed in the period 2004-06. In 2009 and 2010, consumption growth is expected to moderate further, and the consumption-to-income ratio is expected to decline due to slower growth in private consumption than in household disposable income. The lower consumption-to-income ratio reflects the reduction in household wealth as a result of the weakening of the housing market.

House prices have fallen in Denmark over the past year, and expectations of further price drops may have led home buyers to exert extra caution. The weakening of the housing market is also reflected in the increased supply of homes for sale, the lower number of transactions and the higher number of enforced sales. Consequently, the projection also operates with falling house prices, cf. Table 7, although they are cushioned by robust growth in real incomes, a moderate level of interest rates and a continued low unemployment rate.

INCOME, WEALTH AND CONSUMPTION Table 7

	2007	2008	2009	2010
Cash prices, per cent year-on-year	4.6	-4.0	-2.2	-0.8
Real disposable income, private sector, per cent year-on-year	-0.6	1.4	2.3	2.2
Consumption ratio, per cent of private sector disposable income	93.6	93.9	92.7	91.3
Net lending, private sector, kr. billion	-62.1	-43.0	-17.4	16.8

Residential investments have levelled off since 2006 after an almost continuous rising trend since the beginning of the 1990s. In the projection, residential investments decline a little from the current highs predominantly as a result of falling cash prices and high construction costs.

After remaining strong for a few years, growth in business investments has abated since the 1st half of 2007. Construction investments have reacted to the upswing with a considerable lag, having risen over the last few years from a low level. The growth in construction investments is expected to continue at a moderate pace until 2010. Investments in plant and equipment grew at a brisk pace in 2003-07 against the backdrop of sound corporate earnings and substantial capacity pressures. The result is a considerably higher investment ratio. In the projection, the investment ratio is reduced to a more normal level as output growth and capacity pressures subside.

Total domestic demand excluding inventory investments fell by 0.6 per cent in the 1st half of 2008, reflecting dampened growth in demand compared to recent years. The forecast operates with a further slowdown, and in 2010 growth in private-sector domestic demand is expected to be close to zero.

Foreign trade and the balance of payments

Denmark has seen a decline in import growth since 2006, which can be attributed to more subdued growth in demand. In the projection, annual import growth is 1.7 per cent on average, cf. Table 8. In comparison, annual import growth was more than 10 per cent on average in 2004-06. As a result of the high growth in demand and strong domestic capacity pressures, an increasing share of demand was met by imports, causing the import ratio to climb to a high level. In the near future, the propensity to import is expected to stabilise at the elevated level as capacity pressures ease.

Annual export growth was almost 7 per cent on average in 2004-06, a period of favourable conditions in Denmark's major export markets. In

EXPORTS AND IMPORTS — Table 8

Per cent, year-on-year	2007	2008	2009	2010
Exports	1.9	2.4	1.2	2.0
Imports	3.8	3.3	0.4	1.5
Export prices	2.1	5.5	1.7	0.9
Import prices	3.3	4.8	1.9	0.5
Terms of trade	-1.2	0.7	-0.3	0.5
Import ratio, non-energy goods, standard calculation, 2000 = 100	115.0	114.6	114.5	115.9

2007, export growth was 1.9 per cent at constant prices, and in 2008-10 annual growth in real exports is expected to be just under 2 per cent. Export growth will subside in response to the slowdown in the global economy and the deterioration of Denmark's wage competitiveness.

In recent years, the strong growth in Denmark's export markets has benefited industrial exports. However, growth in industrial exports has declined since 2006 and is expected to remain moderate in the near future in light of the weaker international cyclical position. The forecast operates with slower growth in Danish industrial exports than in total imports of industrial goods from the recipient countries, which implies a loss of market shares for the industrial sector.

Oil and gas production has diminished in recent years; a trend that is expected to continue. Consequently, the projection operates with falling energy exports. In the projection, agricultural exports are growing at a steady pace since grain production is expected to increase due to the surging grain prices in recent years and the abolition this year of compulsory set-aside.

Denmark's terms of trade have improved over a number of years. In 2007, however, import prices tended to rise more than export prices, causing the terms of trade to deteriorate. In the forecast period, the terms of trade are expected to remain at the high level.

The current-account surplus declined from 2005 to 2007 primarily as a result of lower trade surpluses. The trade balance for goods has improved since then, and the improvement continues as other countries outperform Denmark in terms of economic growth. At the same time, the surpluses on sea freight and investment income will be maintained, resulting in an increasing current-account surplus in the forecast, cf. Table 9.

BALANCE OF PAYMENTS — Table 9

Kr. billion	2007	2008	2009	2010
Trade in goods	-16.0	-14.6	-6.5	2.4
Trade in services	36.8	35.6	33.7	35.0
Interest, transfers, etc.	-3.0	2.0	8.5	9.3
Current account, total	17.8	23.0	35.7	46.8

Roskilde Bank

In the course of the normal review of loans and guarantees in connection with the preparation of the interim report for the 1st half of 2008, the board and management of Roskilde Bank found it necessary to make far more extensive write-downs than previously assumed.[1] In the assessment of the board, an announcement that substantially greater write-downs were expected might lead to a run on the bank. Consequently, the Danish Financial Supervisory Authority and Danmarks Nationalbank were contacted, and on 10 July 2008 Danmarks Nationalbank concluded an agreement with Roskilde Bank to provide the necessary liquidity. Under the agreement, Danmarks Nationalbank was to make an unlimited credit facility available to Roskilde Bank. A precondition was that Roskilde Bank complied with the solvency requirements of the Danish Financial Business Act. According to the Danish Financial Supervisory Authority, there was no evidence that Roskilde Bank did not meet the statutory solvency requirements.

The guarantee was aimed at ensuring funding for the continued operation of the bank and was subject to a number of conditions, including that Roskilde Bank should work towards a full or partial sale of the bank.

Against this background, from 15 July 2008 to the deadline on 22 August, Danske Markets was in charge of a sales process during which a number of interested banks scrutinised Roskilde Bank and its exposures very closely.

At the expiry of the deadline the unfortunate outcome was that no banks would submit an offer for either all or parts of Roskilde Bank. According to Danske Markets, one explanation was that the potential buyers had discovered that the quality of the bank's credit exposures was subject to great uncertainty. As a result, no one ventured to give an estimate of the value of Roskilde Bank's assets. On 22 August 2008, Roskilde Bank notified Danmarks Nationalbank of the outcome of the sales process.

At the same time, in connection with preparation of the interim report, Roskilde Bank's external auditors discovered write-downs of at least kr. 1 billion more than the amount notified to Danmarks Nationalbank on 10 July. The interim report was audited at the order of the

[1] For further background information, reference is made to the statement of 14 July 2008 (in Danish only) at www.roskildebank.dk.

Danish Financial Supervisory Authority. Also on 22 August, the external auditors notified the Danish Financial Supervisory Authority that the bank no longer complied with the individually calculated capital need nor the statutory solvency requirement.

The Danish Financial Supervisory Authority gave Roskilde Bank respite until 29 August 2008, and subsequently until 16 September 2008, to once again meet the solvency requirement, as well as its individual capital need.

Against that background, Danmarks Nationalbank and "Det Private Beredskab" (the Danish banking sector's contingency association) on 24 August concluded an agreement with the board of Roskilde Bank on the acquisition of the assets and debt and other liabilities of Roskilde Bank, except for hybrid core capital and subordinated loan capital.

Roskilde Bank's activities are transferred to a new bank, to which Danmarks Nationalbank and Det Private Beredskab contribute capital in the range of kr. 4.5 billion. The purpose of this structure is to ensure the best possible financial foundation for settlement of the activities acquired from Roskilde Bank. Danmarks Nationalbank and Det Private Beredskab have jointly appointed a competent board for the new bank.

Should the settlement process ultimately result in a profit after remuneration of the capital contributed, such profit shall be payable to the owners of the subordinate loan capital and the former shareholders of Roskilde Bank in that order.

Any losses shall initially be covered from the kr. 750 million contributed by Det Private Beredskab.

The sales agreement was presented at an extraordinary general meeting of Roskilde Bank on 1 September 2008 in accordance with Section 246 of the Danish Financial Business Act. It is subject to approval by the Danish Financial Supervisory Authority in accordance with Section 204 of said Act. Such approval has not yet been obtained. In addition, the European Commission must be notified of the acquisition under the provisions on state aid in the EC Treaty.

The acquisition of Roskilde Bank by Danmarks Nationalbank and Det Private Beredskab was approved by the Danish Competition Authority on 1 September.

On 4 September, the Finance Committee of the Folketing (Danish parliament) approved a document on a government guarantee for any losses suffered by Danmarks Nationalbank in connection with the unlimited credit facility provided on 10 July 2008. The government has indicated that it will also ask the Finance Committee for a guarantee to cover any losses in connection with the acquisition and settlement of Roskilde Bank.

The above solution for Roskilde Bank has been chosen with a view to limiting the negative impact of the incident. As was the case at the beginning of July, Danmarks Nationalbank believed that the situation in relation to Roskilde Bank posed a serious threat to financial stability in Denmark. Roskilde Bank was the 8th largest bank in Denmark with extensive foreign financing. Suspension of payments by Roskilde Bank could have had an adverse knock-on effect on the Danish financial market at a time when the sector overall has a deposit deficit in the range of kr. 500 billion and therefore relies heavily on financing in the capital markets.

Fixing of Swap Reference Rates

INTRODUCTION

Effective as from 1 October 2008, Danmarks Nationalbank calculates and publishes swap reference rates on a daily basis for maturities between 2 and 10 years. The reference rates are published on the basis of daily reporting by 7 banks, 4 Danish and 3 foreign banks.[1]

The swap reference rates are fixed at 11:00 a.m. and published via DN News at 11:30 a.m., after which time they are also available on Danmarks Nationalbank's website. The rates quoted by the individual banks are published on the website of the Danish Bankers Association.

SWAP REFERENCE RATES – BACKGROUND

Previously, official Danish reference rates for maturities of more than 12 months have not been available. The fixing of swap reference rates extends the range of Danish reference rates to include maturities of up to 10 years.

A swap is a financial agreement between two parties to exchange payments over a fixed period on terms stipulated today, based on an agreed nominal amount. An interest-rate swap entails exchange of payments in the same currency, and typically fixed interest payments are exchanged for variable interest payments.

Interest-rate swaps are used in connection with many different products in the financial markets. For example, some mortgage loans are based on a 10-year swap rate. In view of the widespread use of interest-rate swaps, a reference rate can provide an easily accessible basis for a great variety of commercial contracts and thus contribute to market efficiency.

RESPONSIBILITY AND PARTICIPATION

The Danish Bankers Association administers the rules on participation in the fixing of swap reference rates, while Danmarks Nationalbank undertakes the daily calculation and publication of the swap reference rates.

[1] The reporting banks are Danske Bank, Nordea, Nykredit Bank, SEB, Deutsche Bank, Royal Bank of Scotland and Barclays Bank.

A committee has been established under the auspices of the Danish Bankers Association to address issues in connection with the reference rates. The committee consists of representatives of all of the quoters and the Danish Bankers Association, and Danmarks Nationalbank has observer status.

Any bank that is an active player in the Danish interest-rate swap market can be approved by the committee as a quoter of swap reference rates. Approval is based on an immediate assessment of the applicant's activity in the swap market and on a trial period.

A participant may likewise withdraw from the group of quoters by submitting written notice to the committee by the end of the month, with effect from the end of the following month.

The reporting banks are responsible for ensuring that their reported rates reflect realistic interest-rate levels to the highest possible degree. No quoter is obliged to conclude deals with the other quoters on its quote.

CALCULATION OF SWAP REFERENCE RATES

The daily calculation of swap reference rates is based on reporting of swap rates for all maturities between 2 and 10 years in which the variable leg is 6-month Cibor. The swap reference rate is calculated to 4 decimal places on all Danish banking days.

The reference rate is calculated by removing the highest and lowest reported rates and calculating the average of the rest. The number of reported rates removed depends on the number of reports. All the participating banks are thus given the same weight in the calculation of the reference interest rate.

Status of the Faroese Economy, Mid-2008

Niels Bartholdy, Economics

SUMMARY

Growth in the Faroese economy is slowing down after a couple of years with a sustained upswing. Surging oil prices have led to considerably higher costs in the fisheries sector. At the same time, 2008 to date has seen falling fish prices, and stocks are critically low for cod and haddock – species that are important to the Faroe Islands.

Other sectors are experiencing lower growth than in the preceding few years, but there are no indications of an actual downturn yet. The public sector, particularly local government, is expanding and reporting employment growth, which has helped to keep unemployment at a record-low level of close to 1 per cent of the labour force.

The trade balance showed a very large deficit of kr. 1.3 billion in 2007, driven by sustained growth in imports. Preliminary data points to a deficit of a similar magnitude in 2008. Imports are declining as a result of dampened growth and private consumption, but exports have also declined due to the less favourable conditions for fisheries.

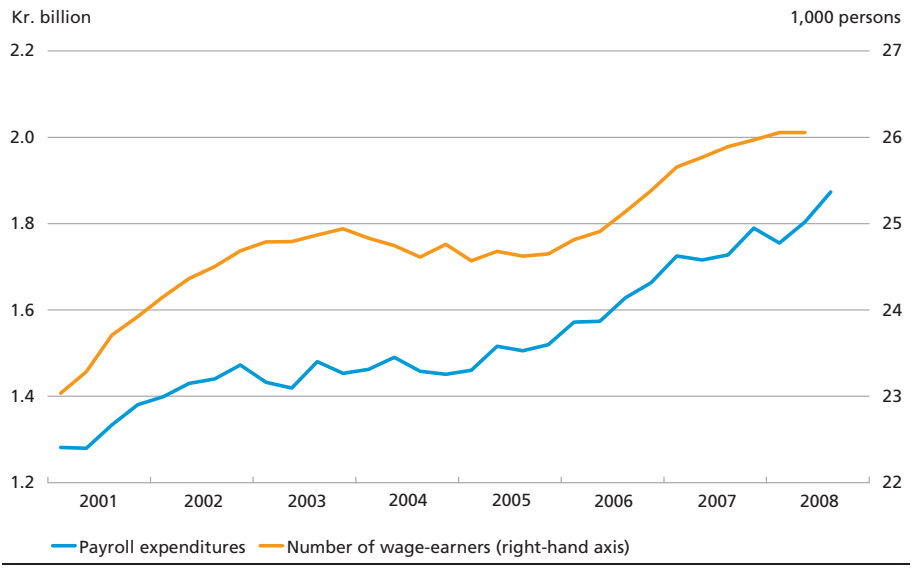
ECONOMIC ACTIVITY[1]

Growth in the Faroese economy is slowing down. Payroll expenditures and employment continue to rise, cf. Chart 1, but there are indications that the economy has reached its capacity limit, and conditions for fisheries are difficult.

Payroll expenditures, which normally account for between 2/3 and 3/4 of the Faroe Islands' gross domestic product at factor cost, were 4 per cent higher in the period January-July 2008 than in the same period of 2007, and employment was just over 1 per cent higher in January-May 2008 than in the first five months of 2007. This is a substantial slowdown on full-year growth in 2007, which was 8 per cent for payroll expenditures and 3 per cent for employment.

[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

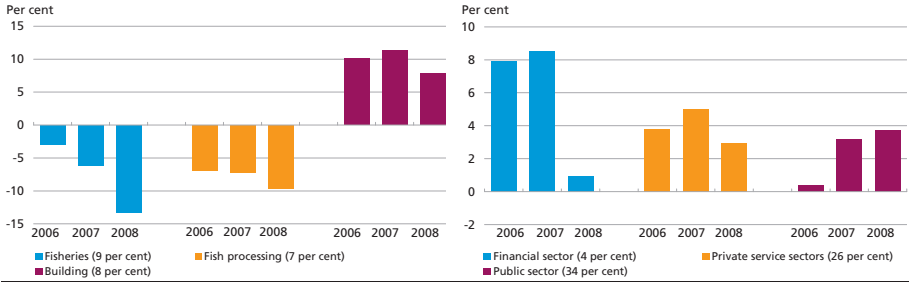


Note: Seasonally adjusted quarterly data.
Source: Hagstova Føroya and own calculations.

These developments reflect the continued and increasingly serious setbacks for fisheries and the fish-processing industry, as well as a more subdued growth in other sectors, except the public sector, cf. Chart 2.

Fisheries and the fish-processing industry have so far in 2008 seen a pronounced downward trend in employment. Part of the fishing fleet has remained in port for shorter periods on account of the high oil prices, which, coupled with falling fish prices, have rendered certain types of fisheries unprofitable. Both fisheries and fish processing were already affected by the low stocks of cod and haddock, and one fish-processing factory has closed down. Payroll expenditures in fisheries were down by 22 per cent in the period January-July 2008 compared with the same period of 2007.

WAGED EMPLOYMENT IN SELECTED SECTORS — Chart 2



Note: Data for 2008 shows the change in the period January-May 2008 in relation to the same period of 2007. Figures in brackets indicate the sector's share of total waged employment in 2007.
Source: Hagstova Føroya.

The fall in employment also reflects problems in attracting labour to the less profitable fisheries segments and to the fish-processing industry. New legislation adopted in June 2008 enables EU citizens to obtain residence permits in the Faroe Islands with a view to taking certain types of employment.

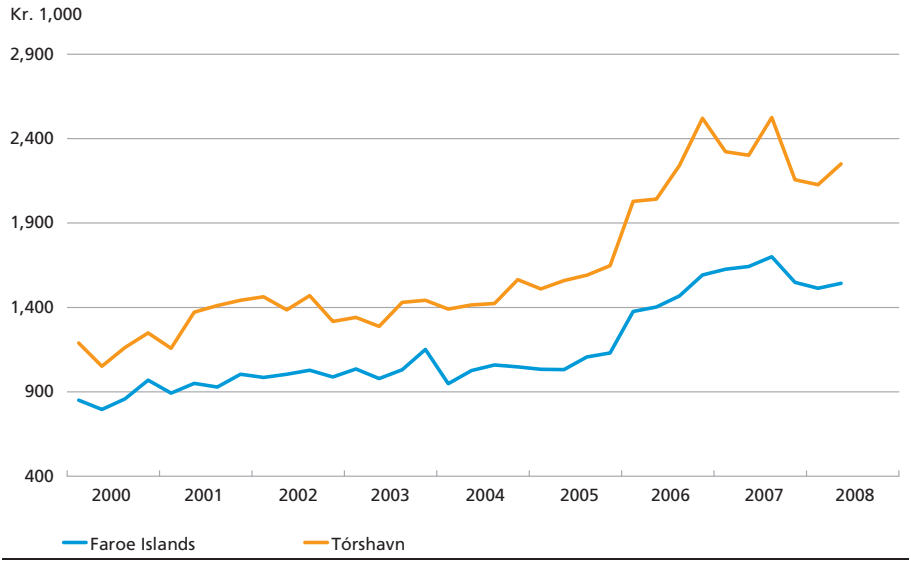
Unlike fisheries, sea farming has seen considerable growth in both employment and payroll expenditures.

Activity in the building and construction sector remains strong, with sound growth in employment and payroll expenditures, albeit weaker than in 2007. Two new tunnel projects are on the drawing board, Streymoy-Eysturoy and Streymoy-Sandoy. The construction and financing plans for these projects have yet to be finalised.

The slowdown in the housing market that started in 2007 continued into 2008, but house prices rose a little in the 2nd quarter, cf. Chart 3. For the Tórshavn area, average housing prices are now back at the mid-2006 level, which is 11 per cent below the most recent peak in the 3rd quarter of 2007. In the settlements, housing prices have also been receding. For the Faroe Islands overall, housing prices in the 2nd quarter of 2008 were 9 per cent below the peak in the 3rd quarter of 2007.

Following a couple of years of strong expansion, the Faroese banks are still growing, but at a far more measured pace. Employment has risen by a mere 1 per cent in 2008 so far, compared with employment growth of

HOUSING PRICES — Chart 3



Note: Quarterly averages, most recently from the 2nd quarter of 2008. 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 Bank, Hagstova Føroya and own calculations.

around 8 per cent in the preceding two years. One of the underlying factors is the difficulty in attracting additional qualified labour to this sector. Payroll expenditures rose appreciably, by 12 per cent, in the period January-July 2008.

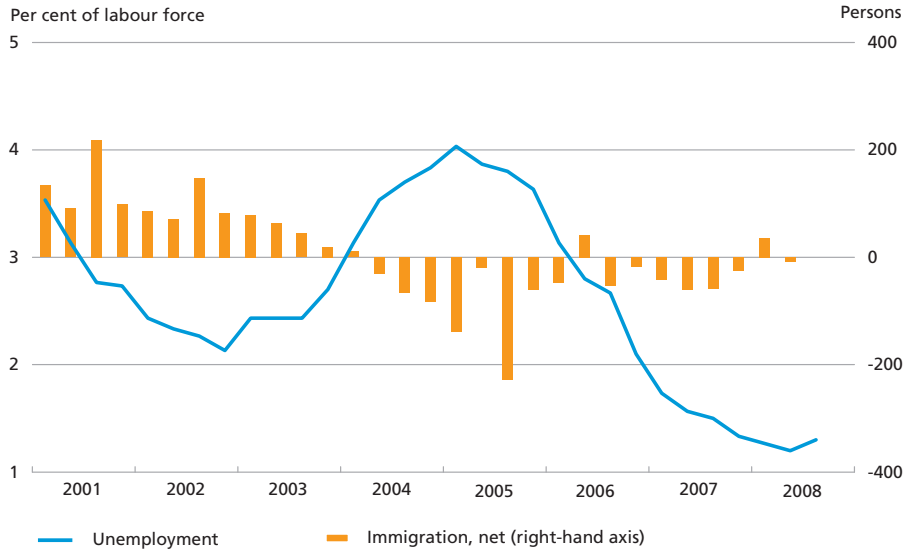
In the private service sectors, payroll expenditures have risen by 9 per cent and employment by 3 per cent in 2008 to date. Growth is broadly based across sectors such as business services and road and sea transport and reflects, inter alia, higher activity in connection with oil drillings (support ships, etc.) in the Faroe Islands. On the other hand, a slowdown in private consumption has affected the retail sector, where employment has been stagnant in 2008 after a couple of years with growth rates of 4-5 per cent a year.

The public sector is unique in that it is the only subsector with higher employment growth in 2008 to date, just below 4 per cent. Payroll expenditures rose by 7 per cent in the period January-July compared with the same period of 2007. This development is to a large extent attributable to fairly strong expansion in local government employment in spite of the tight labour market.

High overall employment has reduced unemployment to a record-low level of 1.2 per cent of the labour force, cf. Chart 4.

Previously, fluctuations in unemployment were smoothed by immigration and emigration, e.g. around 2002 when the decline in unemployment was offset by considerable net immigration to the Faroe Islands.

UNEMPLOYMENT AND IMMIGRATION — Chart 4



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

Conversely, substantial net emigration was seen during the economic setback in 2004-05. However, this trend has been broken in recent years, as rapidly falling unemployment has coincided with net emigration, which further reduces unemployment.

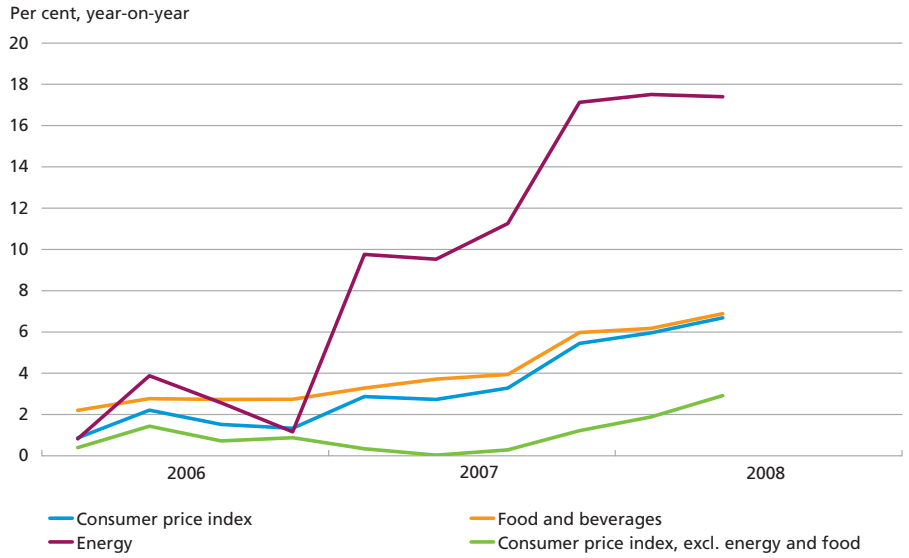
In the 2nd quarter of 2008, the consumer price index stood almost 7 per cent higher than in the 2nd quarter of 2007, cf. Chart 5. The strong increase is mainly attributable to higher oil prices and surging vegetable food prices, but even if these components are excluded, price inflation has picked up considerably over the last six months, reaching 3 per cent in the 2nd quarter of 2008. This reflects the lagged pass-through of higher oil and food prices to other subcomponents of the index such as transport and restaurant prices. High oil prices have a relatively large direct impact on household finances since oil burners are the predominant source of heating in the Faroe Islands.

Fisheries

Coastal fisheries in Faroese waters, which account for approximately 60 per cent of total fisheries, are dominated by the demersal species cod, haddock and saithe. For the former two, stocks are very low, and catches fell by 6 per cent for cod (from an already low level) and 22 per cent for haddock in 2007.

The International Council for Exploration of the Seas, ICES, recommends a complete ban on all cod and haddock fishing for some time in order for stocks to recover. Faroese marine biologists have proposed a

CONSUMER PRICE INDEX BROKEN DOWN BY SUBCOMPONENTS Chart 5



Source: Hagstova Føroya and own calculations. The most recent observations are from the 2nd quarter of 2008.

reduction of the number of fishing days for certain vessel types by up to 50 per cent and a significant expansion of the non-fishing zones in 2008/09. In August 2008, the Løgting (parliament) opted for a general reduction in the number of fishing days by 10 per cent.

The high oil prices have increased costs for the fishing fleet considerably, particularly for the very energy-intensive deep-sea trawlers. The oil price hike in the spring of 2008 meant that a number of vessels remained in port as the costs of fishing exceeded potential earnings.

Fish prices, which generally showed a favourable trend in 2007, have so far been declining in 2008.

The total value of fish caught in Faroese waters fell by 7 per cent in 2007. In the first seven months of 2008, the value was 18 per cent lower than in the same period of 2007.

In contrast, salmon and trout farming has recovered strongly after the crisis in 2004-06, when the sector was affected by epidemic diseases. Output rose from 18,000 tons in 2006 to 30,000 tons in 2007, and the forecast for 2008 is around 45,000 tons. The sector is now better protected against the spread of disease since production is concentrated on a few farms that are subject to detailed regulation and supervision.

FOREIGN TRADE

Exports of Faroese goods, which are entirely dominated by fish products, amounted to kr. 4 billion in 2007, cf. Table 1. This was in line with the 2006 level in spite of lower catches of the most important species: cod, haddock and saithe. Overall, price developments remained favourable in 2007.

Exports of salmon from the re-established sea farming sector increased considerably. In 2007, salmon and trout accounted for 15 per cent of total export revenue. Mackerel also played a larger role, constituting 5 per cent of the value of exports in 2007. This reflected significant increases in both prices and volumes.

TRADE BALANCE — Table 1

Kr. billion	2005	2006	2007
Exports	3,586	3,869	4,023
Imports	4,486	4,678	5,300
Imports, excluding ships	3,710	4,547	5,006
Trade balance	-900	-810	-1,277
Trade balance, excluding ships	-318	-754	-1,077
Memo: Balance of payments, current account	19	142	...

Source: Hagstova Føroya.

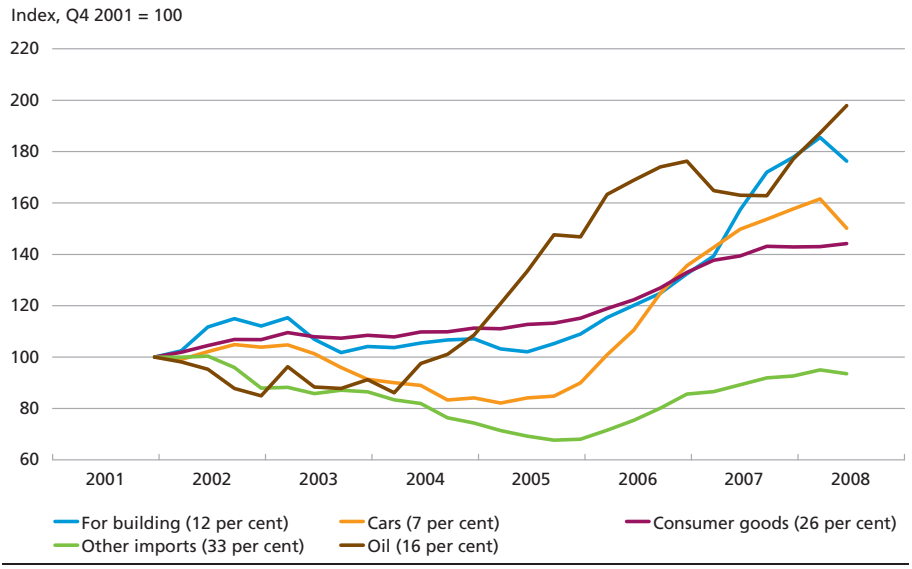
However, late 2007 and 2008 to date have seen substantial declines in the catches of haddock, saithe and mackerel, among other species. Combined with lower fish prices this has reduced exports. Excluding ships, exports in the 1st half of 2008 were 18 per cent lower than in the 1st half of 2007. Due to considerable export revenue from ships, overall exports fell by only 4 per cent.

The upswing in 2006 and 2007 entailed substantial growth in imports, and the trade deficit increased rapidly to kr. 1.3 billion in 2007. The recent dampening of economic activity has, however, curbed growth in imports for most subcomponents, cf. Chart 6. Imports of cars and building materials fell in the 2nd quarter, and total imports in the 1st half of 2008 were 2 per cent below the level in the same period of 2007.

Developments in 2008 so far, with falling export revenue and declining imports, point to a trade deficit in 2008 of the same magnitude as in 2007.

The current account, which comprises the trade balance as well as trade in services, transfers to and from abroad, etc., has shown a surplus for some years. At end-2006, the Faroe Islands had accumulated net external assets of kr. 3.7 billion. The large trade deficits in 2007 and 2008 will invariably entail substantial current-account deficits, thereby reducing the net external assets.

IMPORT VALUE BROKEN DOWN BY SUBCOMPONENTS Chart 6



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 2007.
Source: Hagstova Føroya and own calculations.

THE BANKS' FINANCIAL RESULTS Table 2

Kr. billion	2003	2004	2005	2006	2007
Net interest and fee income	574	553	550	632	830
Value adjustments, etc.	43	95	47	49	181
Profit from financial items	617	648	597	682	1.011
Operating expenses	281	290	313	371	483
Net losses and provisions	437	119	-15	-74	25
Profit from subsidiaries, etc.	1	13	41	123	149
Ordinary operating result before tax	-100	252	341	507	652
Solvency ratio	30.9	31.4	20.6	18.4	18.8

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

THE FINANCIAL SECTOR

The two largest banks in the Faroe Islands, Eik Bank and Føroya Banki, were stock-exchange listed in Copenhagen and Reykjavik in 2007. For both banks, 2007 was characterised by expansion. Eik Bank acquired the Faroese activities of Iceland's Kaupthing Bank, and the subsidiary, Eik Bank Danmark, expanded by acquiring the Danish branch of Skandia-Banken. Føroya Banki set up a subsidiary in Denmark.

The total profit before tax for the Faroese banks was kr. 652 million in 2007, cf. Table 2. This was a 29 per cent increase on the 2006 result, which had been record high. However, a large part of the 2007 profits related to capital gains. The higher level of activity has a clear impact on costs, which rose by almost 30 per cent in 2007. Expansion in Denmark is reflected in increasing transfers from subsidiaries.

The 1st half of 2008 saw considerable downward adjustment of securities prices, and the overall profit before tax was close to zero.

Lending by banks, which rose strongly in 2006 and 2007, has levelled off somewhat during 2008 to date. In the 2nd quarter of 2008, lending to the corporate sector was 23 per cent higher than in the 2nd quarter of 2007, while lending to households was 6 per cent higher[1]. Lending to the public sector has increased in 2008 to stand 16 per cent higher in the 2nd quarter than in the same quarter of 2007. Growth in total deposits has not matched growth in lending, implying that the banks are increasingly dependent on money-market financing.

[1] Source: Landsbanki Føroya.

PUBLIC FINANCES

The favourable economy in 2007 was reflected in government finances, since higher income from taxes and duties, including import duties, boosted total income by just over 5 per cent. Expenses also rose by 5 per cent, entailing an unchanged balance compared with 2006 and a surplus of kr. 146 million. The dampening of the economy, combined with tax cuts adopted by the previous government, exerts downward pressure on income growth in 2008. However, income from customs and other duties is expected to grow, partly on account of increases in certain duties, partly because duty-free sales of tobacco to travellers entering the Faroe Islands will be abolished from October 2008. In total, the budget operates with a 3-per-cent increase in income.

On the expenses side, an increase of almost 7 per cent is expected in 2008, reflecting e.g. higher costs for interest subsidies due to rising interest rates. In the Faroe Islands, interest is not tax-deductible; instead the government subsidises 40 per cent of interest on housing and student loans.

As capital investments are expected to be slightly lower in 2008 than in 2007, this overall means that the Finance Act budgets for a result close to balance in 2008.

The government's outstanding debt has more or less been eliminated by the surpluses in recent years and the privatisation of Føroya Banki.

GOVERNMENT FINANCES — Table 3

Kr. million	2004	2005	2006	2007	Budget 2008
Taxes and duties, etc.	2,840	2,897	3,349	3,559	3,699
Block grants	633	631	632	632	633
Total income	3,472	3,528	3,980	4,191	4,332
Operating costs	3,324	3,467	3,578	3,767	4,106
Capital investments	228	201	268	292	228
Net interest costs	72	71	-7	-14	-19
Total expenses	3,624	3,739	3,838	4,045	4,315
Balance	-152	-211	142	146	17
Net government debt, year-end	1,853	2,088	1,405	117	...

Note Income and balance are exclusive of extraordinary income of kr. 535 million from distribution of extraordinary dividend by Føroya Banki in 2006, and of kr. 1,212 million and kr. 87 million from the respective sales of 2/3 of the shares in Føroya Banki and 1/3 of the shares in Atlantic Airways in 2007. Net government debt is exclusive of financial assets, which amounted to kr. 1,589 million in 2007.

Source: Fíggjarmálaráðið (Faroese Ministry of Finance) and Landsbanki Føroya.

The local government sector has budgeted for large deficits in both 2007 and 2008, which has undoubtedly contributed to the pronounced rise in public-sector employment in 2008 to date, and to the increase in bank lending to the public sector.

ECONOMIC PROSPECTS

The Faroese economy is slackening its pace after the high-growth years 2006 and 2007, but so far only fisheries and fish processing have seen an actual downturn. Declining imports and slower bank lending growth do, however, indicate that the economy is shifting to a lower gear.

In spite of the lower imports, a sizeable trade deficit is still expected as export revenue is also falling on account of the problems in the fisheries sector. The considerable net external assets of the Faroe Islands provide a buffer, but this buffer will soon be eroded unless the trade deficit is reduced.

It looks as if employment is buoyed up, and unemployment kept at a very low level, by strong employment growth in the public sector, particularly local government, while parts of the private sector are still short of labour. The granting of residence permits to EU citizens taking certain types of employment may to some extent ease pressures in the labour market.

It is encouraging that sea farming has been successfully re-established and once again constitutes a major source of export revenue.

Test drillings for oil in the Faroese underground have yet to yield results that provide a basis for initiating production.

The First 10 Years of EMU

Niels Bartholdy, Niels Arne Dam and Susanne Hougaard Thamsborg, Economics

INTRODUCTION

In May 1998, it was decided which EU member states were to make up the euro area from the outset. In June, the European Central bank, ECB, was established. On 1 January 1999, 11 EU member states adopted the euro, and since then another four have followed suit. Slovakia's entry on 1 January 2009 will bring the number of euro area member states to 16 out of the 27 EU member states[1].

After approximately 10 years and a full business cycle, it is time for a status report on Economic and Monetary Union, EMU.

At the launch of the euro in 1999, the euro area was experiencing a boom, followed by a surprisingly long period of low growth. The last few years have seen high growth again, which is now slowing down.

The idea behind EMU was to anchor economic stability in Europe. A single monetary policy was to deliver price stability, and the single currency was to eliminate currency unrest among member states. The aim was to create a framework for sustainable growth, while economic policy would otherwise still predominantly be a national matter. The principal decisions on the design and structure of EMU were taken in the period 1988-92 on the basis of the following key factors:

- The experienced benefits of exchange-rate stability in the European Monetary System, EMS, in 1983-92 contrasted sharply with the strong turbulence of the 1970s, when it became clear that exchange-rate adjustments and capital restrictions did not work as intended.
- The work to create the single market in the European Community was gaining momentum. This included liberalisation of capital flows as from 1990.
- The reunification of Germany in 1989-90 paved the way for agreement on the EMU project between France and Germany.

[1] Euro area member states as from 1 January 2009: Austria, Belgium, Cyprus, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, Netherlands, Portugal, Slovakia, Slovenia and Spain.

Even before the final adoption of the EMU plans, the EMS currency crisis in 1992-93 demonstrated that a broad-based fixed-exchange-rate system, such as the EMS, by no means provided a solid and permanent bulwark against currency unrest. It was also widely believed that it would be increasingly difficult to maintain the fixed-exchange-rate system after the liberalisation of capital flows. EMU was presented as a natural, resilient extension and expansion of the EMS, only with a common central bank at its heart instead of Deutsche Bundesbank that tended to consider only the development in Germany in its policy planning[1].

The ECB's primary objective, modelled on that of Deutsche Bundesbank, is to maintain price stability in the euro area overall. To the extent that this objective is met, the ECB can pursue other objectives, e.g. to stimulate growth and employment by lowering interest rates.

This article looks into the economic development in the euro area in the past 10 years, focusing on inflation, growth, employment, interest rates and the ECB's monetary policy.

The introduction of the single currency has been regarded as an important step towards completion of the single market in the EU, and this article also reviews the progress of financial and trade integration in the euro area in the first 10 years of the euro, and whether inflation and GDP patterns have achieved a higher degree of synchronisation.

ECONOMIC DEVELOPMENT

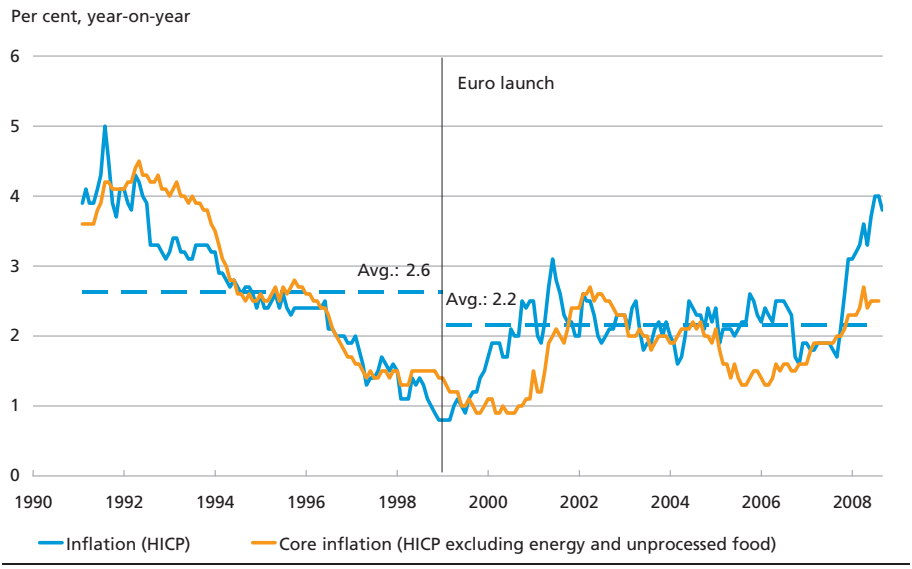
Inflation

The ECB can be said to have fulfilled its primary objective of price stability. The ECB has defined price stability as HICP inflation of below, but close to 2 per cent.[2] The ECB has added that price stability is to be maintained "in the medium term", which is in accordance with the fact that monetary-policy transmission is subject to a certain lag.

Inflation in the euro area member states fell strongly in the years prior to the launch of the euro, when these member states sought to fulfil the convergence criteria for membership, including the criterion of low inflation. Since 1999, inflation has been relatively stable, cf. Chart 1, although on average slightly higher than the ECB's objective. This is chiefly attributable to oil price hikes in 1999-2000, 2004-05 and especially in 2007-08, when surging food prices also contributed to inflation. As mentioned, the ECB stresses the "medium-term orientation", and the ECB's response to high current inflation depends on whether external im-

[1] The background to the creation of EMU is described in more detail in Bartholdy and Thomsen (2002).
[2] See e.g. ECB (May 2008), p. 35.

INFLATION IN THE EURO AREA Chart 1



Source: EcoWin.

pulses to inflation are assessed to impact e.g. wage formation, which implies second-round effects.

Price stability in the euro area is not only attributable to the ECB's successful monetary policy, but should also be viewed in light of the global trend towards relatively low, stable inflation. Central banks worldwide have successfully focused on anchoring inflation expectations and conducting credible monetary policy aimed at price stability. In addition, globalisation, including in particular the increased integration of China into the world economy, has promoted lower inflation via import prices.

Globalisation has also contributed to a shift in relative prices, entailing a general increase in the euro area in prices for frequently purchased "local" goods and services, while prices for less frequently purchased "globally traded" durable consumer goods and services have dropped considerably. Households tend to give frequently purchased goods greater weight in their outlook on price developments than the actual weight of these goods in the overall consumer price index. This shift in relative prices – which was particularly evident in the period around the launch of the euro in 1999 – and the rounding up of prices in e.g. restaurants and cafés on introduction of the euro caused many euro area citizens to believe that the introduction of the euro had generally led to strong price increases[1].

[1] European Commission (2008).

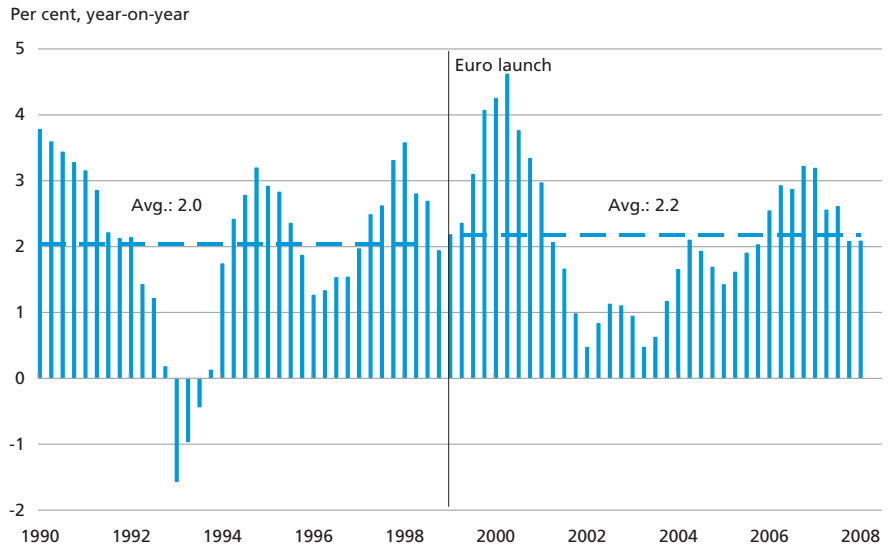
"Perceived inflation" in the euro area member states was, however, considerably higher than actual measured inflation based on a typical basket of consumer goods. The introduction of the euro in the first member states taught the lesson that an intensified effort is called for to avoid unwarranted price increases in connection with other member states' subsequent introduction of the euro, most recently Cyprus and Malta at the beginning of 2008.

Growth and employment

Real-economic development was favourable in the period around the launch of the euro in 1999. The upswing, which had started in 1997 and been temporarily interrupted by the Asian crisis in 1998, lasted until 2000, cf. Chart 2. The period 2001-05 saw relatively low growth in the wake of the bursting of the dotcom bubble that led to plummeting stock prices and a global decline in growth. Germany had previously often played the role of economic locomotive for Europe, but was further burdened by the costs of reunification and the absence of structural reform. An upswing did not set in until 2006. In 2008 to date, growth has declined again. Average annual growth was 2.2 per cent in the first nine years after the launch of the euro, compared with 2.0 per cent in the preceding nine years.

Employment in the euro area rose strongly by approximately 15 million people from 1999 to 2008, compared with approximately 7 million in the

GDP GROWTH AT CONSTANT PRICES IN THE EURO AREA — Chart 2



Source: OECD (2008).

preceding nine years. At the same time, unemployment has fallen to just over 7 per cent by mid-2008, compared with approximately 10 per cent at the end of 1998. The combination of strong employment growth and only slightly higher GDP growth after the start of EMU reflects somewhat weak productivity growth in relation to the preceding years.[1]

Development in interest rates

Interest rates in the euro area generally fell substantially in the period up to the launch of the euro in 1999 due to economic convergence among the potential euro area member states. The yield spreads to Germany narrowed for a number of countries. Both short-term money-market interest rates and government bond yields fell in step with lower risk premiums and diminishing inflation expectations, cf. Chart 3. After the introduction of the euro, the 10-year yield rose a little, but it has been stable at around 4 per cent since 2003. Short-term interest rates have mirrored the ECB's interest-rate adjustments in the period.

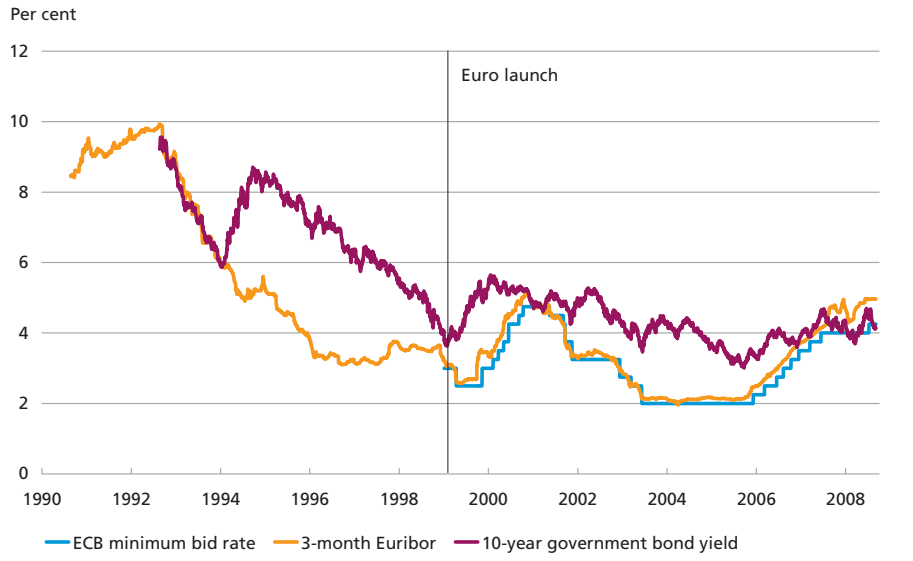
The ECB's monetary policy

In light of very low inflation and an uncertain growth outlook for the euro area after the financial crises in Asia in 1997 and Russia in 1998, the ECB initially lowered its policy interest rate from 3 per cent to 2.5 per cent in April 1999, cf. Chart 3. This was a very low level by historical standards. Subsequently, the upswing in the euro area gained momentum, rising oil prices amplified inflationary pressures, and the euro depreciated against other benchmark currencies. Against this background, the ECB initiated a series of interest-rate increases that culminated with the increase to 4.75 per cent in October 2000.

Despite the still relatively high current inflation in early spring 2001, the ECB in May 2001 initiated a number of interest-rate reductions in step with the substantial slowdown in euro area growth. The dampening of economic activity began in the wake of the global pessimism that had followed the bursting of the dotcom bubble at the end of 2000 and the terrorist attack on the World Trade Center in September 2001. The dampening of growth and the appreciation of the euro in the foreign-exchange market were expected to lead to a gradual decline in inflation. From June 2003 to December 2005, the ECB maintained its policy interest rate at 2 per cent, which was the lowest level in Europe since World War II.

[1] The relatively weak productivity growth (also compared with the USA) is primarily attributable to the limited investment in information and communication technology in e.g. the retail sector and the financial sector, see European Commission (2008).

INTEREST RATES IN THE EURO AREA Chart 3



Note: Corresponding German interest rates have been used for the period before 1999.
Source: EcoWin.

As from the end of 2005, when it became clear that an upswing was again taking off in the euro area, the ECB embarked on a new series of interest-rate increases, initially ending with the increase to 4 per cent in June 2007. The ECB has cited as the background to these interest-rate increases the "withdrawal of monetary accommodation"[1]. This reflects that after the increases, the monetary-policy stance was found to be more neutral. The outbreak of the subprime crisis in the USA in the summer of 2007 gave rise to renewed uncertainty concerning the economic outlook. In July 2008, the policy interest rate was raised again, to 4.25 per cent, with reference to the need to counter second-round effects of the high current inflation due to surging oil and food prices.

Exchange rate

In the foreign-exchange markets, the euro weakened in the first few years after its launch, but since then it has strengthened considerably. The euro was traded in Europe for the first time on 4 January 1999 at 1.19 dollars per euro. It depreciated to 0.85 dollar per euro in 2000-01, but has since rebounded to stand at around 1.45 dollars per euro at the beginning of September 2008. In effective terms, i.e. measured in relation to major trading partners, the euro has shown a similar pattern. The trend towards strong fluctuations in the euro/dollar exchange rate over

[1] E.g. ECB (May 2008), p. 46.

time is not a new phenomenon. The D-mark/dollar rate also fluctuated considerably.

ONE SIZE FITS ALL?

In the EMU planning phase it was discussed whether the potential member states constituted an "optimum currency area"[1]. According to the theory of optimum currency areas, the countries needed to meet a number of conditions before the benefits of a single currency would exceed the costs. The conditions were close economic integration, cyclical synchronisation and a high degree of economic flexibility (as regards prices, wages and the mobility of labour and capital). Other sources pointed out that the introduction of a single currency would in itself reinforce closer integration, synchronisation, etc.[2]

The development in integration and cyclical synchronisation in the first 10 years of EMU is reviewed below together with the implications of having a single monetary policy in the euro area despite the persistence of some divergence among the member states.

It should be emphasised that the theory of optimum currency areas probably had little influence in practice on the political decisions on the establishment of and participation in the euro area. The key factor was more likely the idea of the single currency as the natural completion of the single market. The alternative to a fixed-exchange-rate system and a single currency, i.e. floating exchange rates among all EU member states, was never really on the agenda.

Financial and trade integration

Financial integration in particular, but to some extent also trade integration has advanced across the euro area member states since the launch of the euro.

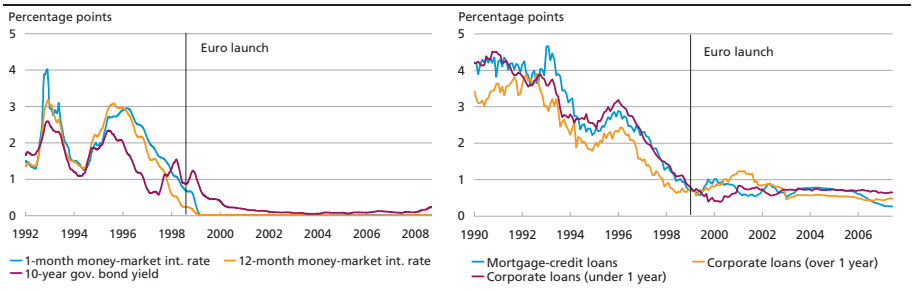
Financial integration is important to liquidity in the financial markets and contributes to more efficient monetary-policy transmission across the euro area member states. The introduction of the euro virtually eliminated a number of factors impeding cross-border financial activities. These factors included exchange-rate risk, inflation and interest-rate differentials and transaction costs for large-value payments.

As regards the money market, the very high degree of integration has been supported by the ECB's development of a single payment system

[1] The term is from Robert Mundell. The theory is e.g. summarised in European Commission (2008), p. 44.

[2] Frankel and Rose (1998).

DISPERSION OF MONEY-MARKET INTEREST RATES AND GOVERNMENT BOND YIELDS (LEFT) AND INTEREST RATES FOR MORTGAGE-CREDIT LOANS AND CORPORATE LOANS (RIGHT) Chart 4



Note: Standard deviations across the euro area member states in uncollateralised 1-month and 12-month money-market interest rates and 10-year government bond yields. 60-day moving averages. Money-market interest rates (BBA Libor) are for France, Germany, Italy, Belgium (Euribor), Spain, the Netherlands and Portugal. Data for Portugal from September 1994. 10-year yields are for all euro area member states (except Luxembourg). Data for Portugal is from May 1994 and for Greece from June 1997.

Source: EcoWin and Eurostat.

for large-value payments, i.e. Target and Target2.[1] Advanced integration is also observed in the market for government bonds, as appears from Chart 4 (left), which shows less dispersion, especially for the (uncollateralised) money-market interest rates of the euro area member states, but also for government bond yields, since 1999. Housing and mortgage-credit loans also indicate stronger financial integration, but to a lower degree, cf. Chart 4 (right). As for the equity market and retail banking, the degree of integration is still low, but on the increase.

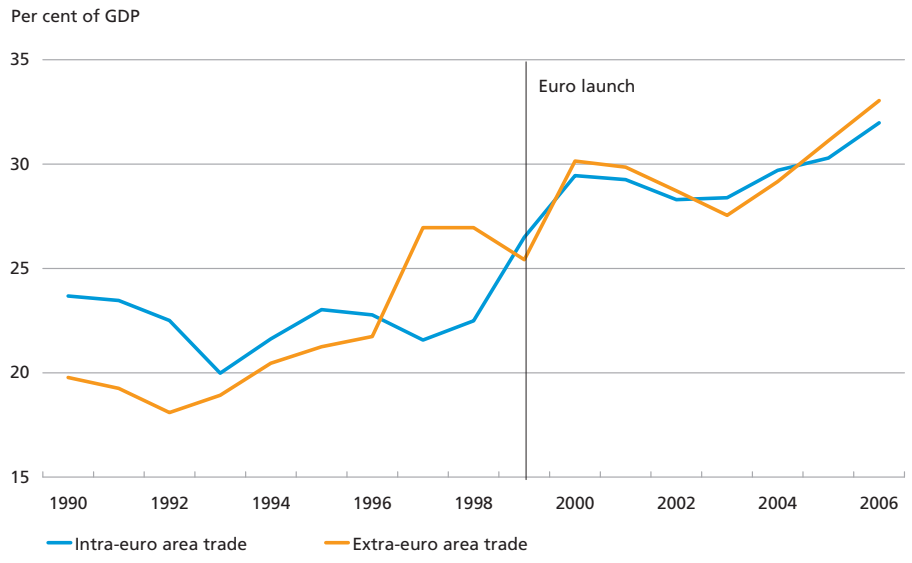
All other things being equal, the introduction of the single currency was expected to entail greater trade integration among the participating member states as a result of diminished uncertainty concerning returns and exchange-rate gains. According to the ECB's estimate, the growth rate of trade in goods in the euro area member states has increased by 2-3 percentage points on average[2]. Since the introduction of the euro, intra-euro area trade in goods has grown from 25 per cent of GDP to 33 per cent of GDP, cf. Chart 5. A corresponding increase has been observed in extra-euro area trade.

Intra-euro area trade as a ratio of GDP has increased slightly more than the ratios for trade with the euro area for the non-euro area member states Denmark, Sweden and the UK. In the UK especially, trade with the euro area as a ratio of GDP was lower in 2007 than in 1999.

However, it is difficult to make a more accurate assessment of the role of the euro in trade, because it is virtually impossible to distinguish between the effects of the single market, the single currency and the general development in global trade.

1 Financial integration is analysed in more detail in ECB (April 2008).
2 ECB (May 2008), p. 90.

EURO AREA TRADE IN GOODS Chart 5



Note: Sum of exports and imports of goods among euro area member states and to/from the euro area at current prices as a ratio of GDP at current prices.
Source: UNCTAD.

Synchronisation of business cycles

Increased trade and financial integration can be expected to contribute to cyclical synchronisation[1].

As appears from Box 1, cyclical synchronisation among the euro area member states has increased, but took place predominantly in the period up to the introduction of the euro. It has subsequently remained at a relatively high level.[2]

Despite relatively synchronous business cycles, considerable dispersion in growth rates is still observed among the euro area member states. Growth dispersion is to a great extent also a natural consequence of the catching-up process, whereby less affluent euro area member states are approaching income levels in more affluent euro area member states through periods of higher growth rates. The dispersion can also be attributed to other factors, however, e.g. country-specific economic shocks, different responses to common shocks, inappropriate economic policies or structural rigidities.

Inflation differentials

Inflation differentials among the future euro area member states diminished considerably in the period up to the introduction of the

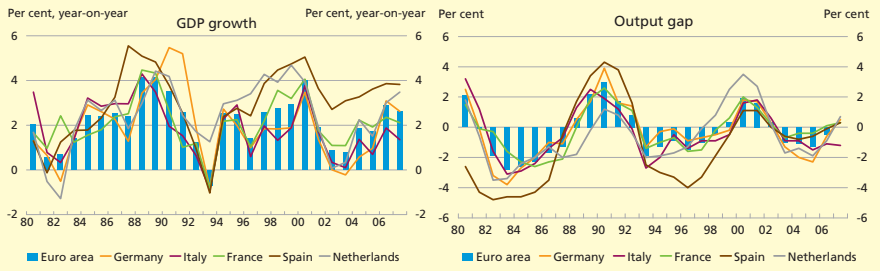
1 Cf. e.g. Frankel and Rose (1998) and IMF (2001).
2 Cyclical synchronisation is described in more detail in Dam (2008).

CYCLICAL PATTERNS IN THE EURO AREA Box 1

The plans to establish EMU led to extensive debate among research economists on the existence of a European business cycle, including the development in the cyclical synchronisation of the European economies.[1]

In terms of GDP growth, considerable synchronisation has been observed in the five largest euro area economies over the last decades, although pronounced deviations have also occurred, cf. Chart 6. Episodes causing marked deviation in economic growth rates include the reunification of Germany in 1989 and the boom in the Netherlands in the second half of the 1990s. At the same time, Spain has shown a clear pattern of high growth rates compared with the other major economies since the mid-1990s; in 1995-2007, annual growth was thus 1.5 percentage points higher in Spain than in the euro area overall. The higher growth in Spain reflects a catching-up process, whereby capital and production processes were gradually brought from a relatively low starting point up to the level of the high-income member states. This results in high growth and elimination of historical income inequalities.

GDP GROWTH AND OUTPUT GAP IN THE EURO AREA Chart 6



Note: For Germany and the euro area: level-adjusted data for West Germany before reunification in 1991. The output gap is the difference between actual GDP and potential GDP that is compatible with stable economic development.

Source: OECD (2008) and own calculations.

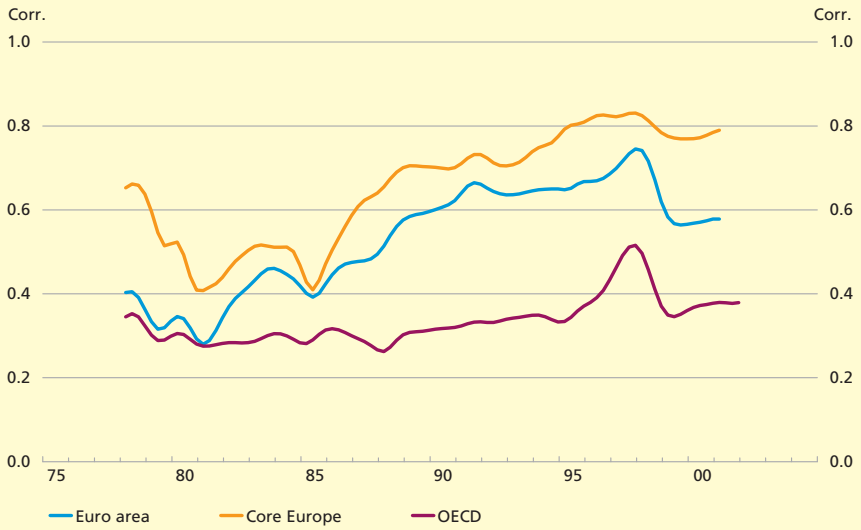
Other member states, e.g. Ireland and Greece, have gone through similar catching-up processes. This illustrates that GDP growth is not an appropriate measure for comparison of cyclical patterns among member states, since GDP developments reflect both cyclical fluctuations and long-term trends that may vary considerably in the different member states.

An obvious alternative is thus to use measures of the output gap in the various economies as this is a better indicator of the overall cyclical position. According to the OECD (2008) measurement of output gaps in the five largest euro area economies, there is a pronounced tendency towards synchronous cyclical fluctuations in the individual member states since 1980, although some of the differences mentioned above still apply, cf. Chart 6.

The calculation of output gap is, however, based on a number of economic-theory assumptions and complicated calculations that can be regarded as controversial. This is one reason for the widespread use of more simple statistical filters in the literature on synchronisation of European business cycles.[2] Chart 7 shows the development in cyclical synchronisation for both the euro area member states and a broader group of OECD countries. The cyclical component of each country is determined using a statistical filter that separates long-term trends from short-term and medium-term cyclical fluctuations in quarterly GDP. The synchronisation is then calculated as averages of correlation pairs for all countries over 10-year periods.

CONTINUED Box 1

CYCLICAL SYNCHRONISATION IN EUROPE AND THE OECD Chart 7



Note: Unweighted average of correlation coefficients for the cyclical component of GDP for centered 10-year periods. The cyclical component is isolated using a Baxter-King filter (1999) on quarterly time series for GDP up to and including 2009 (OECD estimates for the non-historical period). Due to limited data availability "Core Europe" in the calculations is made up of Germany, France, Italy, Spain, Netherlands and Belgium; "Euro area" is Core Europe plus Finland, Greece, Ireland and Portugal; "OECD" includes "Euro area" plus Denmark, Sweden, Norway, UK, USA, Canada, Australia, New Zealand and Japan.

Source: OECD (2008) and own calculations.

Three trends stand out: Firstly, since the late 1980s the euro area has seen clearly stronger internal synchronisation than the broader group of OECD countries. However, the spreads narrowed in connection with the upswing up to the millennium rollover and the subsequent downturn when the dotcom bubble burst. This marked boom-bust pattern was global and appears in the calculations as global convergence of business cycles, cf. e.g. Artis (2003).

Secondly, cyclical synchronisation in the euro area has increased considerably since the mid-1980s. This is in accordance with the fact that increased integration of both product and financial markets within the single market of the EU contributes to greater synchronisation of business cycles.[3] Whether fixed exchange rates as such have been conducive to a European business cycle is still being actively discussed, cf. Dam (2008).

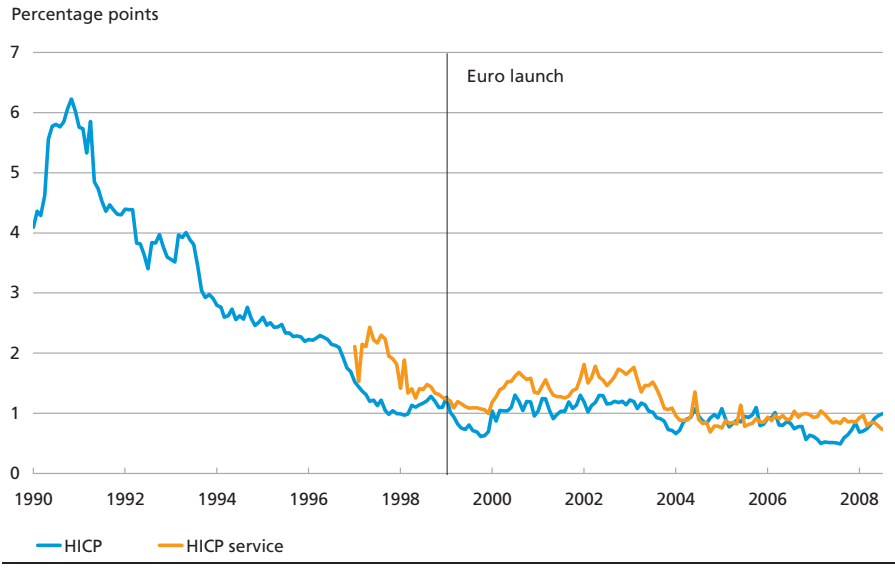
Finally, it is evident that the cyclical pattern is not homogeneous across the euro area. On the basis of several previous studies, Dam (2008) argues that the euro area has a cyclical core consisting of Germany, the Netherlands, Belgium, France, Austria and to some extent Italy and Spain. The synchronisation among these economies is clearly stronger than the area-wide synchronisation. In particular, the global divergence observed in recent years has affected only "peripheral" member states such as Ireland, Greece and Portugal, while the degree of synchronisation has remained high in the core member states throughout the life of the euro. Stronger coupling to the European business cycle is a likely consequence of enhanced integration of the "peripheral" member states with the rest of the euro area.

[1] The debate and results are reviewed and put into perspective – including a Danish perspective – in Dam (2008).

[2] Dam (2008) discusses the use of statistical filters versus methodologies that are more directly anchored in economic theory to identify cyclical patterns.

[3] Cf. e.g. Frankel and Rose (1998) and IMF (2001). De Haan et al. (2008) contains a list of other analyses that show similar results.

INFLATION DISPERSION AMONG EURO AREA MEMBER STATES Chart 8



Note: Harmonised Index of Consumer Prices (HICP) from 1997 and national consumer-price indices before 1997. Standard deviations calculated for the 12 "original" euro area member states.
Source: Eurostat.

euro, cf. Chart 8. The dispersion has since then been more or less constant. The differentials are a natural consequence of the catching-up process, which also entails gradual adjustment of price levels in less affluent member states to the levels in the more affluent member states[1]. However, inflation dispersion can also be attributed to national structural rigidities in the product and labour markets in the form of sluggish adaptation of relative prices or diverging developments in wage increases and productivity in some euro area member states.

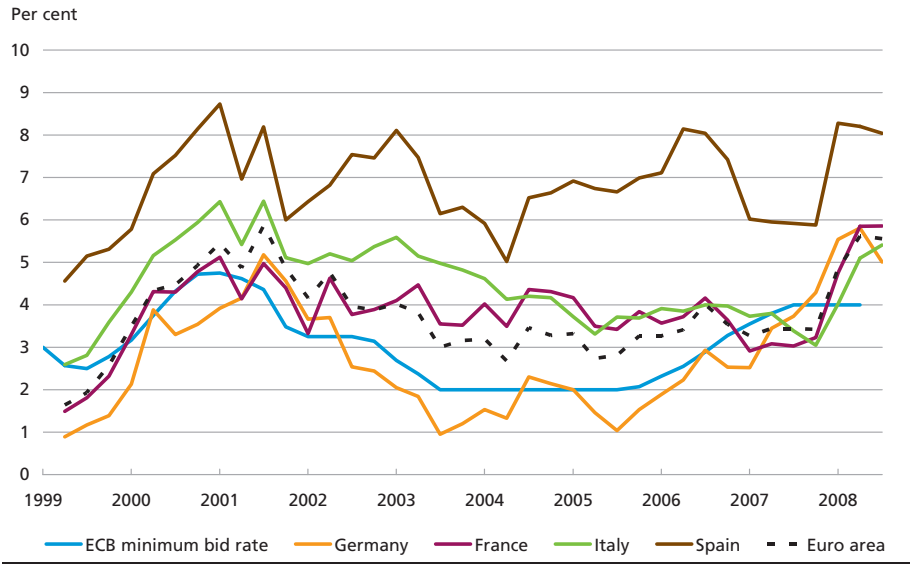
Payroll costs account for a considerable share of expenditure in the service sector, and the inflation dispersion has been slightly more pronounced, despite a declining trend, for the HICP service component than for HICP overall. In addition, the sensitivity to energy price fluctuations varies across the euro area member states. The surging oil and food prices and their different weights in the price indices of the various member stares contribute to explaining the increase in inflation dispersion since the summer of 2007.

One size fits all?

Overall, the progress in economic integration has been rather subdued in the first 10 years of EMU, although stable and pronounced cyclical synchronisation is observed for at least some euro area member states.

[1] Kramp and Thamsborg (2008) analyses the catching-up process in the new EU member states.

MONETARY-POLICY INTEREST RATE ACCORDING TO TAYLOR RULE Chart 9



Note: The Taylor rule is specified as: r_t = $inflation_{t-1}$ + ½($inflation_{t-1}$–1.8) + ½(output gap_{t-1}) + potential $growth_{t-1}$. It is subject to some uncertainty due to extensive revisions of the output gap.
Source: EcoWin, Consensus Economics, OECD (2008) and Taylor (1993).

The ECB's monetary-policy planning is based on an assessment of the area-wide economy, so it necessarily applies that it is at times better suited to the economic positions of some member states than others.

Chart 9 illustrates monetary-policy interest rates in some euro area member states and the euro area as a whole, had they been determined nationally using the Taylor rule. In somewhat simplified terms, this "rule" calculates the monetary-policy interest rate based on an overall assessment of inflation (low inflation provides for low interest rates, high inflation requires high interest rates) and growth (a recession calls for low interest rates, a boom calls for high interest rates).

For example, the Chart shows that in the period of low growth in Germany in 2002-04, when inflation was also relatively low, German interest rates should have been lower according to the rule. Conversely, interest rates in France should have been higher than the actual ECB interest rates in the same period. Spain experienced very high growth in this period, so considerably higher interest rates were warranted. For the euro area overall, the rule warrants somewhat higher interest rates for almost the entire period.

It is emphasised that these calculations are for illustrative purposes only. No central banks actually apply the Taylor rule to monetary-policy planning.

CONCLUSION

After the first 10 years, a stable economic framework for the euro area has been successfully created and maintained in terms of price stability and elimination of the internal currency unrest that characterised the preceding decades. Unlike previous episodes, the current financial turmoil, triggered by the US subprime crisis, has entailed no European currency crises.

The ECB has fulfilled its objective of stable inflation, although inflation has generally been slightly higher than the specific objective of "below, but close to 2 per cent". The ECB has gained respect and credibility in the financial markets and successfully anchored inflation expectations in the euro area. The inflation shock occurring in 2008 in the form of surging oil and food prices, and prospects of an economic downturn in the euro area constitute a particular challenge for the ECB's policy planning in the near future.

The introduction of the euro has not as such entailed any clear increase in economic integration in the euro area, but it has provided the foundation for sustainable economic growth in the form of price stability and an area with irrevocably fixed exchange rates.

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Real Convergence in the New EU Member States

Paul Lassenius Kramp and Susanne Hougaard Thamsborg, Economics

INTRODUCTION AND SUMMARY

Since the dissolution of the Soviet Union in 1991, income per capita has shown considerable volatility in the new EU member states in Central and Eastern Europe. Following pronounced declines at the beginning of the period, these member states have, since 1997, generally seen higher growth rates than those observed in the old EU member states (EU-15)[1]. This has brought income per capita closer to the level in EU-15, cf. Chart 1, i.e. there has been real convergence.

In the new EU member states, convergence towards the standard of living in EU-15 is typically accompanied by rising price levels. Hence, the new member states have experienced nominal convergence as well as real convergence. Nominal convergence is reflected in rising inflation and/or appreciation of the exchange rate.

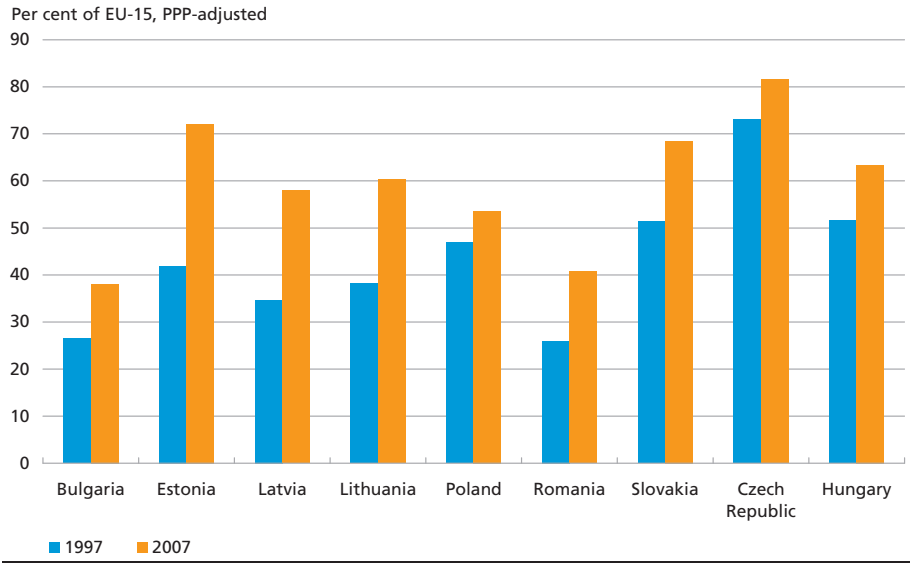
This article reviews the process of real convergence and its economic-policy challenges. In addition, the impact of the chosen exchange-rate regime on the process of nominal convergence is described, including the member states' ability to meet the criteria for euro area membership set out in the EU Treaty, cf. the Appendix. The conclusion looks at the outlook for further real convergence. Focus is on the new non-euro area EU member states in Central and Eastern Europe, i.e. Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania and Slovakia.[2]

In the new EU member states, real convergence is to a high degree driven by productivity gains generated by increased capital inflows, structural reforms and institutional improvements. In general, the convergence process entails relatively large imbalances such as considerable current-account deficits and resultant rising external debt. The deficits have been financed primarily by inward FDI (foreign direct invest-

[1] EU-15 covers Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the UK.

[2] Estonia, the Czech Republic, Hungary, Latvia, Lithuania, Poland and Slovakia joined the EU in 2004, while Bulgaria and Romania became member states in 2007. Slovakia will join the euro area as from January 2009.

CONVERGENCE IN INCOME PER CAPITA TOWARDS THE EU-15 LEVEL Chart 1



Note: GDP per capita as a percentage of the EU-15 average. The first observation for Romania is 1999.
Source: EcoWin.

ment) and inflows of capital from foreign banks as a result of extensive financial integration.

The exchange-rate regimes of the new EU member states play an important role in economic development during the convergence process. It is not clear which regime constitutes the best framework for compliance with the Maastricht criteria. Member states with fixed-exchange-rate regimes tend to have stronger inflationary pressures and larger current-account deficits, while member states with floating exchange rates tend to have larger government deficits.

The new EU member states are vulnerable to external shocks due to their large current-account deficits and thus strong reliance on external financing. Furthermore, in several of these member states a large share of the debt of the corporate sector and households is denominated in foreign currency, which impedes the central banks' efficient conduct of monetary policy.

A common feature of all the new member states is that they need to continue the course of structural improvement since there is still a considerable income gap in relation to EU-15.

REAL CONVERGENCE

In this article, real convergence means that income per capita in the new EU member states is approaching the level in EU-15. Real convergence is

driven by higher productivity growth than in EU-15. In the last 10 years, the new EU member states have reported productivity growth rates (GDP per employee) of 3-7 per cent year-on-year, compared with 0-3 per cent in EU-15.

Firstly, productivity is influenced by the quality of a country's institutions, e.g. factors such as the degree of corruption, respect of private property rights and labour-market flexibility. In practice, the quality of the new member states' institutions is poorer than in EU-15. However, the mere wish for EU membership and to some extent the prerequisites for membership have accelerated the reform process and reduced the quality gap between institutions in the new EU member states and EU-15. This has boosted productivity and thus growth.

Secondly, the combination of institutional improvements, structural reform and the prospects of high returns has made investment in the new member states particularly attractive. This has led to strong expansion of the capital stock as a result of both domestic savings and foreign investment. The transition to market-based economies with free capital flows has opened up for large inflows of capital and technology from the industrialised countries – especially Western Europe. The expansion of the capital stock has boosted productivity and thus economic growth.

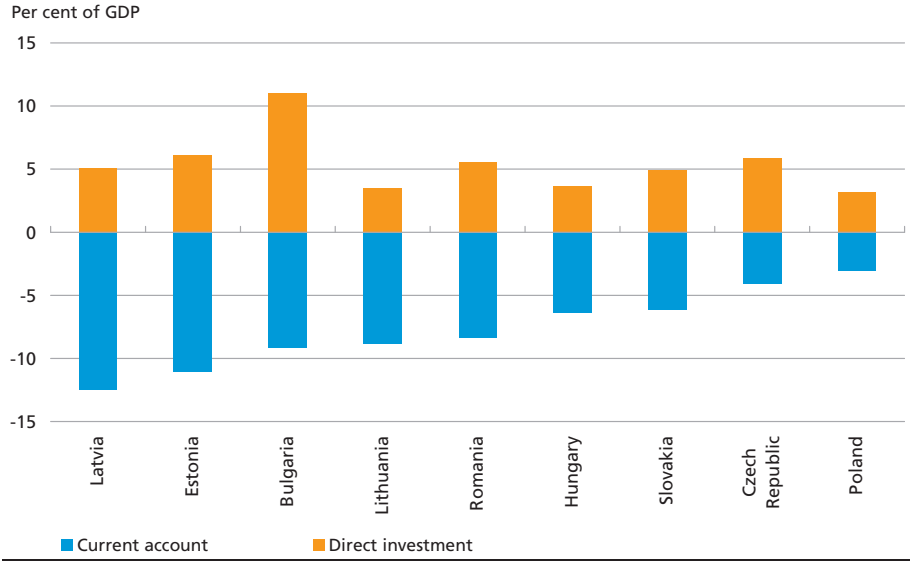
CAPITAL FLOWS, FOREIGN DIRECT INVESTMENT AND FINANCIAL INTEGRATION

The real convergence process has given rise to expectations of large productivity gains and high returns. This has enabled the new EU member states to attract considerable capital from the West. Prospects of higher income have also induced consumers and business enterprises in the new EU member states to increase consumption and investments. This has led to stronger demand for capital.

The consequences have been larger current-account deficits and accumulation of substantial external debt. The current-account deficit has been predominantly financed by foreign direct investment, cf. Chart 2.

The new EU member states' ability to accumulate and finance of the substantial external debt can be explained primarily by the rapid and extensive integration of their financial markets with Western European markets. This is exemplified by the acquisition of large parts of the banking sector in Eastern Europe by Western banks, cf. Chart 3. The financial integration has provided easier access to euro liquidity, thereby reducing financing costs. Moreover, in member states with fixed-exchange-rate regimes, there is little risk associated with euro financing in so far as the exchange-rate regimes are supported by economic policy in general.

CURRENT-ACCOUNT DEFICIT AND DIRECT INVESTMENT, 1995-2007 Chart 2

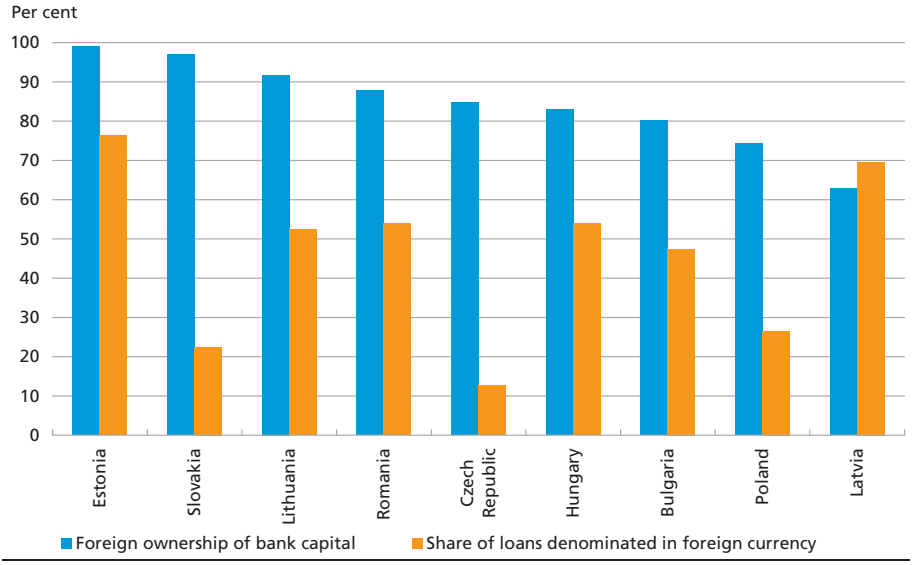


Note: Aggregated for the period 1995-2007 (Poland: 2000-07, Romania: 1998-2007). Direct investment is calculated on a net basis.
Source: Eurostat.

Many loans have thus been granted as euro loans at low euro interest rates or even negative expected real interest rates.

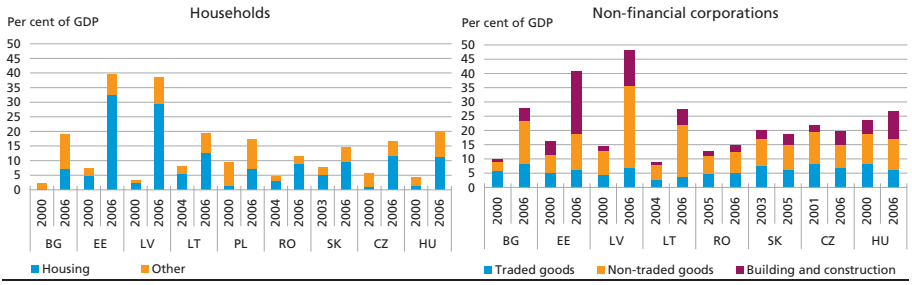
This has entailed strong growth in credit to both the corporate sector and the households since 2000, cf. Chart 4.

EXTENSIVE FINANCIAL INTEGRATION Chart 3



Note: Data for 2006. A breakdown by currency is not available, but euro is likely to account for the predominant share.
Source: The European Bank for Reconstruction and Development (2007) and IMF (2007a).

CREDIT TO HOUSEHOLDS AND NON-FINANCIAL CORPORATIONS Chart 4



Note: BG: Bulgaria, EE: Estonia, LV: Latvia, LT: Lithuania, PL: Poland, RO: Romania, SK: Slovakia, CZ: Czech Republic, HU: Hungary.
Source: Bems, Rudolfs and Schellekens (2007).

For the household sector, housing debt has risen in particular, while housing prices have soared. In many countries, this has stimulated housing investments. For the corporate sector, construction investments and investments in the non-traded goods sector accounted for the strongest growth.

NOMINAL CONVERGENCE – APPRECIATION OF THE EXCHANGE RATE OR HIGHER INFLATION

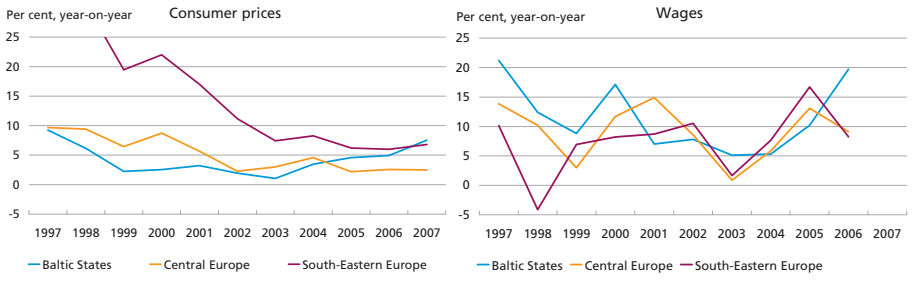
As incomes grow in the new EU member states, consumer purchasing power approaches the level in EU-15. As a result, prices in the new member states are being pulled towards the EU-15 level, measured in the same currency. This is an expression of nominal convergence.

Depending on the exchange-rate regime, nominal convergence is primarily reflected in either rising inflation (fixed-exchange-rate regime) or appreciation of the nominal exchange rate (floating/flexible exchange-rate regime).

Wages and prices

Real convergence thus entails a risk of higher inflation compared with the level in the target countries, i.e. EU-15. The challenge is to keep the convergence process stable, while preventing inflation from soaring out of control, which could lead to overheating and subsequently strong growth in unemployment. From the end of the 1990s to just before the enlargement, most of the new EU member states experienced declining wage and price inflation, but since 2003 an upward trend has been observed – especially in the Baltic States, cf. Chart 5. The increase in wage inflation can be attributed to factors such as falling unemployment – from 11 per cent in the Baltic States, 15 per cent in Central

CONSUMER PRICES AND WAGES Chart 5



Note: Average wage and price inflation (unweighted averages) in South-Eastern Europe (Bulgaria, Romania and Hungary), Central Europe (Poland, Czech Republic and Slovakia) and the Baltic States (Estonia, Latvia and Lithuania). Bulgaria is included in price data as from 1998 and in wage data as from 1999. Romania is included in wage data as from 2001.
Source: Eurostat.

Europe and 9 per cent in South-Eastern Europe in 2003 to 5, 9 and 7 per cent, respectively, in 2007 (unweighted averages).

The increased inflation observed in many of the new EU member states in recent years is partly of a cyclical nature. Accelerating domestic demand and GDP growth indicate overheating of several of the economies, as reflected in soaring prices, cf. Bini Smaghi (2007). Moreover, the most recent hikes in global oil and food prices are fuelling inflation to a greater extent in the new EU member states than in the euro area. This is due to the larger weights of the oil and food components in their overall consumer price indices.

Structural explanations can also be offered as to why inflationary pressures arise in converging member states. The Balassa-Samuelson effect is a well-known explanation for higher wage and price inflation in connection with real convergence. According to this effect, the convergence process is driven by productivity gains. They are most pronounced in the traded goods sector, which is more exposed to competition than the service sector, i.e. non-traded goods, and can attract technology-intensive foreign direct investment. Wages in the traded goods sector tend to rise in step with productivity, which spills over into wage increases in the non-traded goods sector despite the absence of productivity growth. Consequently, the increase in prices for non-traded goods exeeds productivity growth, thereby generating inflation. The Balassa-Samuelson hypothesis is only to a limited extent supported by empirical studies.[1]

[1] The reason is either that a cyclical rather than a structural effect applies, or that the assumptions of the hypothesis are too restrictive. The hypothesis applies the following assumptions: (1) that real wages are driven by productivity growth in the traded goods sector; (2) that wage inflation in the traded goods sector pushes up wages in other sectors; and (3) that productivity growth in the non-traded goods sector is zero, whereby wage inflation is fully reflected in price inflation. An analysis in Égert, Balázs and Podpiera (2008) indicates that none of these assumptions quite hold true in the new EU member states.

Another structural explanation focuses on quality improvements as the cause of rising inflation in the converging member states. The theory is that the new EU member states not only manufacture and export higher volumes, they also manufacture and export better goods at higher unit prices. This entails ongoing quality improvement of the goods in the basket used in the consumer price index, causing prices to rise. Adjustment for such quality improvements is difficult, so the measure tends to overestimate inflation, i.e. there is a "quality bias". The IMF has created a product quality proxy, Unit Value Ratio, cf. Igan et al. (2007). From around 2000, the Unit Value Ratio has risen considerably in most of the new EU member states, notably the Czech Republic, Estonia and Hungary. This points to quality improvements that may entail "quality bias" in inflation data.

Exchange-rate regime and nominal convergence

Exchange-rate regimes play a pivotal role in the convergence process of the new EU member states. The Baltic States and Bulgaria have opted for narrow or no fluctuation bands against the euro, cf. Table 1. Hungary has also pursued a fixed-exchange-rate policy, but within a wider fluctuation band. These member states are named "fixed-exchange-rate regimes" in the following. Poland, the Czech Republic and Romania have opted for freely floating exchange rates governed by inflation targets. Despite ERM

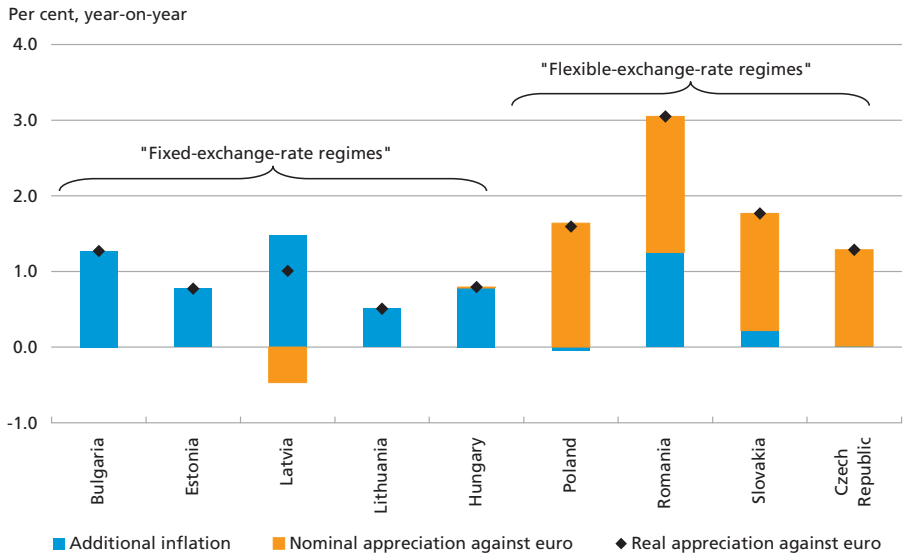
EXCHANGE-RATE REGIMES IN THE NEW EU MEMBER STATES AS OF 2007 — Table 1

	Regime	Target	ERM2
"Fixed-exchange-rate regimes"	***Currency board***		
	Estonia (kroon)	peg to the euro	yes
	Lithuania (litas)	peg to the euro	yes
	Bulgaria (lev)	peg to the euro	no
	Fixed-exchange-rate regime with fluctuation band		
	Latvia (lats)	euro, +/- 1 per cent	yes
	Hungary (forint)	euro, +/- 15 per cent and inflation target	no
"Flexible-exchange-rate regimes"	Slovakia (koruna)	euro, +/- 15 per cent and inflation target	yes
	Managed float		
	Czech Republic (koruna)	inflation target	no
	Romania (leu)	inflation target	no
	Free float		
	Poland (zloty)	inflation target	no

Note: Currency Board means the fixing of a currency to an anchor currency. The concept is described in more detail in Bie and Hahnemann (2000). ERM II (Exchange Rate Mechanism II) is a fixed-exchange-rate mechanism in which the participating member states and the ECB are mutually committed to keeping the exchange rate within the normal fluctuation band (+/- 15 pct.). The Baltic States have unilaterally opted for a narrower fluctuation band. As of February 2008, Hungary has let the exchange rate float and pursued an inflation target.

Source: IMF (2007b).

NOMINAL CONVERGENCE (REAL APPRECIATION AGAINST THE EURO), BREAKDOWN BY INFLATION AND NOMINAL APPRECIATION OF THE EXCHANGE RATE 2004-07 Chart 6



Note: Average annual changes. The period is 2004-07, when the monetary-policy strategies of most member states remained unchanged.
Source: Eurostat.

II participation, Slovakia in practice applies a managed float (within the fluctuation band) and has revalued its central rate in ERM II on two occasions. These member states are named "flexible-exchange-rate regimes".

The choice of exchange-rate regime (fixed or floating) determines whether nominal convergence is reflected in higher inflation or nominal appreciation, cf. Chart 6.

In fixed-exchange-rate regimes, the central bank's task is to keep the exchange rate stable. Consequently, nominal convergence is almost entirely reflected in inflation. This contributes to the current difficulties of especially these member states in meeting the inflation criterion, cf. the Appendix.[1] On the other hand, the absence of monetary-policy means requires stricter fiscal discipline. All of the fixed-exchange-rate regimes except Hungary have modest government deficits or even surpluses.

A floating nominal exchange rate enables central banks to pursue independent monetary policy, which gives them greater scope to withstand inflationary pressures. Nominal convergence is therefore reflected in a combination of appreciation of the nominal exchange rate and inflation. However, the demands of fiscal discipline are less stringent,

[1] For a country to be considered for membership of the euro area, it must, among other requirements, meet a number of convergence criteria regarding inflation, interest rates and government finances. These criteria are described in the Appendix.

which has resulted in larger government deficits. Consequently, the flexible-exchange-rate regimes are generally closer than the fixed-exchange-rate regimes to exceeding the convergence criterion concerning fiscal sustainability, cf. the Appendix.

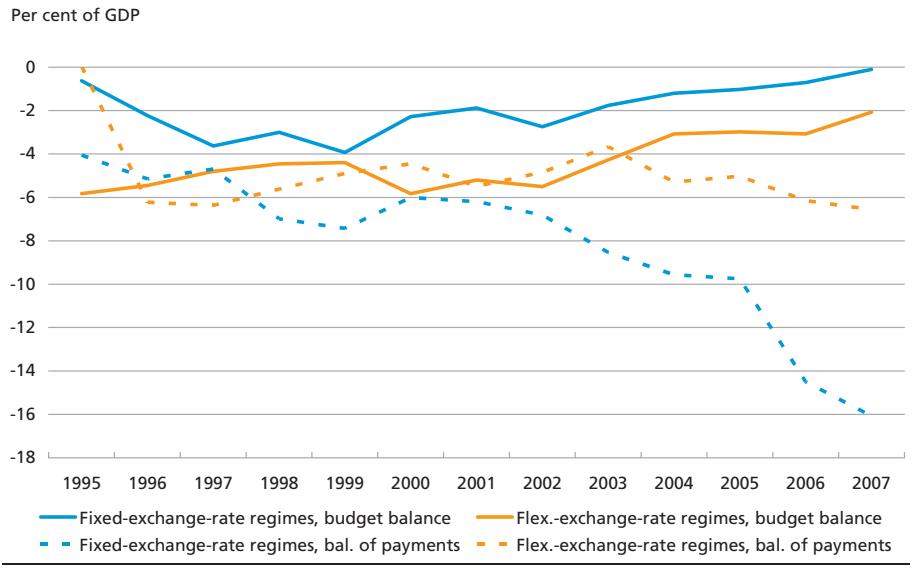
Overall there is a tendency for the fixed-exchange-rate regimes to have larger current-account deficits, while the flexible-exchange-rate regimes have larger government deficits, cf. Chart 7.

Fighting inflation – economic-policy means

The central banks of the fixed-exchange-rate regimes have to adjust monetary-policy interest rates in order to keep the exchange rate stable. This leaves no scope for independent monetary policy. Provided that the markets have confidence in the fixed-exchange-rate policy, the monetary-policy interest rate will be close to the level in the anchor country (the euro area). This implies a tendency towards lower monetary-policy interest rates than otherwise warranted by the high growth rates in these member states. The consequences are pronounced credit growth, stronger domestic demand, higher GDP growth, intensified inflationary pressures and ultimately deterioration of the balance of payments.

The combination of strong growth dynamics and the lack of means to pursue independent monetary policy requires strict fiscal discipline in order to keep inflation at bay. Fiscal tightening measures work, but with

BALANCE OF PAYMENTS AND GOVERNMENT BALANCE — Chart 7



Note: Unweighted averages. The breakdown by fixed-exchange-rate regimes and flexible-exchange-rate regimes follows the breakdown in Chart 6.
Source: Eurostat.

a certain lag, and there are limits to the political acceptability of large budget surpluses. Furthermore, the convergence process itself requires public investments. There are, however, alternative means to curb inflationary pressures, such as raising reserve requirements, reducing the maximum mortgaging ratios for homes and limiting interest deductibility (to dampen credit growth) and improving labour-market flexibility (to contain wage pressures).

In theory, flexible-exchange-rate regimes offer central banks more scope to counter mounting inflationary pressures. However, the more open the economy and the greater the share of loans denominated in foreign currency, the more limited is the scope for independent monetary policy. This is because national interest rates and exchange rates play a less significant role.

It is characteristic of converging economies – whatever the exchange-rate regime – that globalisation tends to reinforce inflationary pressures. Declining activity, which ought to dampen inflationary pressures via rising unemployment, instead entails increased emigration. This can make it difficult to break an inflation spiral. The challenge is amplified even more by the recent surges in global oil and food prices – especially because the oil and food components generally have a larger weight in overall CPI than is the case in e.g. EU-15.

CONCLUSION – OUTLOOK FOR FURTHER REAL CONVERGENCE

The rapid and extensive integration of the new EU member states with EU-15 has entailed massive capital inflows due to expectations of high returns. This has paved the way for quick real convergence in many of these member states.

The rapid growth has been associated with large imbalances and signs of overheating, especially in member states with fixed-exchange-rate regimes, where the pace of the convergence process is generally faster than in the member states with flexible-exchange-rate regimes. To some extent, the substantial external imbalances can be regarded as a natural consequence of the convergence process. This applies particularly in member states where real convergence is based extensively on strong fundamental factors such as growth-promoting structural reforms, productivity gains and considerable foreign direct investment (FDI).

In several of the member states, growth has exceeded the potential for the last couple of years, without being sufficiently underpinned by further structural reforms. To improve the balance of payments without any marked slowdown in consumption, competitiveness must be enhanced, e.g. by further boosting productivity growth. In many of the

member states, the principal drivers of growth are private consumption and investment in the non-traded goods sector. These member states have not yet experienced the necessary (and expensive) shift of capital and labour towards the traded goods sector – where the best opportunities for productivity gains can be found.

As a consequence of the strong financial integration, the current-account deficits and growth in consumption and investment have to a large extent been financed by external funds. External shocks, e.g. sudden shifts in exchange and interest rates and increased risk aversion among investors, pose a significant threat to the new EU member states – especially those with large current-account deficits. The risk of a hard landing for several of the new EU member states is therefore considerably more pronounced in light of the financial turmoil over the past year, and growth is expected to decline in most of the new EU member states in the coming years, cf. IMF (2008).

Both fixed-exchange-rate and flexible-exchange-rate regimes can support the real convergence process as long as economic policy is consistent overall. All the new EU member states should continue the reform process in order to create the best and most flexible framework as a bulwark against shocks and to ensure a more stable convergence process. There is still a considerable income gap in relation to EU-15.

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APPENDIX: CONVERGENCE CRITERIA

All EU member states aspiring to introduce the euro must meet the convergence criteria for euro area membership. There are four main criteria:

1. Fiscal sustainability – the government deficit must not exceed 3 per cent of GDP, and the (gross) government debt must not exceed 60 per cent of GDP (or must be diminishing).
2. Price stability, defined as inflation of maximum 1.5 percentage points more than inflation in the three EU member states with the lowest inflation rates.
3. Persistent convergence in the form of limited spreads in long-term bond yields – long-term interest rates must not exceed the interest rates in the three EU member states with the lowest inflation rates by more than 2 percentage points.
4. Exchange-rate stability given by observance of the normal fluctuation band (+/- 15 per cent) in ERM II for at least two years without unilateral devaluation.

Especially the Baltic States, Hungary, Bulgaria and Romania have difficulties in meeting the inflation criterion. All of these member states except Romania and Hungary pursue fixed-exchange-rate policies with narrow (or no) fluctuation bands against the euro. By May 2008, all the new EU member states except Hungary met the fiscal sustainability criterion.

OBSERVANCE OF CONVERGENCE CRITERIA, MAY 2008 — Table A1

	Inflation	Government balance (per cent of GDP)	Government debt (per cent of GDP)	Long-term interest rates
Bulgaria*	9.4	3.2	14.1	4.7
Estonia*	8.3	0.4	3.4	…
Latvia*	12.3	-1.1	10.0	5.4
Lithuania*	7.4	-1.7	17.0	4.6
Poland	3.2	-2.5	44.5	5.7
Romania	5.9	-2.9	13.6	7.1
Slovakia	2.2	-2.0	29.2	4.5
Czech Republic	4.4	-1.4	28.1	4.5
Hungary	7.5	-4.0	66.5	6.9
Convergence criteria	3.2	-3.0	60.0	6.5

Note: The grey fields indicate compliance with the criterion. * indicates a fixed-exchange-rate regime. Inflation and interest rates are changes in per cent year-on-year, and data refers to the period April 2007-March 2008. Besides complying with the above convergence criteria, a member state must have participated in the exchange-rate mechanism ERM II for at least two years without severe tensions and must also meet a number of legal criteria, including central-bank independence.

Source: ECB (2008).

New Principles for Liquidity Risk Management

Jakob Windfeld Lund, Financial Markets

INTRODUCTION

Liquidity risk is a natural part of traditional banking activities where liabilities, e.g. demand deposits, have shorter maturities than assets, e.g. loans.[1] The financial turmoil over the past year has highlighted liquidity risk, particularly because liquidity diminished in some of those financial markets that were previously considered to be the most liquid.[2] Funding through the financial markets became significantly more difficult and expensive. This led to liquidity pressures on the most vulnerable banks and in a few instances to actual banking crises.

The risk of banking crises with broader economic costs provides a strong economic argument for banking supervision and regulation.

Globalisation of financial markets and financial innovation have widened the opportunities for risk diversification, but have also heightened the risk of international contagion and opportunities for regulatory arbitrage. This has reinforced the need for international coordination of financial regulation.

Recent years have seen substantial convergence of rules for the banking industry, both in the EU (e.g. the Capital Adequacy Directive) and globally (e.g. Basel II). But so far, liquidity regulation and supervision have not been harmonised, and even within the EU this area has been regarded as a matter for national authorities.

On 17 June, the Basel Committee[3] published new principles for liquidity risk management, and CEBS[4] published a set of recommendations for liquidity regulation and supervision in the EU.[5]

The financial turmoil over the past year has demonstrated the need to revise risk management and supervision of banks' liquidity. The prin-

1 See the special chapter on banks' liquidity in Danmarks Nationalbank (2006).
2 See Lund (2007).
3 Basel Committee on Banking Supervision. The Basel Committee is a forum for international cooperation on banking supervision and has become an important forum for the preparation of international standards for regulation and supervision of banks.
4 The Committee of European Banking Supervisors, CEBS, is the forum for cooperation between banking supervisors in the EU.
5 See Basel (2008) and CEBS (2008).

ciples of the Basel Committee and CEBS provide a good foundation for this. The current liquidity regulation in Denmark does not appear to adequately cover all new principles.

This article reviews the principles of the two reports based on the Basel Committee report.

THE BASEL COMMITTEE AND CEBS REPORTS

Both the Basel Committee and CEBS had already been addressing the liquidity issue for some time before the financial turmoil began in the summer of 2007. The financial turmoil over the past year has highlighted liquidity risk and increased the awareness of the work on liquidity in Basel and CEBS.

The CEBS report was originally planned to be published in January 2008, but in light of the crisis – and as part of the overall compilation of Ecofin's "roadmap" for responses to the crisis – it was postponed to allow for better coordination with the corresponding work in Basel. The reports of 17 June from the two committees were submitted for public consultation with deadlines on 29 July (Basel) and 1 August (CEBS), respectively. Publication of the final reports is expected in the autumn.

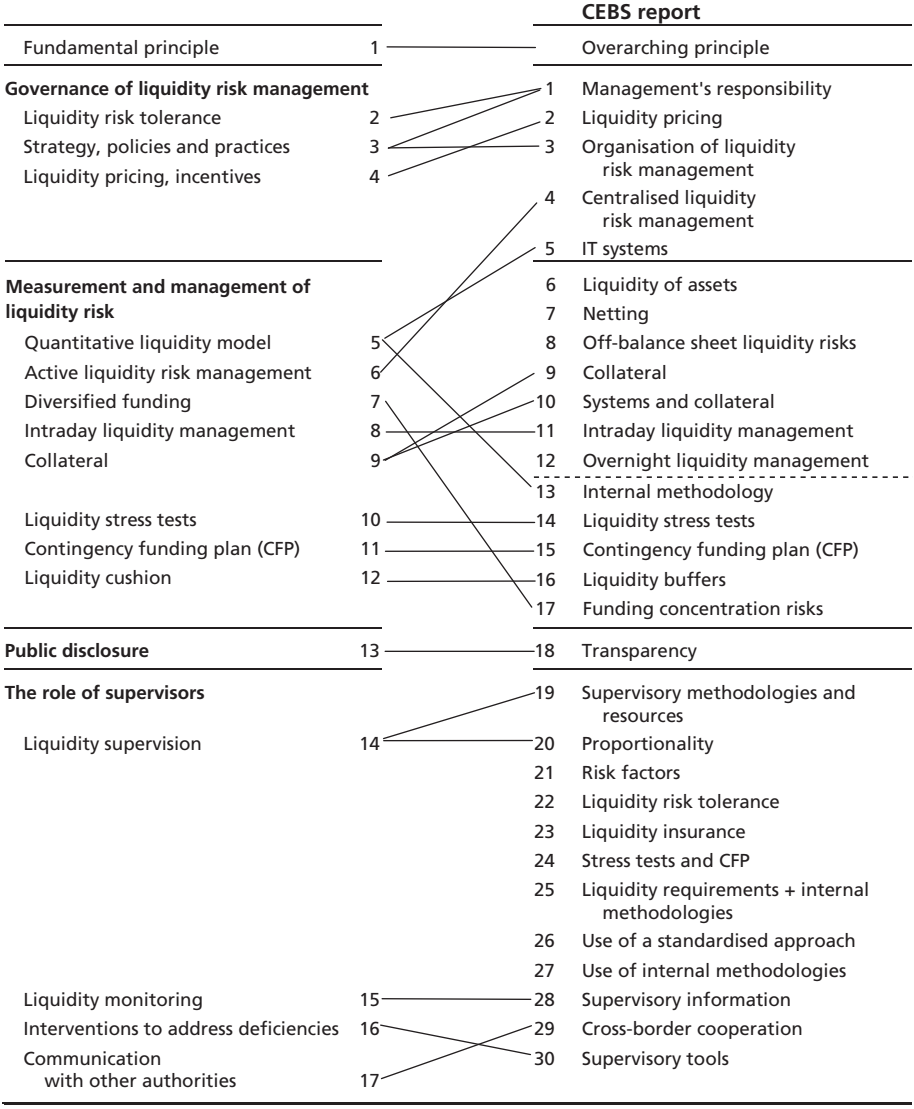
The structure and content of the two reports overlap to some degree, cf. Chart 1. The Basel Committee report includes 17 principles for liquidity risk management and supervision and is a detailed update of the Committee's report from 2000. The following areas are highlighted:

- the importance of establishing a liquidity risk tolerance
- the maintenance of an adequate level of liquidity, including through a cushion of liquidity assets
- the necessity of allocating liquidity costs, benefits and risks to all significant business activities)
- the identification and measurement of the full range of liquidity risks, including contingent liquidity risks
- the design and use of severe stress test scenarios
- the need for a robust and operational contingency funding plan
- the management of intraday liquidity risk and collateral
- public disclosure in promoting market discipline
- expanded guidance for liquidity supervisors.

The CEBS report, with 30 recommendations, is the second part of CEBS' response to the Call for Technical Advice of March 2007 from the European Commission. The first part was a survey of the national regulatory frameworks adopted by the EEA countries.[1]

[1] Se CEBS (2007).

COMPARISON OF THE REPORTS – STRUCTURE AND CONTENT Chart 1



The CEBS report begins with a background analysis of liquidity risk in modern banking. It emphasises a number of conditions that affect liquidity risk, including the globalisation of financial markets, financial innovation (e.g. credit derivatives), new forms of payment systems and other financial infrastructure, increased use of collateral, new accounting principles, and the fact that markets respond differently when under stress.

Compared with the Basel report, the CEBS report focuses more on regulation and supervision of banks' liquidity risk management, includ-

ing the principle of proportionality and issues related to the banks' use of internal liquidity management methodologies.

The principles of the Basel report and the recommendations of the CEBS report are both designed as high-level principles for what banks and supervisors "should" do regarding liquidity risk management and supervision. Nevertheless, banks and supervisors are clearly expected to improve their practices in this area. The rest of this article briefly reviews the 17 principles of the Basel report.

THE FUNDAMENTAL PRINCIPLE

Principle 1 Fundamental principle for the management and supervision of liquidity

"A bank is responsible for the sound management of liquidity risk. A bank should establish a robust liquidity risk management framework that ensures it maintains sufficient liquidity, including a cushion of unencumbered, high quality liquid assets, to withstand a range of stress events, including those involving the loss or impairment of both unsecured and secured funding sources. Supervisors should assess the adequacy of both a bank's liquidity risk management framework and its liquidity position and should take prompt action if a bank is deficient in either area in order to protect depositors and to limit potential damage to the financial system."

This fundamental principle establishes clear lines of responsibility. It is the bank's responsibility to ensure sound management of liquidity risk, and it is the supervisor's responsibility to assess the adequacy of the bank's response and to react promptly to any deficiencies.

Principle 1 has both a qualitative and a quantitative dimension in terms of liquidity management and supervision. A bank should have a robust liquidity management framework and hold a liquidity cushion comprised by readily marketable assets. Comparisons of national regulatory frameworks in the liquidity area have previously distinguished between qualitative regulation focusing on the bank's internal framework (management, strategies, practices) and quantitative regulation focusing on maintaining an established liquidity requirement.[1] Principle 1 encourages a mixed approach where supervisors should assess both a bank's liquidity risk management framework (qualitative) and its liquidity position (quantitative).

Principle 1 also provides a clear liquidity supervision objective: to protect depositors and to limit potential damage to the financial system.

[1] See the special chapter on banks' liquidity in Danmarks Nationalbank (2006).

GOVERNANCE OF LIQUIDITY RISK MANAGEMENT

Principle 2: Liquidity risk tolerance

"A bank should clearly articulate a liquidity risk tolerance that is appropriate for the business strategy of the organisation and its role in the financial system."

Risk tolerance is a key concept in modern risk management and closely related to risk appetite. In practice, risk tolerance is often set as maximum limits to, for instance, a bank's Value-at-Risk for market risk. The liquidity risk tolerance defines the maximum level of liquidity risk that the bank is willing to assume.

It should be commensurate with the bank's business strategy and its role in the financial system. The business strategy affects the types of liquidity risk to which the bank is exposed, while the bank's role in the financial system determines the consequences of potential liquidity problems. The formulation depends on how the bank calculates its liquidity risk. The tolerance may be expressed as limits to, for example, LaR[1], the net funding requirement over a specific set of time horizons, or excess cover of the statutory liquidity requirement.

Principle 3: Strategy, policies and practices

"Senior management should develop a strategy, policies and practices to manage liquidity risk in accordance with the risk tolerance and to ensure that the bank maintains sufficient liquidity. Senior management should continuously review information on the bank's liquidity developments and report to the board of directors on a regular basis. A bank's board of directors should review and approve the strategy, policies and practices related to the management of liquidity at least annually and ensure that senior management manages liquidity risk effectively."

Principle 3 establishes clear lines of responsibility between a bank's senior management and its board of directors. Both should have a thorough understanding of liquidity risk and other risks, including market, credit, operational and reputational risks.

The liquidity strategy, key policies for implementing the strategy and the liquidity risk management structure should be communicated throughout the organisation to all business units conducting activities that have an impact on liquidity.

Principle 4: Liquidity pricing and incentives

"A bank should incorporate liquidity costs, benefits and risks in the product pricing, performance measurement and new product approval

[1] Liquidity-at-Risk is described in Danmarks Nationalbank (2006), p. 102.

process for all significant business activities (both on- and off-balance sheet), thereby aligning the risk-taking incentives of individual business lines with the liquidity risk exposures their activities create for the bank as a whole."

Principle 4 encourages banks to use internal transfer pricing for liquidity to ensure that both current funding costs and the risk of increasing future funding costs are taken into account for each exposure. The objective is to increase individual business lines' awareness of liquidity risk and to create natural incentives for good liquidity risk management.

MEASUREMENT AND MANAGEMENT OF LIQUIDITY RISK

Principle 5: Quantitative liquidity model

"A bank should have a sound process for identifying, measuring, monitoring and controlling liquidity risk. This process should include a robust framework for comprehensively projecting cash flows arising from assets, liabilities and off-balance sheet items over an appropriate set of time horizons."

A bank should have reliable systems to give an up to date, exhaustive picture of its liquidity position and risks. This includes future cash flows from both assets, liabilities and off-balance sheet items, e.g. liquidity guarantees. It also includes correspondent, custody and settlement activities.

Banks should design a system of early warning indicators to monitor liquidity risks. Alarms should start to go off when a bank experiences:

- rapid asset growth, especially when funded with potentially volatile liabilities
- growing concentrations in assets or liabilities
- a decrease of weighted average maturity of liabilities
- repeated incidents of positions approaching or breaching internal or regulatory limits
- negative trends or heightened risk associated with a particular product line
- negative publicity
- a credit rating downgrade
- stock price declines or rising debt costs
- counterparties that begin requesting or request additional collateral for credit exposures or that resist entering into new transactions
- difficulty accessing longer-term funding
- increased risk of liquidity drain from products with embedded triggers such as derivatives and back-up lines.

Principle 6: Active liquidity risk management for the bank as a whole
"A bank should actively manage liquidity risk exposures and funding needs within and across legal entities, business lines and currencies, taking into account legal, regulatory and operational limitations to the transferability of liquidity."

So far, a distinction has been made between centralised and decentralised liquidity risk management in international banks.[1] Principle 6 establishes the need for both, i.e. for a consolidated overview and for taking into account potential limitations to the transferability of liquidity between a bank's different entities.

Principle 7: Diversified funding
"A bank should establish a funding strategy that provides effective diversification in the sources and tenor of funding. It should maintain an ongoing presence in its chosen funding markets and strong relationships with funds providers to promote effective diversification of funding sources. A bank should regularly gauge its capacity to raise funds quickly from each source. It should identify the main factors that affect its ability to raise funds and monitor those factors closely to ensure that estimates of fund raising capacity remain valid."

Funding can be diversified in many dimensions: maturities (short-, medium- and long-term), type of counterparty (retail and wholesale), secured versus unsecured funding, instrument type, currency and geographic market. As a general practice, banks should limit concentration in any one particular funding source, notably certain market-based funding sources.

Banks should make efforts to secure access to market-based funding by maintaining strong relationships with counterparties and by regularly testing the funding opportunities in the market.

Banks need to identify alternative sources of funding that strengthen their capacity to withstand potential liquidity shocks, including:

- deposit growth
- the lengthening of maturities of liabilities
- new issues of short- and long-term debt instruments
- intra-group fund transfers, new capital issues, the sale of subsidiaries or lines of business
- the sale or repo of unencumbered, highly liquid assets
- borrowing from the central bank.

[1] See the article Liquidity risk management in cross-border banking groups in the EU, ECB (2007).

Principle 8: Intraday liquidity management

"A bank should actively manage its intraday liquidity positions and risks to meet payment and settlement obligations on a timely basis under both normal and stressed conditions and thus contribute to the smooth functioning of payment and settlement systems."

The time horizon for liquidity risk management has changed in recent years as a result of shorter settlement periods and increased use of real-time systems. Principle 8 underlines the importance of sound intraday liquidity management and emphasises six practical challenges in that connection:

- capacity to measure expected gross liquidity inflows and outflows and anticipate the timing of net funding shortfalls that might arise during the day
- capacity to monitor intraday liquidity positions against expected activities and available resources (balances, remaining intraday credit capacity, available collateral)
- acquisition of sufficient intraday funding to meet the bank's intraday objectives
- ability to manage and mobilise collateral available to acquire the level of intraday liquidity needed
- capability to manage the timing of the bank's liquidity outflows and the payment outflows of key customers
- preparedness to deal with unexpected disruptions to the bank's intraday liquidity flows.

Principle 9: Collateral

"A bank should actively manage its collateral positions, differentiating between encumbered and unencumbered assets. A bank should monitor the legal entity and physical location where collateral is held and how it may be mobilised in a timely manner."

Increased use of collateral in financial transactions (e.g. repo transactions and intraday credit) in recent years has enabled banks to reduce uncollateralised counterparty risks, while imposing higher requirements on banks' management of collateral and liquidity. Banks should be aware of the acceptability of assets as collateral to various counterparties (including central banks) and any restrictions on the use of collateral.

Principle 10: Liquidity stress tests

"A bank should conduct stress tests on a regular basis for a variety of institution-specific and market-wide stress scenarios (individually and in combination) to identify sources of potential liquidity strain and to ensure that current exposures remain in accordance with a bank's

established liquidity risk tolerance. A bank should use stress test outcomes to adjust its liquidity risk management strategies, policies and positions and to develop effective contingency plans."

Liquidity stress tests use a bank's cash flow projecting tools (cf. principle 5) to calculate the effect on liquidity in a variety of stress scenarios. The stress scenarios should be aimed at liquidity risks of relevance to the bank concerned. The scenarios may be institution-specific (e.g. if a bank's credit rating is reduced by the rating agencies, and/or if a bank loses access to important sources of funding) and market-wide (e.g. the closing of important markets for funding). Institution-specific and market-wide scenarios may arise individually and in combination. Stress tests should allow for changed behaviour among counterparties, including the risk of counterparties stockpiling liquidity and of slower intraday payment flows. Stress test outcomes and the resulting modifications to a bank's risk management should be discussed with its board of directors and the national supervisor.

Principle 11: Contingency funding plan

"A bank should have a formal contingency funding plan (CFP) that clearly sets out the strategies for addressing liquidity shortfalls in emergency situations. A CFP should outline policies to manage a range of stress environments, establish clear lines of responsibility, include clear invocation and escalation procedures and be regularly tested and updated to ensure that it is operationally robust."

A CFP is the compilation of policies, procedures and action plans for responding to severe disruptions to a bank's ability to fund some or all of its activities. A CFP should be closely integrated with a bank's liquidity risk management and include:

- a description providing the bank's management with an overview of the potentially available contingency funding measures
- clear specification of roles and responsibilities among key employees on the "crisis team", including contact details, and the designation of alternates for key roles
- plans for contacting and communicating with market participants, employees, clients, creditors, shareholders and supervisors
- potential steps to meet critical payments on an intraday basis.

CFPs should be reviewed and tested regularly to ensure their effectiveness and operational feasibility.

Principle 12: Liquidity cushion

"A bank should maintain a cushion of unencumbered, high quality liquid assets to be held as insurance against a range of liquidity stress

scenarios, including those that involve the loss or impairment of unsecured and typically available secured funding sources. There should be no legal, regulatory or operational impediment to using these assets to obtain funding."

The many uncertainties involved in predicting liquidity developments make it necessary for banks to have a cushion of liquidity for immediate use in emergencies.

The statutory liquidity requirement in Denmark is specified in section 152 of the Financial Business Act. The requirement must be observed at all times. This means that the liquidity used to meet the statutory requirement cannot be used as a cushion. Goodhart (2008) likens binding liquidity requirements to the last taxi at the railway station that cannot be taken if the bylaws require that there must always be one taxi standing ready at the station. For Danish banks, the available liquidity cushion can therefore only be said to be their excess liquidity cover, over and above the requirement in section 152. Operating with low excess liquidity cover therefore seems imprudent, especially during periods of stress.

The assets in a liquidity cushion can be used to obtain funding either in the market or from the central bank. Banks are encouraged to be realistic about both options. Market liquidity can disappear. Nor should banks rely on the central bank helping by altering the amount of or the terms on which it provides liquidity. Other considerations such as moral hazard and the objective of monetary policy may outweigh the central bank's short-term consideration for banks with liquidity problems.

PUBLIC DISCLOSURE

Principle 13: Public disclosure

"A bank should publicly disclose information on a regular basis that enables market participants to make an informed judgement about the soundness of its liquidity risk management framework and liquidity position."

Public disclosure may contribute to reducing uncertainty and strengthening market discipline. Principle 13 encourages banks to disclose both qualitative information on their liquidity risk management and quantitative information on their key liquidity numbers. Examples of relevant qualitative information:

- the bank's liquidity risk tolerance (principle 2)
- processes for internal liquidity reporting and monitoring
- details about the bank's liquidity model and its assumptions (principle 5)
- description of the stress test scenarios modelled (principle 10) and CFP (principle 11).

In some countries there has been opposition against disclosing quantitative data concerning the liquidity of individual banks. The reason given is often that different banks have different business models and thus different liquidity needs, and that because liquidity data are not harmonised, they are not comparable. This may entail risk of misunderstandings and unjustified disruptions of liquidity. In other countries it has been up to the banks themselves to decide what liquidity information they wanted to disclose. Banks that disclose data on liquidity often have different types of key liquidity metrics and different internal limits for those metrics. Denmark is one of the few countries where banks are required to disclose standardised key metrics for excess liquidity cover together with their annual financial statements.

THE ROLE OF SUPERVISORS

Principle 14: Liquidity supervision

"Supervisors should regularly perform a comprehensive assessment of a bank's overall liquidity risk management framework and liquidity position to determine whether they deliver an adequate level of resilience to liquidity stress given the bank's role in the financial system."

Principle 14 clarifies supervisors' responsibility for liquidity supervision. Supervisors should have in place a supervisory framework which allows them to make thorough assessments of banks' liquidity risk management practices and the adequacy of their liquidity, in both normal times and periods of stress. Such assessment may be conducted through on-site inspections and off-site monitoring and should include regular communication with a bank's management and/or board of directors. The supervisory framework should be publicly available.

Liquidity supervision should be commensurate with the risk profile of an individual bank, especially the risk a bank poses to the smooth functioning of the financial system as a whole given its size and role in e.g. payment and settlement systems. Supervisors should assess the risk tolerance of a bank and the overall liquidity risk management framework to confirm that it ensures sufficient liquidity. Supervisors should pay special attention to banks' liquidity stress tests and CFP, including stress scenarios and underlying assumptions, and how the results of stress tests are used in liquidity risk management.

Principle 15: Liquidity monitoring

"Supervisors should supplement their regular assessments of a bank's liquidity risk management framework and liquidity position by moni-

toring a combination of internal reports, prudential reports and market information."

Supervisors should regularly collect and analyse liquidity reports from the banks. Such data should be supplemented with other information on market developments. Close collaboration between supervisors and central banks in monitoring major banks' liquidity positions and financial market liquidity conditions is particularly useful during stressed conditions.

Principle 16: Intervention to address deficiencies

"Supervisors should intervene to require effective and timely remedial action by a bank to address deficiencies in its liquidity risk management processes or liquidity position."

Principle 16 clarifies supervisors' responsibility to address deficiencies in a bank's liquidity risk management processes. Supervisors should have a range of tools at their disposal to address any deficiencies they identify, including the authority to compel banks to take appropriate and timely remedial action. The choice of tools to use and the timeframe in which any remedial action is expected to be taken by the bank should be proportionate to the level of risk the deficiency poses to the safety and soundness of the bank or the relevant financial system(s). The range of supervisory responses could include:

- requiring actions by the bank to strengthen its management of liquidity risk
- requiring actions by the bank to improve its CFP (e.g. through stress testing)
- requiring actions by the bank to reduce its liquidity risk
- restricting the bank from making acquisitions or significantly expanding its activities
- imposing higher capital requirements.

Principle 17: Communication with other authorities

"Supervisors should communicate with other supervisors and public authorities, such as central banks, both within and across national borders, to facilitate effective cooperation regarding the supervision and oversight of liquidity risk management. Communication should occur regularly during normal times, with the nature and frequency of the information sharing increasing as appropriate during times of stress."

Principle 17 encourages supervisors to communicate openly with other relevant authorities, both internationally with supervisors in other countries and nationally with the central bank. Cooperation and information sharing among supervisors and central banks can contribute to the

effectiveness of these authorities in their respective roles. Such cooperation can help supervisors improve the assessment of the overall profile of a bank, e.g. with additional knowledge about conditions in the financial markets, and help central banks assess the risks posed to the broader financial system, e.g. with assessments of the banks' liquidity risk management.

Not only is international cooperation on supervision of cross-border banking groups necessary; the exchange of knowledge and experience regarding supervisory processes and the banks' liquidity risk management practices may also help supervisors identify potential improvements.

Communication among the authorities becomes particularly important during times of stress, whereas in normal times, communication can be used to establish good habits and trust among the authorities.

IMPLICATIONS FOR DENMARK'S FINANCIAL SYSTEM

The new principles of the Basel report set a level of ambition for liquidity risk management that exceeds the capability of many banks in the EU and Denmark at present. Even though the principles are formulated in general terms, they set high expectations for both the banks' liquidity risk management and the supervision thereof.

The principles are likely to be implemented in new bank liquidity regulations. At EU level there are plans to incorporate some of the recommendations into the Capital Requirements Directive. National supervisors are also expected to bring national liquidity regulations and supervision in line with the new recommendations within the foreseeable future.

The impact on the framework for financial business in Denmark remains unclear. It is still too early to establish exactly how the principles of the Basel and CEBS reports are to be implemented, e.g. whether new liquidity regulation is required. However, current liquidity regulation in Denmark (section 152) does not appear to adequately cover all the new principles.

The financial turmoil over the past year has increased the banks' awareness of liquidity risk. The Basel and CEBS reports provide sensible and detailed guidelines for sound risk management and supervision. As a result, both banks and supervisors have good opportunities to strengthen their resilience to liquidity risk. While being a significant challenge, this is also an opportunity that should not be missed.

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Credit Default Swaps

Annemette Skak Jensen, Financial Markets

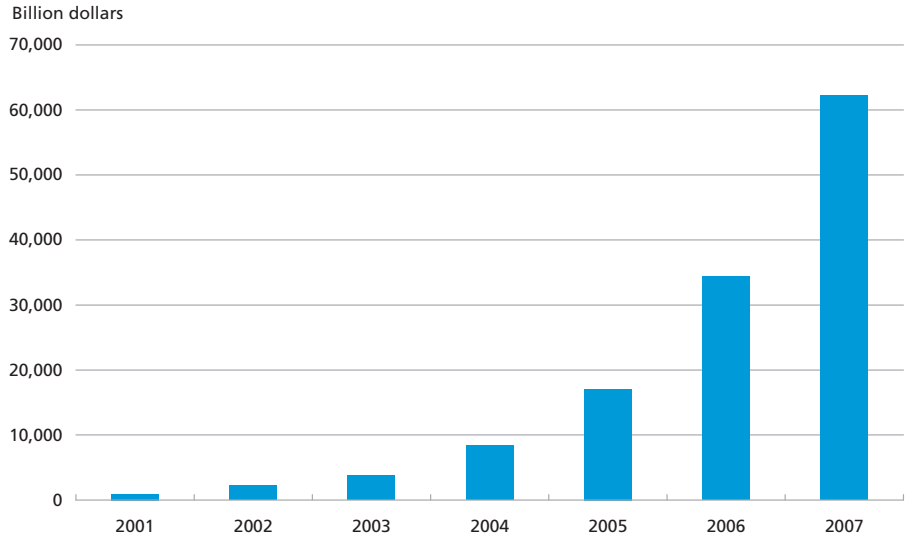
INTRODUCTION

Recent years have seen considerable innovation within financial products for trading credit risk. Among the most widely used and discussed new credit products are credit default swaps, CDS. The notional value of outstanding CDS contracts has grown substantially from just under 1,000 billion dollars in 2001 to more than 62,000 billion dollars in 2007, cf. Chart 1.

Most new financial products are variations on old, established products. This also applies to CDS. A CDS contract is, in effect, a guarantee linked to a bond (or a loan). The issuer of the bond (the reference entity) is not as such party to the contract. A CDS is purely an agreement between the buyer and seller of the guarantee. The seller compensates the buyer if the issuer fails to service the bond debt.

The financial crisis over the past year has called attention to CDS and developments in CDS prices. Prices send signals about the credit stand-

NOTIONAL VALUE OF OUTSTANDING CDS CONTRACTS, YEAR-END Chart 1



Source: ISDA.

ings of the reference entities and have therefore been used to predict which financial institutions might be particularly exposed to the credit crisis.

However, CDS have not only attracted attention due to interesting pricing patterns. There have also been, and still are, extensive concerns about the risks linked to the very widespread use of CDS, and whether the CDS market could amplify the financial turmoil.

Many observers see these concerns as being one of the primary reasons why the Federal Reserve earlier this year, in an unconventional step, helped to bail out the investment bank Bear Stearns. Bear Stearns is a major player in the CDS market, acting as counterparty in many CDS contracts. If it were to default, the problems would spread to many enterprises that have used CDS to hedge credit risk. This could cause an avalanche of problems.

This article provides a description of CDS. Which factors influence CDS prices? What can these prices tell us?

CREDIT DEFAULT SWAPS – CDS

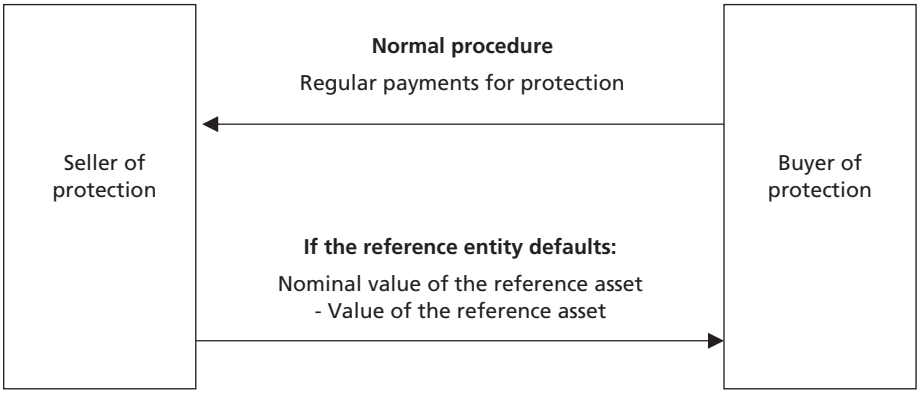
As stated above, a CDS is an agreement between two parties to trade credit risk on a reference asset issued by a third party, the reference entity. The reference asset is typically a bond, but could also be a loan. Chart 2 illustrates the underlying principle of a CDS contract.

One party to the agreement *purchases*, for an agreed period, protection against a credit event, i.e. the reference entity's default or failure to meet its payment obligations. Most contracts run for 5 years.

The other party to the agreement *sells* protection in return for regular payments from the buyer. Such payments are received throughout the term of the contract, or until a credit event occurs. The annual payment per nominal value of the reference asset is known as the *CDS spread*. This is determined at the outset and depends on factors such as the perceived credit standing of the reference entity.

If the reference entity defaults or fails to meet its payment obligations, the contract must be settled, i.e. the buyer receives the difference between the value of the asset and its nominal value. A number of credit events can trigger the settlement of the contract. In the following, these events are collectively referred to as default. The contract can be settled physically or in cash. *Physical settlement* entails a swap, whereby the protection buyer delivers the reference asset to the seller against payment of its nominal value. In *cash settlement*, the seller of protection pays the buyer the difference between the nominal value of the reference asset and its market value after the credit event.

CDS CONTRACT Chart 2



A CDS bears considerable resemblance to a guarantee, but a significant difference in relation to conventional guarantees is that a fairly standardised and liquid CDS market has emerged. This enables trading of credit risk without access to the reference assets.

Growth in the market has to a large extent been driven by a set of Credit Derivative Definitions issued by the International Swaps and Derivatives Association (ISDA) in 2003. These include definitions of credit events and settlement methods.

At more or less the same time, i.e. in late 2003, the first CDS index contracts were introduced. The introduction of indices also supported the development of a liquid CDS market.

Index CDS

CDS contracts are traded both as contracts on single reference entities and as contracts on multiple reference assets. Multiple-entity contracts can be CDS on a small group of reference entities (basket CDS) or CDS on standardised indices of reference entities.

There are several standardised CDS indices, each comprising 25-125 reference entities. Reference entities are grouped according to fixed guidelines, and the contracts operate with standard maturities and payment dates. Such CDS are generally more liquid than single-entity CDS contracts.

The two most important groups of standardised CDS indices are CDX and iTraxx. The two CDS indices with the highest turnover are thus CDX.NA.IG, comprising the 125 most frequently traded North American CDS reference entities with high credit standings, and the corresponding index of European reference entities, iTraxx Europe.

Use

CDS allow banks to sell the credit risk associated with their lending activities so that they can increase lending more than they would be able to if they bore the risk themselves. For example, a bank that has granted a loan to a business enterprise may sell off the credit risk on the loan by purchasing a CDS contract with the loan in question, or an equivalent loan, as the reference asset.

Likewise, credit risk on a bond can be hedged by purchasing a CDS with an equivalent bond as the reference asset. However, the CDS contract covers only credit risk, i.e. the risk of losses if the issuer of the bond (the reference entity) defaults.

Credit risk can be reduced by buying CDS, but it can also be increased by selling CDS. CDS thus provide an enhanced opportunity to diversify credit portfolios and reduce the overall credit risk on the portfolio. In this way, a CDS can be a useful tool for risk management.

CDS have been developed primarily with a view to hedging and managing credit risk. However, as is often the case with financial products, the use of CDS has been expanded so that many contracts are now used to take positions in credit risk or to construct other credit products.

A CDS is a very flexible instrument for taking credit risk positions. An investor who believes that the credit risk on a reference entity is increasing, and that the CDS spread on that entity will therefore widen, should purchase protection by way of a CDS contract.

If the CDS spread in the market for the reference entity in question subsequently widens, the investor profits. The gain can be realised by selling the contract. Alternatively, an opposite contract can be concluded by selling equivalent protection to another counterparty. Since the spread has widened, the investor – who is now selling protection – will regularly receive payments exceeding those being paid for the protection previously purchased. Selling protection involves taking on a credit risk on the reference asset, but this risk is hedged by the protection initially purchased.

Likewise, it is possible to speculate in a reduced credit risk, and thus a narrowing of the credit spread, by selling protection.

Today, CDS are also extensively used as building blocks for "structured products". CDS make it possible to design products that include or sell off credit risk on one or more reference entities – without directly investing in or selling the bonds of the reference entity.

When taking positions in credit risk, and when constructing other credit products, buyers and sellers of CDS contracts are not necessarily exposed to the reference asset beforehand. As a result, the notional

value of outstanding CDS on a reference entity may exceed the reference debt considerably. This is indeed often the case.

The market

The market for CDS contracts has been growing rapidly, particularly since 2003. Annual growth in the notional value of outstanding CDS was in excess of 100 per cent from 2004 to 2006. In 2007, the notional value of CDS increased by 81 per cent, from 34,423 billion dollars to 62,173 billion dollars.

Just over half of all outstanding CDS in 2007 were single-entity contracts. The share of multiple-entity contracts is, however, increasing.

The largest part by far of CDS turnover takes place between financial enterprises. According to BIS (2008), non-financial enterprises were counterparties to less than 2 per cent of outstanding CDS in December 2007.

In a global perspective, banks are net purchasers of protection, while insurance companies and hedge funds are net sellers. According to Fitch Ratings, the 10 largest players in the CDS market are all banks, and in 2006 these 10 banks were counterparties to 89 per cent of all traded CDS. This means that a major share of the CDS market is concentrated on a small group of very large counterparties.

In Denmark, CDS are mainly traded on the following reference entities: Carlsberg, Danske Bank, DONG Energy, ISS, TDC and FIH Erhvervsbank.[1]

WHAT DRIVES CDS SPREADS – AND WHY ARE THEY SO INTERESTING?

The price paid by a buyer of protection, the CDS spread, is intended to compensate the seller for the risk of loss taken on by concluding the contract.

As this risk depends on the probability that the reference entity will default, the spread is significantly affected by how great the market perceives this probability to be. If the market believes that it has increased, the CDS spread widens.

The probability that the reference entity will default depends on a number of factors, some of which are entity-specific, while others concern the market in general. The former include e.g. conditions relating to the assets and loans of the reference entity. If the value of the entity's assets is believed to be falling, this may increase the perceived probability of default and thus the CDS spread.

[1] Fitch Ratings.

Market factors affecting the probability of default include business cycles and liquidity conditions. Recessions often increase the probability that the reference entity will default, thereby widening the CDS spread. Likewise, liquidity shortfalls in the market and strained credit conditions will also increase the probability of default.

The compensation payable to the seller also depends on this party's willingness to take on additional credit risk. The CDS spread is therefore also influenced by general risk appetite in the market.

Finally, the price of a CDS also reflects the liquidity of the product. If a CDS contract is difficult to resell, compensation is paid to the seller by way of a liquidity premium. The less liquid the contract is, the greater the liquidity premium and thus also the CDS spread.

What information do CDS spreads contain?

As stated, CDS spreads depend on many factors. Nevertheless, a liquid CDS market may provide insight into market perceptions of both credit risk on individual reference entities and systemic risk.

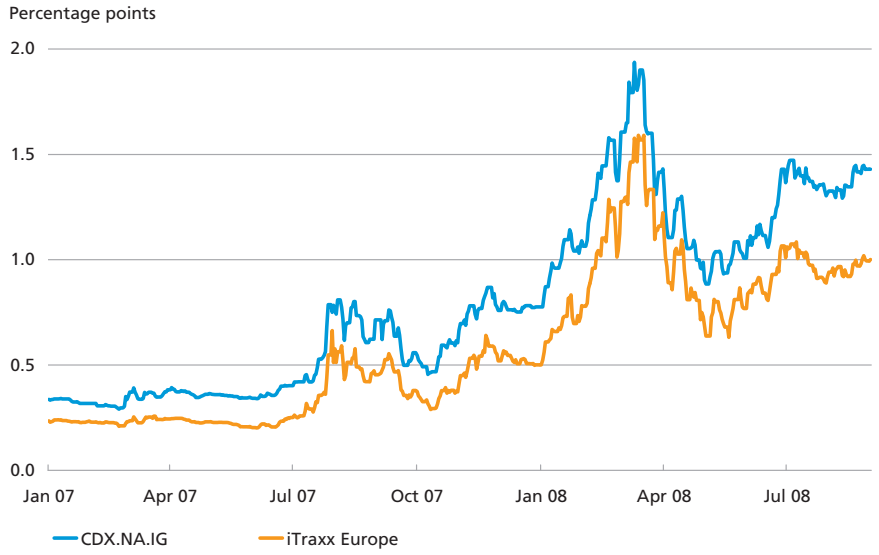
Changes in CDS spreads *across the board* reflect risk appetite among market participants, cyclical conditions and other general market factors. A downturn leads to widening of spreads in all segments of the CDS market.

Such general widening of CDS spreads has been observed in both Europe and the USA over the past year, cf. Chart 3. The indices shown comprise reference entities from a number of different sectors, e.g. the energy, industry and financial sectors, reflecting the general market trend. The widening of CDS spreads over the past year reflects, among other things, how the financial crisis has reduced the risk appetite of market participants, as well as less favourable macroeconomic conditions.

On the other hand, fluctuations in the spread for a *single reference entity*, which do not mirror the general trend in the market, indicate that the market assesses the credit standing of the specific reference entity to have deteriorated (the spread widens) or improved (the spread narrows). In July 2007, the US investment bank Bear Stearns announced sizeable losses, and subsequently a pronounced widening of the Bear Stearns CDS spread was observed. As Chart 4 illustrates, the Bear Stearns spread did not follow the trend in the banking sector or the market in general. The market perception was that the credit standing of the bank had dropped as a consequence of the losses announced.

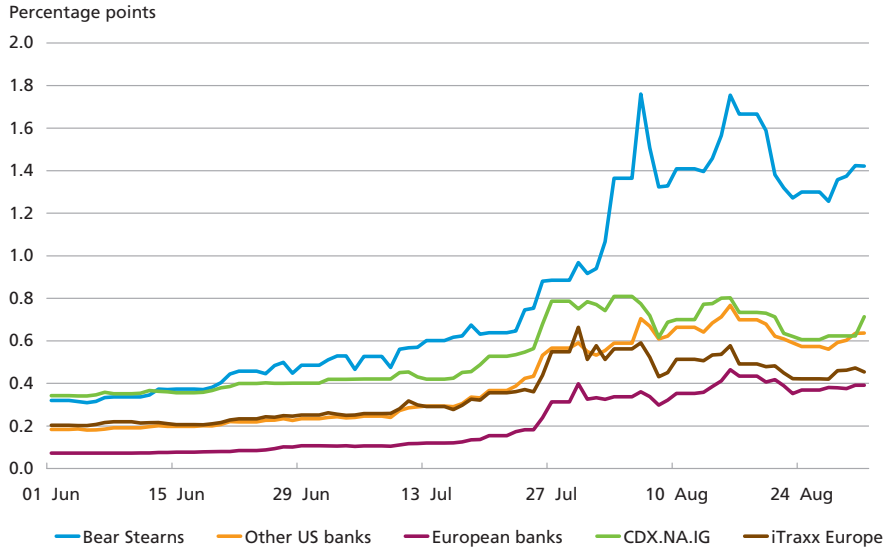
The correlation between spreads provides an indication of how the market perceives systemic risk. This is the risk that affects all reference entities in the market or within a given sector. Greater correlation be-

SPREADS FOR 5-YEAR CDS INDICES, JANUARY 2007-AUGUST 2008 Chart 3



Note: Both indices comprise reference entities from a number of different sectors, such as industry, energy and finance.
Source: Bloomberg.

5-YEAR CDS SPREADS FOR BEAR STEARNS, JUNE-AUGUST 2007 Chart 4



Note: "Other US banks" is an average of the CDS spreads for Bank of America, Citigroup, Goldman Sachs, JP Morgan Chase, Lehman Brothers, Merrill Lynch, Morgan Stanley, Wachovia and Wells Fargo.
"European banks" is an average of the CDS spreads for Barclays, BNP Paribas, Commerzbank, Credit Suisse, Deutsche Bank, HSBC, ING, Royal Bank of Scotland and UBS.
Source: Bloomberg and own calculations.

tween fluctuations in CDS spreads reflects the view that the probability of coinciding credit events, and thus the systemic risk, has increased.[1]

Market-based ratings

As an alternative to the traditional ratings used for credit assessment of counterparties, Fitch Ratings, among others, has begun to issue market-based ratings. These ratings are based on CDS spreads for the individual reference entities and measure the market assessment of the entities' credit standing.

Typically, traditional ratings are seldom revised. In contrast, CDS spreads on the most frequently traded reference entities can be observed on a daily basis. This means that the market-based ratings are in effect revised every day. Since CDS spreads rapidly respond to changes in the credit standings of reference entities, market-based ratings have often proved to be good at predicting subsequent changes in the traditional ratings. Chart 5 shows traditional and market-based ratings for a group of banks that have been officially downgraded within the last few months. In all cases, a decline in the market-based ratings has preceded the downgrading.

It is also seen that the market-based ratings have been lower than the official ratings in the review period. The reason could be that CDS spreads, unlike traditional ratings, are cyclically sensitive. The unfavourable macroeconomic conditions at present entail wide CDS spreads and thus low market-based ratings. Traditional ratings, on the other hand, take resilience against cyclical fluctuations into account and therefore a general fall is not likely during a recession. This means that market-based ratings may very well be higher than traditional ratings during an upswing.

One of the reasons why declining market-based ratings are often followed by a fall in traditional ratings could, however, be that the predictions are to some extent self-fulfilling. If the market-based ratings go down, the reference entity may experience problems in the credit market and in relation to customers, suppliers, etc., which could in turn contribute to a downgrading of the traditional rating.

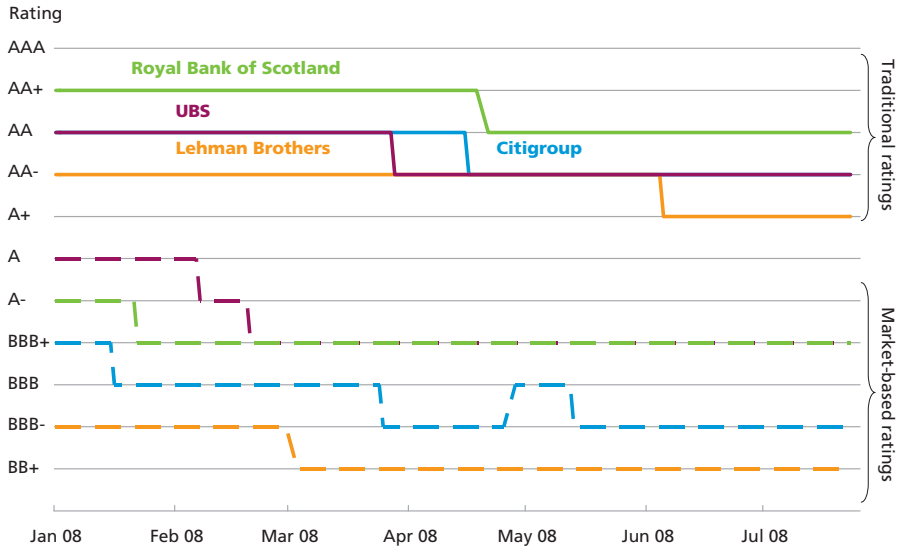
How useful are CDS spreads as measures of credit risk?

As seen, there can be advantages in using CDS spreads to assess credit risk, but the method also has its drawbacks.

In order to use CDS spreads for credit assessment of a counterparty, there must be a liquid market for CDS with the counterparty as the

[1] See Tarashev and Zhu (2008).

FITCH'S TRADITIONAL AND MARKET-BASED RATINGS Chart 5



Note: Until 31 March and after 18 April, the official Citigroup rating is identical to the UBS rating. From 1 April to 6 June, the official Lehman Brothers rating is identical to that of UBS. Since 22 February, the market-based rating of UBS has been identical to that of the Royal Bank of Scotland.
Source: Fitch Ratings.

reference entity. That is not always the case. Although CDS contracts are often traded more frequently than the reference assets, the liquidity of CDS on a number of reference entities is nevertheless very limited. The lack of liquidity reduces the quality of the information derived from the CDS spreads. It is difficult to quantify the elements of credit risk and liquidity premium, respectively, in the spread.

Moreover, CDS are also traded for speculative purposes, which may in turn affect spreads. Speculation may thus lead to wider and more volatile CDS spreads. Once again, the less liquid CDS are more vulnerable to speculation.

An advantage of CDS spreads is that they react very rapidly to news and market conditions that influence credit risk on the reference entity. However, this also means that CDS spreads can be sensitive to misconceptions of the credit standings of reference entities and to rumours that may be unfounded.

IMPLICATIONS FOR THE CREDIT MARKET

In principle, there is close a link between the CDS spread and the interest on loans/yield on bonds issued by the reference entity.

For example, if a business enterprise issues a bond, the buyer of the bond may hedge the credit risk by purchasing a CDS with the bond

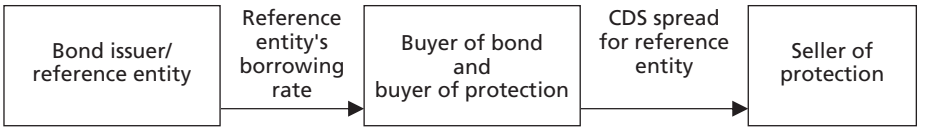
issuer as the reference entity. The buyer of the bond then regularly receives the difference between the reference entity's borrowing rate and the CDS spread without having incurred any credit risk on the reference entity. However, the buyer does have a counterparty risk on the seller of the CDS. Appendix 1 includes a brief description of counterparty risk and other problems and risks related to the CDS market. Alternatively, the buyer of the bond could buy a risk-free asset such as a government bond and receive a risk-free return. As Chart 6 illustrates, the two strategies outlined ensure that the buyer of the bond receives regular payments without incurring the associated credit risk, and in principle the size of the two payment flows should therefore be the same.

In other words, the yield on the reference entity's bond should be equal to the sum of the risk-free return and the CDS spread on the reference entity. The wider the CDS spread, the higher the borrowing costs for the reference entity.

All the same, this link does not quite hold true in practice due to a number of factors. Tax issues may play a role, or the liquidity of the CDS contract may differ from that of the reference entity's debt instruments. In many cases, CDS contracts are more liquid than the reference assets, which makes the CDS spread a purer measure of credit risk.

The difference in liquidity is indeed one of the reasons why the CDS spread, and not the price of the reference asset, is generally used for assessing the credit standing of e.g. a bank. In many cases, CDS spreads also react more rapidly to changes in the credit standing of the reference entity.

CORRELATION BETWEEN CDS SPREADS AND BORROWING COSTS Chart 6



Without incurring credit risk, the buyer of the bond receives:
Reference entity's borrowing rate –
CDS spread for reference entity

Without incurring credit risk, the buyer of the bond receives:
Risk-free return

For a business enterprise that wishes to issue bonds or raise loans, it can thus be an advantage to be a reference entity on CDS traded with narrow spreads. Conversely, wide CDS spreads reduce the borrowing opportunities of the reference entity.

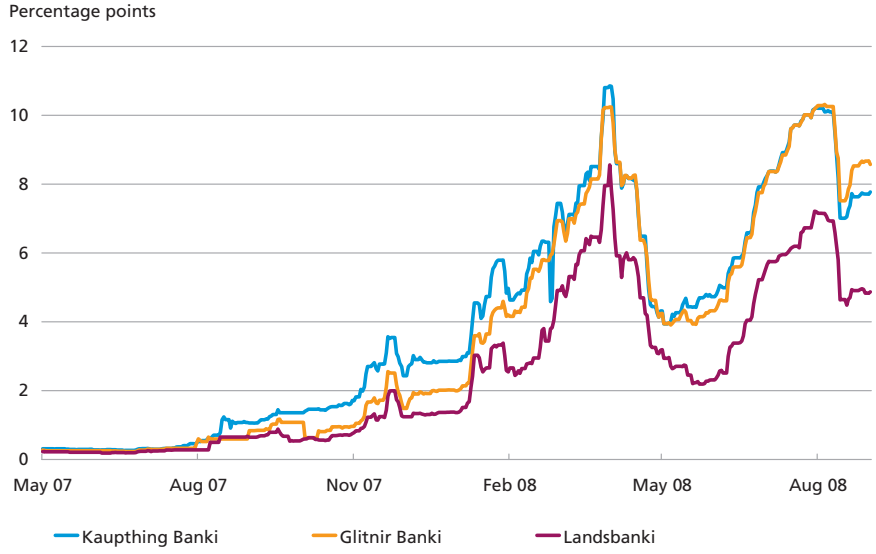
Widening of the CDS spread for a reference entity does not necessarily reflect actual deterioration of the reference entity's credit standing. Speculation, rumours or misconceptions may also be underlying factors. Nevertheless, the widening of the spread could make it more difficult and costly for the reference entity to borrow. Ultimately this could mean that faulty assessments or rumours may cause real problems for a reference entity.

CDS spreads may fluctuate considerably. Chart 7 shows the development in the CDS spreads of the three large Icelandic banks Kaupthing Banki, Glitnir Banki and Landsbanki. The CDS spreads for these three banks have widened considerably.

So far, these banks have not had any great need to raise new loans, but the terms of the loans already raised have been less stringent in practice than the spreads would indicate. The banks have, for instance, raised loans via private placements, which could reflect that the CDS market is fairly thin in comparison with the actual lending market.

Besides the impact of CDS spreads on the borrowing costs of the individual reference entity, the CDS market may also influence the credit market in general. The CDS market has made it easier and less expensive

5-YEAR CDS SPREADS FOR ICELANDIC BANKS, MAY 2007-AUGUST 2008 Chart 7



Source: Bloomberg.

to hedge credit risk and diversify credit portfolios. In principle, this should mean that credit risk on a loan is passed on to the party best able to assume the risk. In addition, CDS provide easily accessible information about the credit standing of reference entities. This could mean less expensive loans for references entities on relatively liquid CDS.[1]

However, reduced liquidity in the CDS market may have an impact on the lending market, which could in turn affect financial stability, cf. Appendix 2. If trading in credit risk becomes less efficient, it may become more expensive and more difficult to borrow and raise liquidity.

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[1] See Ashcraft and Santos (2007) for an empirical study of the impact of the CDS market on borrowing costs.

APPENDIX 1: PROBLEMS AND RISKS

For the individual market participants, benefits may be gained by trading credit risk in order to achieve the desired credit risk profile, but the CDS market also entails a number of problems and risks.

Counterparty risk

The buyer of protection passes on the credit risk on the reference asset, but instead incurs a credit risk on the seller. There is a risk that the latter is unable to pay if the reference entity defaults. The counterparty risk is also relevant to the buyer of protection if the CDS purchased has a positive market value, since the market value falls if the seller's credit standing deteriorates. Counterparty risk may also affect the CDS spread. The buyer of protection may be willing to accept a higher spread if the seller is assessed to have a high credit standing.

The seller of the guarantee assumes the credit risk traded, as well as a counterparty risk in relation to the regular payments from the buyer. Both parties would thus find themselves in a rather awkward position were the counterparty to default.

Another issue relating to counterparty risk is that the contract may be passed on to a third party by either the buyer or the seller. This can lead to uncertainty about the counterparty risk, as the identity of the actual counterparty is not clear.

Legal and operational risks

Legal risk arises from factors such as lack of documentation and standards. There have been problems with lack of clarity in relation to reference assets and the absence of definitions of the events that trigger settlement of the contract. This could mean that buyers of guarantees are in practice not obtaining the insurance that they believe.

These issues have to some extent been addressed by the ISDA Credit Derivative Definitions, as they reduce the uncertainties concerning the content of the contracts. However, not all CDS contracts are based on the ISDA Definitions, and the Definitions have not been seriously tested in court.

An operational issue in relation to the CDS market is the potentially large backlog of contract registrations. Again, extensive retrading exacerbates the problem. Since late 2005, the Federal Reserve, among others, has had strong focus on eliminating this backlog – with considerable success.

There are also operational issues concerning settlement of contracts, primarily because the notional value of outstanding CDS on a reference

entity often by far exceeds the reference debt. Since physical settlement requires the buyer to deliver the reference asset to the seller, problems may arise because many buyers of protection will attempt to procure the asset if the reference entity defaults.

The first step towards an infrastructure to address the settlement issues has now been taken, in that the US Depository Trust & Clearing Corporation, DTCC, has entered into cooperation with CLS Bank[1]. In November 2007, CLS began to settle CDS registered at DTCC in US dollars, euro, Japanese yen, pounds sterling and Swiss francs.

In connection with cash settlement, it may be a problem to determine the market value of the reference asset. ISDA has, however, begun to conduct auctions to determine the market value of the reference entity's debt. No standards have as yet been developed for such auctions.

Incentive issues

The CDS market has contributed to a shift in the business models of some institutions. Previously, they took on most of the credit risk on lending themselves, but now they increasingly act as lending intermediaries, i.e. they do not assume the credit risk.

This development can create incentive problems. It can be problematic that the credit assessment performed by the original issuer of the loan is less thorough than previously. In addition, the original lender does not suffer a loss if the reference entity defaults and therefore does not have the same incentive to find a solution to prevent this. On the contrary, the buyer of protection may have an interest in the default of the reference entity, since this could trigger contract settlement.

[1] CLS Bank was originally established with a view to settling currency transactions. Today, the CLS system settles transactions in 17 different currencies, see Lone Natorp and Tina Skotte Sørensen, Settlement of Foreign-Exchange Transactions, Danmarks Nationalbank, *Monetary Review,* 4th Quarter 2006.

APPENDIX 2: SYSTEMIC RISK AND FINANCIAL STABILITY

CDS have become a frequently traded product. There are many players in the market, and extensive retrading creates long chains of counterparties. This tangle of counterparties in the CDS market can entail systemic risk.

Any difficulties experienced by any one active participant in the CDS market may spread to a wider range of counterparties. This can cause instability in the CDS market, which may in turn spill over into other financial markets. The tangle of counterparties could mean that it will take some time to realise how the default of one market participant will affect the rest. Consequently, the market may for a period become very illiquid, causing considerable widening of CDS spreads. As previously described, this may affect the credit market, thereby causing the problems to spread.

The bailout of Bear Stearns indicates that the Federal Reserve is very much aware of the potential systemic risk in relation to CDS. Bear Stearns was one of the large players in the CDS market. According to an article in Risk Magazine, it is estimated that Bear Stearns had outstanding CDS contracts totalling around 2,000 billion dollars.[1] Consequently many players would have experienced problems if Bear Stearns had defaulted.

The need to improve e.g. the registration of trades, handling of counterparty risk and the procedure for settlement of contracts was recently highlighted in a report by the Counterparty Risk Management Policy Group, which comprises representatives from a number of market participants and is chaired by Gerald Corrigan, former president of the Federal Reserve Bank of New York. The Policy Group emphasises the importance of cooperation between market participants with a view to implementing improvements. Regulatory authorities have also focused on containing systemic risk in the CDS market. For example, the establishment of a central counterparty – a clearing house – for all trades would reduce counterparty risk and facilitate the disentanglement of counterparties in the event that a reference entity or market participant defaults. Recently, players in the CDS market have themselves taken the initial steps to establish such a clearing house.

It seems like a paradox that CDS can cause so much concern. After all, a CDS allows efficient hedging of credit risk and diversification of credit portfolios, which should contribute to financial stability. However, financial innovations such as CDS are not only used to reduce risks. Furthermore, the rapid growth of the CDS market has led to operational and legal issues in the market. Consequently, the CDS market may have a negative impact on financial stability unless these issues are addressed in an efficient manner.

[1] See Risk Magazine (2008).

Growth, Public Finances and Immigration

Erik Haller Pedersen and Johanne Dinesen Riishøj, Economics

INTRODUCTION AND SUMMARY

The level of a society's prosperity is often measured by output per capita. In practice, however, prosperity is generated by consumption rather than production. Systematic improvement of a country's terms of trade may over time enable consumption per capita to exceed output per capita.

In a long-term historical perspective, productivity growth has been a key factor in explaining material prosperity development, while demographic trends and terms-of-trade improvements have played a secondary role. This will also be the case in future.

Over the last 15 years, growth in hourly productivity in Denmark has been lower than in the preceding period, and weaker than in many comparable countries. If this trend continues, Denmark will experience weaker prosperity development in the coming decades than observed over the last 40 years and consequently fall behind other countries. In a long-term perspective, offsetting significantly lower productivity growth by higher labour input will not be feasible.

Sustained improvement of a country's terms of trade contributes to prosperity on a par with productivity growth. Denmark has improved its terms of trade over the last 30-40 years. This also applies if energy is excluded. If this development can be sustained, it will to some extent compensate for low productivity growth.

While prosperity development depends primarily on productivity growth and only to a lesser extent on demographic trends, the opposite applies to fiscal sustainability. Here demography, labour participation and working hours are key factors, as they determine the size of the tax base. Moreover, in terms of its prioritisation of expenditure, the public sector is able to contribute positively to productivity growth, e.g. by focusing on education and research and development.

Immigrants and frontier workers may contribute to alleviating the pressure on the labour market and to output growth. The participation rate for these groups determines whether they contribute to prosperity development and to fiscal sustainability.

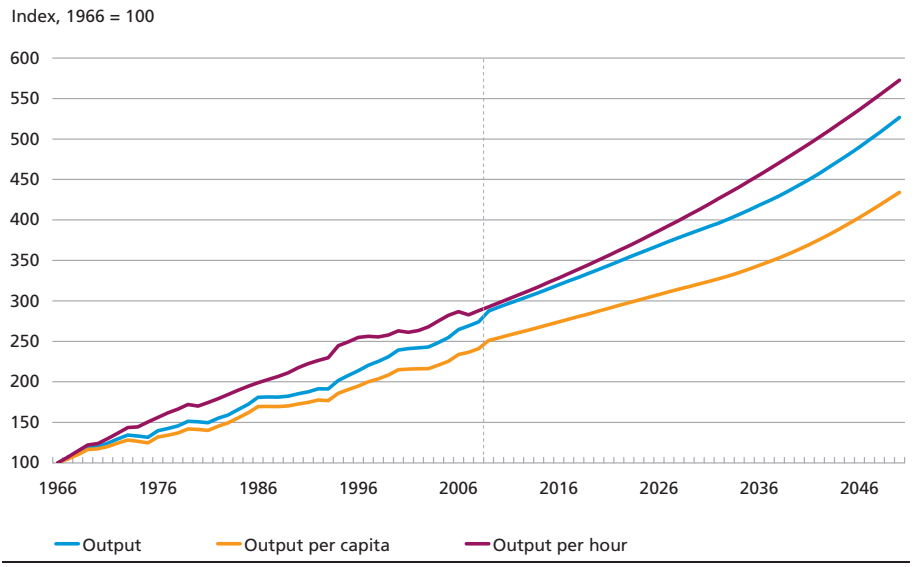
DECLINING PROSPERITY GROWTH

Welfare is a very broad term with an imprecise definition. In addition to material prosperity, the welfare of a country is determined by factors such as the mental well-being of the population, the degree of inequality in terms of consumption opportunities, the environment, the extent of corruption, the degree of confidence among people, etc. In a wider measure of welfare, positive value must also be attached to leisure time. Thus, to the extent that growth in output per capita is kept down due to increased leisure time, welfare will increase at a faster rate than material prosperity.

This article focuses narrowly on material prosperity measured by GDP per capita and consumption per capita. This does not mean the other factors that determine welfare are considered to be insignificant, but merely that GDP and terms of trade can be measured and compared internationally. However, this is not entirely without problems either.

The size of a country's output – measured as real GDP – is determined by labour input, e.g. measured in hours per year, and by productivity, i.e. output per hour. The higher the employment rate, the greater the

OUTPUT AND MATERIAL PROSPERITY DEVELOPMENT Chart 1



Note: "Output" indicates real GDP. The "Output per capita" projection is based on the latest population forecast from Statistics Denmark. Growth in hourly productivity over the next 40 years is assumed to be the same as in the period from 1990 to 2007, i.e. 1.6 per cent p.a. Furthermore, it is assumed that the number of hours per employee remains unchanged, and that the age-related employment rates are fixed at the 2005 level adjusted for the future raising of the eligible ages for early retirement benefit and state retirement pension that has already been adopted. This has been done by upward adjustment of the employment rates of persons aged 60-64 relative to the 2005 level. In general, the current employment rates are estimated to be higher than what is compatible with long-term economic equilibrium (a positive output gap).

Source: Statistics Denmark and own calculations.

output per capita, other things being equal. The demographic structure thus affects prosperity development to some extent, cf. Box 1.

As shown in Chart 1, output per capita in Denmark has developed more slowly than total output since the 1960s if we look at the population as a whole. At the same time, output per hour has grown at a faster rate than output per capita. The reason is that individual employees work fewer hours per year than 40 years ago. On the other hand, labour participation has been rising over the period concerned, especially for women. This increase has, however, not quite been able to match the decline in the average number of working hours, and up to the mid-1990s the number of hours worked declined in Denmark, cf. Chart 2. Subsequently, hours worked per capita increased somewhat again in step with the rise in employment. There has also been a slight increase in the average number of working hours.

BREAKDOWN OF THE PROSPERITY MEASURE – OUTPUT PER CAPITA Box 1

Output per capita can be broken down into a number of explanatory factors, cf. the following expression:

$$\underbrace{\frac{f_y}{U}}_{\text{Output per capita}} = \underbrace{\frac{f_y}{t}}_{\text{Productivity}} \times \underbrace{\frac{t}{B}}_{\text{Working hours}} \times \underbrace{\frac{B}{U_{20\text{-}64}} \times \frac{U_{20\text{-}64}}{U}}_{\text{Employment rate}}$$

where fy = real GDP; U = total population; t = number of hours worked per year; B = employment; U20-64 = number of persons in the population aged 20-64.

Individual elements of the formula expression

"Output per capita" indicates real GDP relative to the size of the population.

"Productivity" indicates hourly productivity for the economy as a whole, i.e. including the public sector.

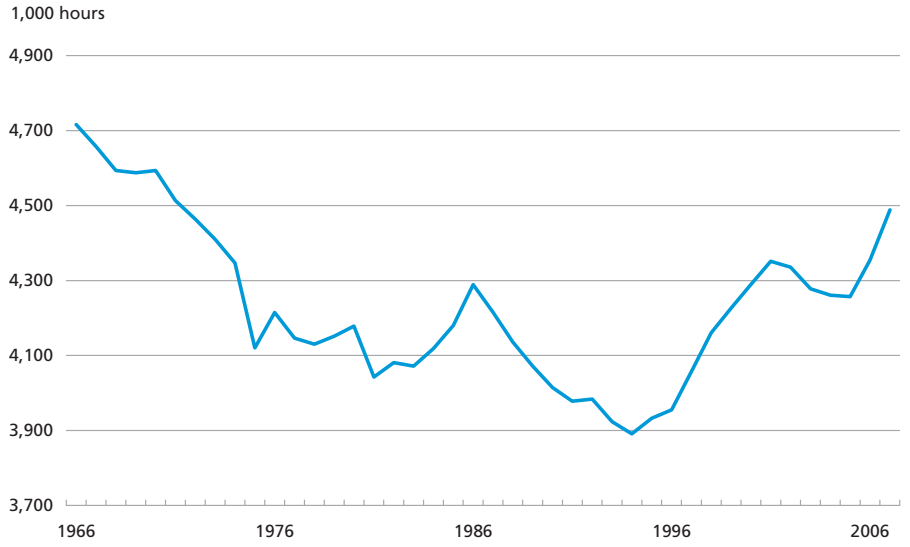
"Working hours" indicates the average number of hours worked per employee per year.

"Employment rate" is the product of the sum of age-related employment rates (the first element) and a component indicating the proportion of the population as a whole that is made up by the prime age groups, i.e. the age groups from which the labour force is primarily recruited (the second element).

The participation rate could be substituted for the employment rate in the formula – unemployment accounting for the difference. Unemployment is highly cyclical, whereas it is of less relevance to the long-term, future-oriented growth scenarios described here.

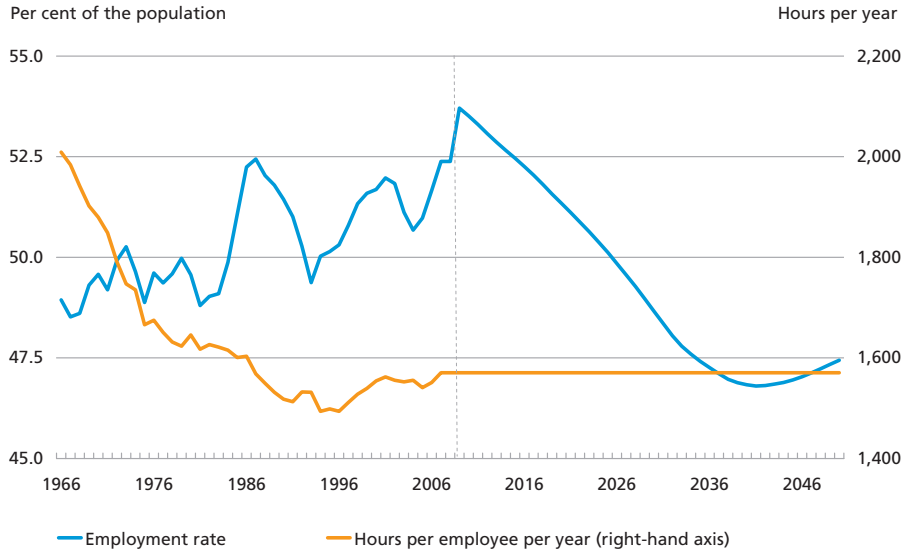
The output measure applied in this article concerns the economy as a whole, including the public sector. The problems involved in measuring output based on national accounts data for sectors that compile output on a cost basis are thus disregarded. Denmark's poor performance in an international context is also in evidence when considering output in the manufacturing sector alone.

TOTAL HOURS WORKED — Chart 2



Source: Statistics Denmark.

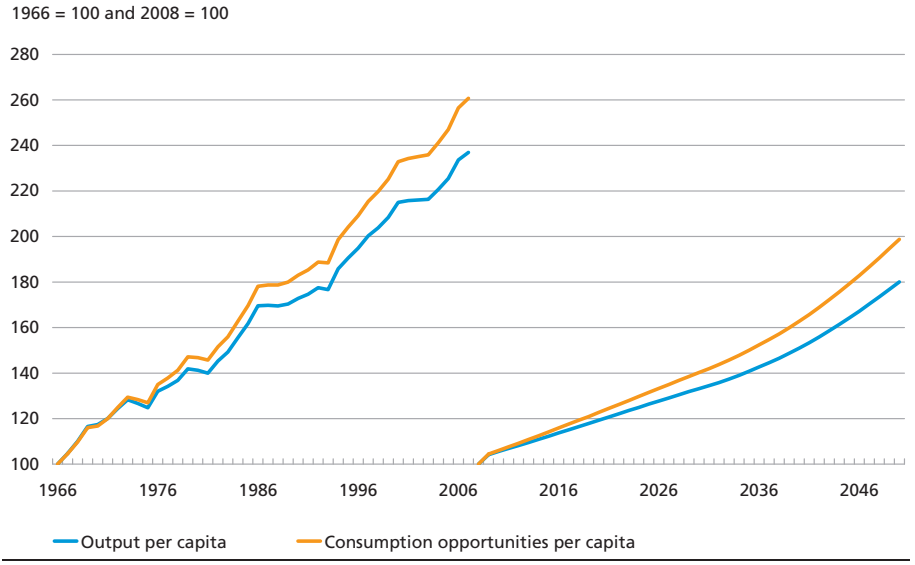
LABOUR INPUT IN THE ECONOMY — Chart 3



Note: "Employment rate" indicates the proportion of the Danish population that is in employment. This proportion depends on both the age structure of the population and the age-related employment rates that are locked at the 2005 level in the projection, except for the 60-64 years age group, cf. the note to Chart 1. The drop in the projected labour participation reflects mainly the ageing of the population with more elderly people in future. "Hours per employee per year" is maintained at the 2007 level in the baseline scenario.

Source: Statistics Denmark and own calculations.

PROSPERITY DEVELOPMENT WITH AND WITHOUT TERMS-OF-TRADE GAIN Chart 4



Note: "Consumption opportunities per capita" is calculated by adjusting "Output per capita" by an annual improvement in the terms of trade. The projection applies the annual rate of growth in the terms of trade, excluding energy, over the period from 1975 to 2007.
Source: Own calculations.

Up to the year 2050, demographic trends, cf. Chart 3, will exert downward pressure on the employment rate as defined in Box 1. The projections assume that the number of hours per employee per year will remain at the 2007 level up to 2050.

For prosperity purposes, consumption per capita is more relevant than output per capita. Ongoing improvement of a country's terms of trade will allow consumption opportunities per capita to persistently exceed output per capita. Denmark has experienced continuous improvement in its terms of trade over the last 40 years. Chart 4 illustrates a situation in which the terms of trade are assumed to continue to improve at the average rate for the period from 1975 to 2007. This will contribute significantly to consumption opportunities per capita and thus to material prosperity.

DECLINING PRODUCTIVITY GROWTH

Growth in hourly productivity has been declining over time. For the full period since the mid-1960s it averages 2.6 per cent a year, but since 1990 it has been only 1.6 per cent per year, see Iversen and Riishøj (2007). To get an idea of the consequences for the future prosperity development, output per capita is calculated up to 2050 based on Statistics Denmark's population forecast and the assumptions that working hours per capita

are unchanged and age-related employment rates will remain at the 2005 level. As shown in Chart 4[1], this will result in slower prosperity growth in the coming 40 years than seen in the previous 40 years. Whereas output per capita is 2.4 times higher in 2008 than 40 years ago, based on the assumptions made it will be only 1.8 times higher than today in 40 years' time. If a potential terms-of-trade gain is included, the corresponding figures concerning consumption development are 2.6 and 2.0 times higher, respectively.

Productivity growth is the key factor in explaining the development in output per capita, whereas demographic trends have played only a secondary role, cf. Chart 5. This will also be the case in future.

The number of working hours is also important. If the reduction of working hours per employee continues at the same rate as in the last 40 years, this will further significantly reduce growth in output per capita. The last 10 years have seen a slight increase in working hours per employee in Denmark, but looking forward, the ageing of the population will have the opposite effect.

Basically, changes in the participation rate and the number of hours worked have only secondary effects on productivity growth in the calculation of GDP per capita, because the potential for a change in labour input is limited to a shift in level (there are only 24 hours in a day, and the participation rate can never exceed 100). On the other hand, it is assumed that productivity will continue to grow every year up to 2050. Assuming a decline in employment of, say, 10 per cent as a result of the ageing of the population, this can be translated into a reduction of average annual growth in GDP per capita over 40 years of 0.25 per cent. This figure should be compared with the growth in productivity.

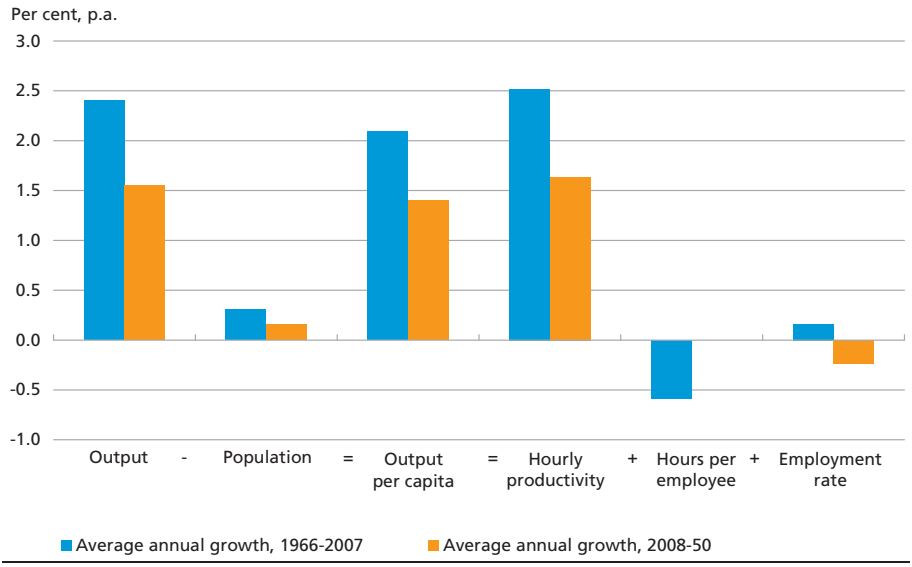
The dampening of productivity growth seen in Denmark is not observed to the same extent in other countries, cf. Chart 6. Part of the explanation is that services, including in the large public sector, account for a larger share of the economy in Denmark than in most other countries. Productivity growth in the service sectors is generally lower than in most other sectors, cf. Pedersen and Riishøj (2007).

An estimate shows that it is not realistic to make up for significantly lower productivity growth by increasing labour input. Let us assume that the development in hourly productivity up to 2050 will be in line with the development seen in the last 15 years, i.e. 1.6 per cent per year for the economy as a whole. For output per capita to grow by 2.5 per cent per year up to 2050, this being the historical average in the period from

[1] Rather than a forecast, this is a schematic calculation with a view to assessing the magnitude of the individual explanatory factors. A similar analysis concerning Australia can be found in the "Intergenerational report 2007" on the Australian Treasury website: www.treasury.gov.au.

HISTORICAL AND SCHEMATIC PROJECTION OF MATERIAL PROSPERITY DEVELOPMENT

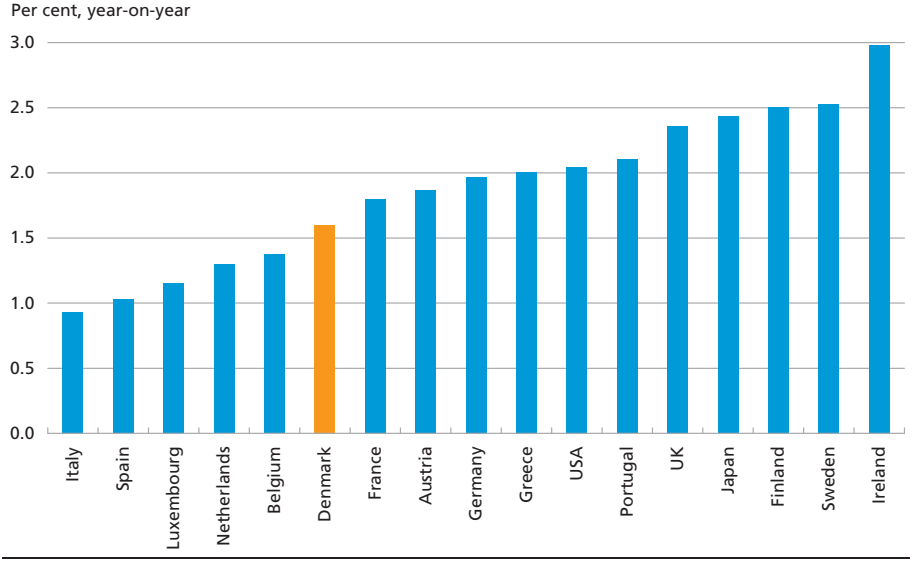
Chart 5



Note: Contribution to an explanation of the development in "Output per capita" in a historical and future period. For an explanation of the assumptions underlying the projection, see the notes to Charts 1 and 2.
Source: Own calculations.

AVERAGE ANNUAL GROWTH IN HOURLY PRODUCTIVITY 1990-2005

Chart 6



Note: Average hourly productivity for the economy as a whole in the period from 1990 to 2005.
Source: EU-KLEMS, March 2008 database and Statistics Denmark.

1966 until today, it would require an increase in working hours to 2,100 hours per employee per year, even if the age-related employment rates are maintained at the 2005 level. This corresponds to the level in the mid-1960s and to the number of hours worked in Korea today.

Alternatively, the age-related employment rates should generally be increased by just over 20 percentage points to maintain the number of working hours per capita. Even the requirements for a combination of increased working hours and labour participation in order to match the historical prosperity development must be assessed to be unrealistic. These sensitivity calculations also show that a reduction in structural unemployment of, say, 1 percentage point will not have any significant impact on future growth in GDP per capita.

So if Denmark is to keep up with international prosperity development, productivity growth has to increase. Rather than population trends, low productivity growth is the primary factor undermining our relative prosperity[1].

While replacing increased hourly productivity by increased labour input is only possible to a limited extent, this does *not* mean that employment and labour input are immaterial in terms of the economy. On the contrary, labour input is essential if we are to ensure fiscal sustainability. This requires a high employment rate and a high number of working hours per employee.

GROWTH, POPULATION TRENDS AND PUBLIC FINANCES

When viewed in isolation, higher output per capita will increase the tax base, thereby facilitating the financing of a given level of government expenditure. However, a significant proportion of this expenditure is subject to upward regulation in line with the wage development in Denmark. This includes pensions and transfer payments. As regards public service expenditure, experience shows that there will also be a strong political desire to ensure that it follows the general prosperity development. At the same time, due to lower productivity growth in service-related sectors such as the public sector, the costs of producing public services will rise at a faster rate than the production costs in the private sector. As a result, productivity growth and thus growth in output per capita will not automatically strengthen fiscal sustainability. Presumably, demand for many public services such as healthcare will increase more rapidly than income in general, further accentuating the financing problem.

[1] However, there may be a connection between the age distribution of the population and social productivity, see Feyrer (2005).

The distribution of government expenditure across age groups is highly uneven, with the elderly accounting for by far the largest part – measured per capita. This makes the government budget balance highly sensitive to the proportion of the population that is in employment, and thus contributing to output. As a consequence, fiscal sustainability is affected by both population trends and the level of structural unemployment.

While in the coming decades material prosperity will depend mainly on the development in productivity and only to a lesser extent on underlying population trends, as described above, the opposite is the case for public finances. Fiscal sustainability is neither ensured by GDP growth nor increased immigration, cf. below, but requires increased labour input by those who are already living in Denmark. Alternatively, the pressure on the tax base may be alleviated through a more direct link between public services rendered and payment for such services.

IMPORTING MORE FOREIGN LABOUR – PART OF THE SOLUTION?

In a situation where the number of persons in the prime age groups is falling, a certain influx of foreign labour may contribute to reducing the pressure on the labour market and thus the inflationary pressure on the economy. In order to fill many types of jobs in future, importing more foreign labour will be a necessity. However, if we look at the contribution to the future prosperity development measured as output per capita, immigration will be less significant – the reason being that while an additional foreign employee would indeed increase output, the social value created would have to be distributed on at least one extra person. The fraction's numerator and denominator are both increased. Conversely, if we succeed in getting a person that is passively receiving benefits to contribute to output, this would alone increase output per capita and thus have a more direct impact on prosperity development.

Just as importing foreign labour would only to a certain extent affect growth in output per capita, it is not a panacea for government budget balance support either. This issue is illustrated by calculations based on the DREAM model[1].

Table 1 shows how public finances are influenced by immigration under different assumptions pertaining to immigrant behaviour, including primarily participation rate and drain on public services. A positive figure indicates that public finances may be expanded and still sustain a

[1] Similar calculations are found in the Danish Welfare Commission's final report. There are minor differences, however. For example, the calculations made in this review are based on an updated version of the DREAM model.

EFFECT OF IMMIGRATION ON THE GOVERNMENT BUDGETS Table 1

Per cent of GDP	Improvement in public finances relative to the baseline scenario
Decline in structural unemployment of 1 percentage point	0.31
Increased immigration, current breakdown by country	-0.18
Increased immigration from less developed countries	-0.54
Increased immigration from more developed countries	-0.03
Increased "super immigration"	0.35
Perfect integration of immigrants and descendants	1.26

Note: "Increased immigration" means an annual influx of 5,000 new immigrants in future. This implies that immigrants will constitute a steadily increasing proportion of both the population and the labour force.
"Super immigration" includes people who immigrate only after completing their education, who have a participation rate of 100, who do not bring their families, and who leave Denmark again before reaching retirement age.
"Perfect integration" assumes full equality between the immigrants and descendants who are already in Denmark and ethnic Danes in terms of affiliation to the labour market, productivity, and drain on transfer payments and individual public services.

Source: Calculations based on the DREAM model.

[1] The figures in the table show the permanent change in the government budget balance in per cent of GDP (the sustainability indicator) as a result of increasing immigration and better integration, respectively. A negative figure indicates a need to tighten fiscal policy with in order to achieve unchanged sustainability, while a positive figure means that fiscal policy expansion is feasible.

given long-term budget balance, i.e. support the financing of the public sector. A negative figure, on the other hand, indicates that public finances should be tightened. The sustainability indicator, i.e. the long-term budget balance level in per cent of GDP, is not shown, as the focus is on the effect on public finances of a given change in immigration or integration.

People immigrating to Denmark over the last 15-20 years, especially in the early part of that period, have mainly come from less developed countries; they have a low participation rate and account for a relatively large drain on public welfare services. This has caused fiscal deterioration, i.e. increased the urgency of the sustainability issue.

For immigration to substantially support the financing of the public sector, it should take the form of "super immigration". This term covers persons who immigrate only after completing their education, who immediately enter the labour market at a participation rate of 100 and pay taxes like the Danes, who do not bring their families, and who leave Denmark before reaching retirement age. These are rather far-reaching requirements, but to a large extent the conditions are met by the influx of foreign labour in recent years, especially that from Eastern Europe. In practice, however, workers from e.g. Eastern Europe pay far less income tax than Danish workers in similar jobs, because they are granted separation allowance.

There are great financial benefits in better integration – and the resulting higher labour participation – of the immigrants and descendants

who are already in Denmark. Perfect integration, whereby immigrants and descendants resemble the population at large with regard to labour participation and drain on public services, would go a long way towards reducing the sustainability problem. Initiatives to increase the participation rate in general would have a similar effect.

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The Chilean Fiscal Rule[1]

Michael Pedersen[2], Central Bank of Chile

INTRODUCTION

In many countries and several situations, fiscal policy has contributed to creating imbalances, thereby increasing economic instability. A fiscal framework is desirable in order to support sustainable economic development. This article describes Chile's fiscal rule, which has worked successfully as part of the foundation for the favourable course of the Chilean economy in recent years.

In the past decades, Chile and other Latin American countries have been subject to a high degree of macroeconomic volatility, which has resulted in large fluctuations in economic growth and exchange rates and, in some cases, hyperinflation. One of the reasons for this volatility has been large movements in international commodity prices – raw materials are important export articles for the region – combined with pro-cyclical macroeconomic policies. To move towards a countercyclical framework, in order to smooth economic fluctuations, Chile in 2000 adopted a structural surplus rule as the basis for fiscal policy from 2001 onwards.

Under this rule, the Chilean government undertakes to maintain nominal expenditure equal to structural revenue minus the structural surplus target as a percentage of GDP. The indicator of the structural balance nets out the cyclical impact of economic activity, the long-run copper price and the structural income from the sale of molybdenum. This indicator reflects the revenue that the central government would receive if the economy grew at the trend output rate, i.e. with full employment, and with the prices of copper and molybdenum at their long-run levels.

Compliance with the rule is not a legal obligation but a voluntary undertaking on the part of the government.[3] To ensure the credibility

[1] The present article summarises Pedersen (2008). The opinions expressed are those of the author and should not be attributed to the Central Bank of Chile. While the usual disclaimers apply, comments and suggestions from Gonzalo Echavarría, Macarena García and Claudio Soto have been very useful.

[2] Central Bank of Chile, Agustinas 1180, Santiago, Chile. E-mail: mpederse@bcentral.cl.

[3] The government is, however, mandated by law to publish the annual structural surplus.

and transparency of the rule, independent experts have a substantial influence in setting a ceiling to public expenditure, which makes the Chilean fiscal rule unique in its application, compared with similar rules applied elsewhere. Since 2001, these panels of experts have defined the long-run reference copper price and, since 2002, also the parameters used to calculate potential output (trend GDP). On the other hand, the target for the structural surplus is decided by the government.

The present article briefly describes the functioning of the Chilean fiscal rule and the way it is applied. In the next section the rule is described, followed by an outline of the work of the independent panels of experts. The final section briefly describes the experience with the fiscal rule.

THE FISCAL RULE

The fiscal rule is formulated in terms of the structural balance. Unlike the current balance, the structural balance reflects the fiscal outlook in the medium term and it is defined as the difference between fiscal income net of the impact of the economic cycle and the expenditure that is compatible with this income.

In general terms, the fiscal rule states that

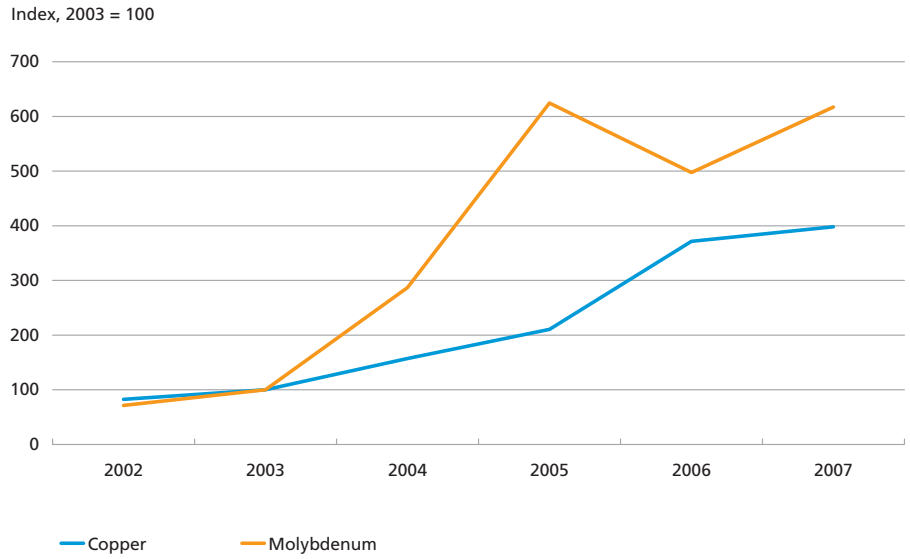
Structural revenue – public expenditure = X per cent of GDP,

where *X* is the target of the structural surplus. Until 2007 the target was 1 per cent of GDP, but it has been reduced to 0.5 per cent of GDP as from 2008. In other words, in 2008 public expenditure must, according to the rule, not exceed the difference between structural revenue and 0.5 per cent of GDP in the same year.

When the rule was introduced, a surplus of 1 per cent of GDP was considered sufficient to ensure accumulation of financial assets in order to finance future public commitments, in particular the guaranteed minimum pension and old-age benefit. Furthermore, a surplus target seemed appropriate since the Central Bank of Chile had a structural operating deficit as well as negative net worth due to losses related to the bailout of the private banking system in 1982 and accumulation of international reserves in the 1990s. In 2007, the target was revised and it was decided to reduce it to 0.5 per cent from 2008, cf. the Appendix.

The indicator of the Chilean structural balance is calculated by netting out the cyclical impact of economic activity and deviations from long-run prices of copper and molybdenum. Because of heavily rising molybdenum

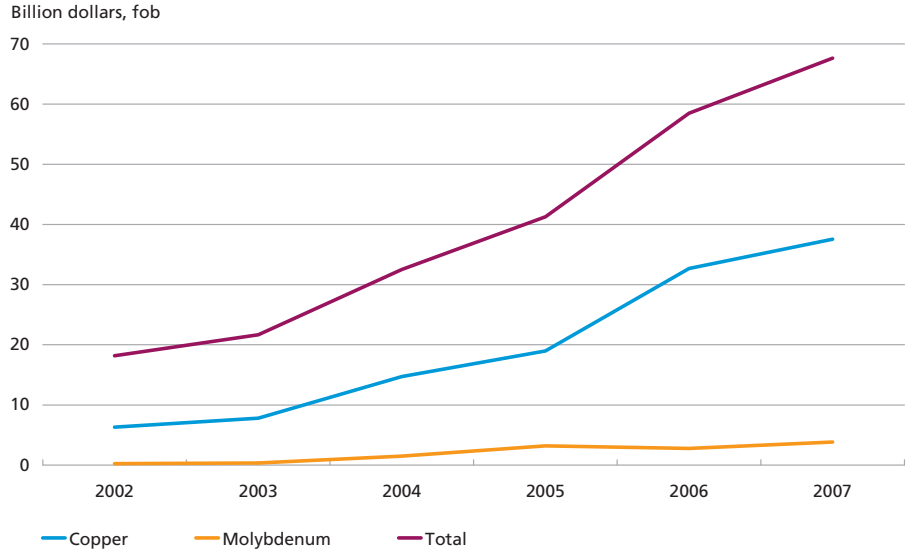
EXPORT PRICES Chart 1



Source: Own calculations based on data from the Central Bank of Chile.

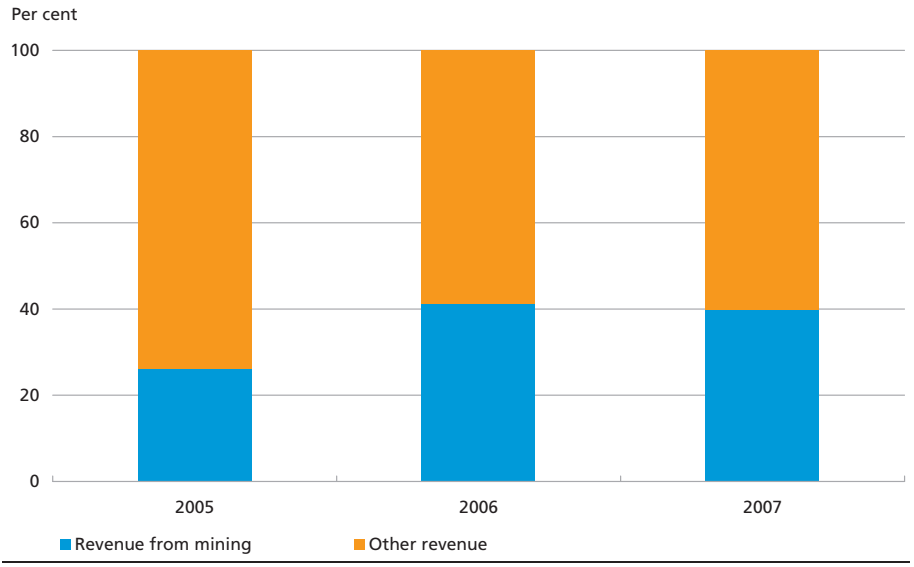
prices, cf. Chart 1, public revenue from molybdenum production by Codelco, Chile's largest mining company, was included in the fiscal rule in 2005. In Chile, copper is the main product for exportation and it accounts for more than 50 per cent of total exports, cf. Chart 2.

EXPORTS Chart 2



Source: Central Bank of Chile.

PUBLIC REVENUE Chart 3



Note: The data before 2005 do not allow for a separation of the total revenue from the mining sector.
Source: Own calculations based on data from the Chilean Ministry of Finance.

A large share of public revenue comes from the mining sector in the form of royalties, taxes and direct transfers from Codelco, which is publicly owned, cf. Chart 3.

According to Rodríguez et al. (2007), the structural balance indicator for Chile can be expressed in terms of the effective balance (accrued) and four more terms: (1) the difference between structural and actual net non-mining tax revenue and social security in-payments; (2) the difference between structural and actual income from taxes on private mining companies; (3) the difference between structural and effective transfers from Codelco on account of copper sales; and (4) the difference between structural and effective transfers from Codelco on account of molybdenum sales.

While the latter is calculated assuming that the molybdenum long-run reference price is equal to a historical average, the calculation of the former three terms requires information of variables, which are unobservable by nature: trend GDP and the long-run copper price. Estimations of these variables are made by independent expert panels.

THE INDEPENDENT EXPERT PANELS

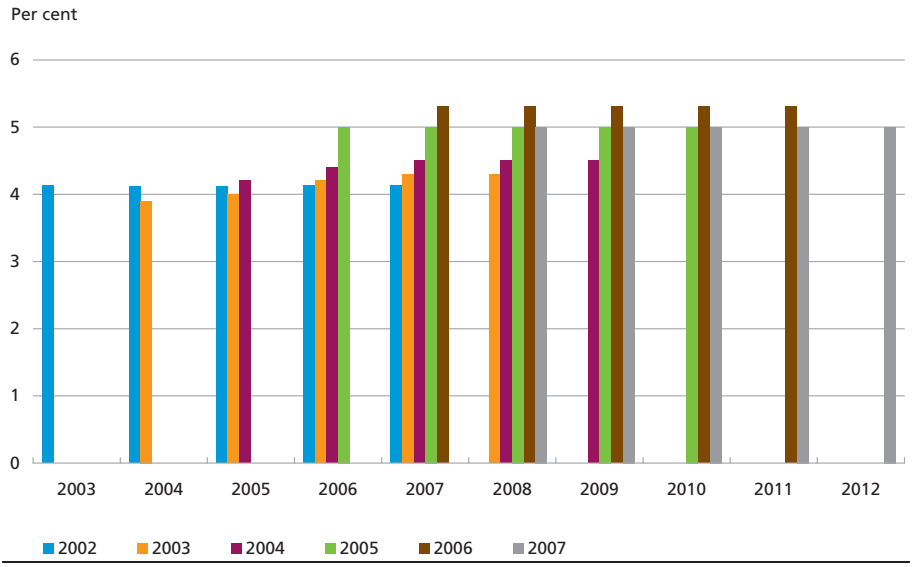
With the purpose of improving the transparency of the conduct of fiscal policy, the Chilean government decided in 2001-02 to have panels of independent experts decide two of the important parameters of the fiscal rule described above: trend output and the long-run copper price.

The members of the trend output expert panel are selected on a personal basis and do not represent the institutions with which they are associated. For example, three of the 15 members who participated in the panel in 2007 were also members of the central bank's board. In the six years from 2002 to 2007, the panels have consisted of between 14 and 17 members. The meetings were held in June, July or August and the minutes of the meetings were published shortly after.

Prior to the meeting, the members receive a methodological note with background information and historical data. Based on this information the members are asked to provide estimates of the growth rates of each of the three variables necessary for the calculation of trend output for the following year: Total factor productivity (TFP), investment and the labour force. The members are required to make estimates for the following five years. For each year, the highest and lowest observations are eliminated and an average of the remaining is used in the calculation of trend output.

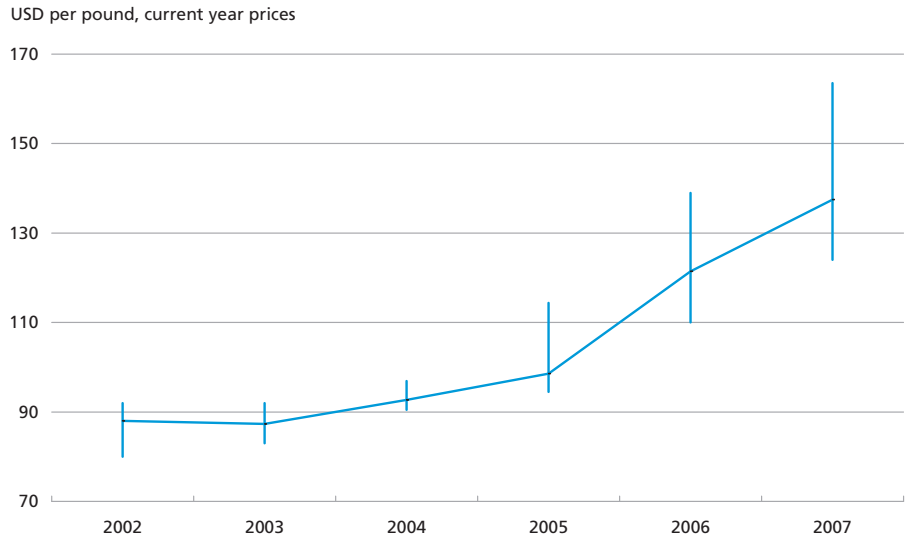
Trend output is the theoretical level of output, if the economic resources are used with "normal" intensity and productivity is at the normal trend. The aggregate production function is assumed to be a Cobb-Douglas type with constant returns to scale. Potential output growth rates for the following five years are calculated by inserting in this function the estimates provided by the panels, cf. Pedersen (2008). Estimated trend growth has been 4-5 per cent since 2002, cf. Chart 4.

ESTIMATIONS OF 5-YEAR TREND OUTPUT GROWTH RATES — Chart 4



Source: Chilean Ministry of Finance (2002a, 2003a, 2004a, 2005a, 2006a, 2007a).

ESTIMATIONS OF THE REFERENCE COPPER PRICE Chart 5



Note: The highs and lows are the two observations that were excluded before calculating the average.
Source: Chilean Ministry of Finance (2002b, 2003b, 2004b, 2005b, 2006b, 2007b).

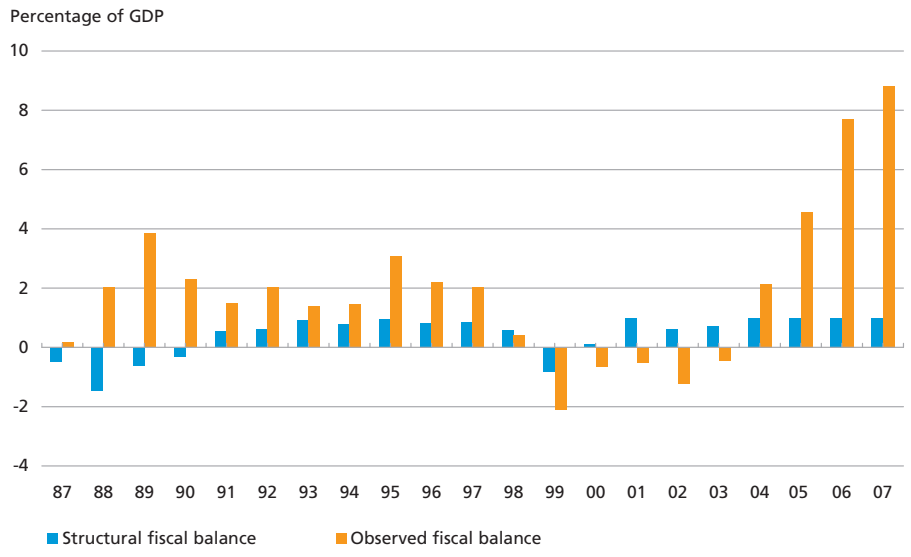
In 2001 it was decided to invite independent experts to determine a reference price for copper. This panel has so far consisted of 8-12 members, and the meetings take place around the same time as the meetings of the trend output expert panel.

The panel is asked to provide an estimate of the average copper price in dollars for the following 10 years. The highest and lowest observations are eliminated and the average of the remaining is used in the calculation of the structural balance. Chart 5 shows the averages reported for the period 2002-07 and the highest and lowest observations, i.e. those excluded before calculating the average. The higher the reference price, the higher has been the difference between the highest and the lowest estimates. In relative terms, the difference between highest and lowest has increased from an average of 10 per cent of the final reference price in 2002-04 to 24 per cent in 2005-07.

EXPERIENCE WITH THE RULE

Since the rule is not enforced by law, a natural question would be if the government has conducted fiscal policy in accordance with the rule. The answer is "yes". According to the government's official data, the structural balance has been exactly 1 per cent of GDP in 2004-07, while the actual fiscal balance has been substantially higher, cf. Chart 6.

FISCAL BALANCE Chart 6



Source: Chilean Ministry of Finance.

Since there are only few observations available, it may be too early to evaluate the countercyclical nature of the rule. However, in 2002 and 2003 Chile experienced relatively low growth rates, and the government balance was negative in both years. As economic growth picked up in the following years, so did the government balance, cf. Table 1, suggesting that the rule has indeed been countercyclical in the first six years of its existence.

Mainly because of the high copper price, the conduct of fiscal policy according to the rule has implied an increase in public savings from 2 per cent of GDP in 2002 to 12 per cent in 2007. At the same time, the government debt has been reduced substantially from more than 15 per cent of GDP in 2002 to 4 per cent in 2007. Relative to output, government interest payments declined to half in the same period. Hence, since the introduction of the fiscal rule, public finances have improved signifi-

KEY RATIOS FOR THE CHILEAN ECONOMY Table 1

Percentage of GDP	2002	2003	2004	2005	2006	2007
GDP growth	2.2	3.9	6.0	5.6	4.3	5.1
Effective government balance	-1.2	-0.5	2.1	4.6	7.7	8.8
Gross public savings	2.2	2.8	5.2	7.7	10.7	12.0
Gross government debt	15.7	13.0	10.7	7.3	5.3	4.1
Government interest payments ...	1.2	1.1	1.0	0.8	0.7	0.6

Source: Central Bank of Chile and Chilean Ministry of Finance.

cantly, and in 2006 the government created two sovereign wealth funds, the Economic and Social Stabilisation Fund (ESSF) and the Pension Reserve Fund (PRF).

The purpose of the PRF is to fund government pension obligations and to help pay for the expected increase in the minimum pension benefit take-up rate. The government surplus of the previous year, with a minimum of 0.2 per cent of GDP and a maximum of 0.5 per cent, is deposited in this fund until it reaches 900 million UF.[1] Estimations indicate that with annual contributions equal to 0.2 per cent of GDP it should take around 25 years to reach 900 million UF and that this amount should finance pension payments for 25 years. Every three years, the Chilean Ministry of Finance must evaluate the sustainability of the fund. After subtracting deposits in the PRF and capital contributions to the Central Bank of Chile, the remaining government surplus is deposited in the ESSF. The main purpose of this fund is to smooth out the financing of public expenditure, such that deposits are made in surplus years and funds are withdrawn in deficit years. Both funds are administered by the Central Bank.

As a measure of the credibility of fiscal policy, the yield spread between Chilean and US government bonds[2] can give some indications. The spread narrowed from more than 200 basis points in early 2001 to levels under 100 basis points in the 1st half of 2007. However, the spread has widened again and in July 2008 the average spread was recorded to be 181 basis points. With this evidence, there are some indications that the credibility of Chile's fiscal policy has improved since the adoption of the rule, but given the turmoil in the financial markets over the past year it is difficult to extract any clear signal from interest rates.

In general, international organisations agree that the implementation of the fiscal rule in Chile has been a success. For example, the executive summary of the IMF's article IV report about the macroeconomic framework states that "Successful implementation of this framework has created increasing room for addressing social priorities, which the authorities intend to pursue in an incentive-compatible manner, accompanied by further increase in transparency."[3] Another example is the IADB's 2007 report on economic and social progress in Latin America, where it is recognised that "the Chilean fiscal rule has worked well. While structural balances mimicked the actual balance before the adop-

1 The UF (unidad de fomento) is a CPI-indexed unit of account.
2 Measured by JP Morgan's EMBI global spread, which reflects the premium an investor requires to invest in bonds issued in dollars by, in this case, the Chilean government, instead of investing in US bonds.
3 IMF (2007) p. 3.

tion of the rule, since 2001 the average structural balance has been more or less constant."[1]

There is no doubt that the implementation of the structural surplus rule in Chile has benefited economic stability. It has been widely accepted as a credible and transparent commitment. From the beginning, the rule has been subject to continuous refinement and is at the core of fiscal credibility. This credibility is very important for a country that has been affected by a high degree of macroeconomic instability in the last decades.

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[1] IDB (2007) p. 182.

APPENDIX MAIN CHANGES IN THE FISCAL RULE[1]

May 2000	President Lagos announces the adoption of fiscal rule with a structural surplus target of 1 per cent of GDP.
Aug. 2001	The expert panel for the long-run copper price is created.
Jul. 2002	The methodology of estimating potential GDP is revised.
Aug. 2002	The expert panel of potential GDP is created.
Feb. 2004	Changes of fiscal statistics to be in accordance with IMF (2001).
Aug. 2005	Incorporation of cyclical adjustment of income taxes from private mining companies due to the important impact on the copper price.
Dec. 2005	Incorporation of cyclical adjustment of effects of the molybdenum price.
Dec. 2006	Incorporation of cyclical adjustment of additional taxes paid by the mining companies.
May 2007	President Bachelet announces a reduction of the structural surplus target from 1 to 0.5 per cent of GDP in 2008.

[1] Source: Velasco et al. (2007) and IMF (2007).

Press releases

27 JUNE 2008: JOINT STATEMENT BY DANMARKS NATIONALBANK AND THE DANISH FINANCIAL SUPERVISORY AUTHORITY

Joint Statement: How can regulations help to restore the confidence in the soundness of financial markets and institutions?

The statement is available on www.nationalbanken.dk

3 JULY 2008: 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 4.60 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 4.25 per cent. The increase will have effect as from 4 July 2008.

The interest rate increase is a consequence of the European Central Bank increasing the minimum bid rate on the main refinancing operations by 0.25 per cent to 4.25 per cent.

10 JULY 2008: DANMARKS NATIONALBANK THE DANISH FINANCIAL SUPERVISORY AUTHORITY

Roskilde Bank A/S has announced to the OMX Nordic Exchange that in connection with the regular review of loans and guarantees in preparation of the semi annual report, the management of the bank has found that write-downs have to be made on a significantly larger scale than what has previously been assumed. The amount and scope of the write-downs are not known at this point but will be made public once the full amount is known.

As a result of discussions between the Ministry of Economic and Business Affairs, the Danish Financial Supervisory Authority, the Danish Bankers Association and Danmarks Nationalbank, Danmarks Nationalbank has decided to provide the necessary liquidity to Roskilde Bank A/S. The Government and the financial sector have assured Danmarks Nationalbank of their support to the arrangement with a guarantee towards Danmarks Nationalbank.

7 AUGUST 2008: NEW SHIP COIN WITH THE SEA STALLION AS ITS MOTIF

On 8 August 2008 Danmarks Nationalbank issues a new 20-krone coin with the Sea Stallion from Glendalough as its motif. This is the fourth coin with a ship as motif. The coin was presented today at the Viking Ship Museum in Roskilde.

The Sea Stallion from Glendalough is a reconstruction of the ocean-going ship Skuldelev 2. The ship is expected to return from Dublin on Saturday 9 August after a long trial voyage since the summer of 2007. The original ship was built in Dublin in 1042 and ended her days on the bottom of Roskilde Fjord at the end of the 11th century. The excavation of the ship and four other viking ships laying side-by-side began in 1962.

The motif for the coin has been made by the sculptor Erik Varming. It shows the Sea Stallion on the ocean with the famous Roskilde Cathedral in the background.

The Sea Stallion coin will enter into ordinary circulation in an edition of 1.2 million.

The coin can be bought in packets of twenty in the banks, in Danmarks Nationalbank (Banking Services) or via the website of The Royal Mint, www.royalmint.dk

The next ship coin is expected to be issued in September 2008.

24 AUGUST 2008: ROSKILDE BANK

Danmarks Nationalbank and the financial sector in Denmark have entered agreement with the board of directors of Roskilde Bank A/S, via a new bank, on buying all assets and take over all debt and other liabilities, except from hybrid core capital and subordinated loan capital in Roskilde Bank A/S, cf. company announcement of 24 August 2008 from Roskilde Bank A/S. The takeover includes all employees of Roskilde Bank, all depositors and other unsecured creditors.

The financial sector is represented by a private association set up by the Danish Bankers' Association ("Det Private Beredskab til Afvikling af Nødlidende Banker, Sparekasser og Andelskasser") who has received funds from its members and from Nykredit.

The takeover of Roskilde Bank follows the fact that no offers – domestic or foreign – were received after a thorough sales process on either all or parts of Roskilde Bank.

Furthermore, the auditing of Roskilde Bank's interim report has revealed additional losses in the bank to the extent that Roskilde Bank does not meet solvency requirements.

Danmarks Nationalbank sees the Roskilde Bank situation as very serious. It is expected that the takeover of Roskilde Bank will contribute to limiting the negative effect on the Danish financial system.

The operations of Roskilde Bank will continue in a new bank under the same name. Danmarks Nationalbank and "Det Private Beredskab" will contribute approximately kr. 4.5 billion in capital base. The purpose of the new bank is to continue banking business in order to ensure the best possible proceeds from the discontinuation of the company that is being taken over from Roskilde Bank.

Any loss in this relation will firstly be covered by the kr. 750 million in capital contributed by "Det Private Beredskab".

The government has confirmed that it supports the arrangement and that it will submit a new document to the Finance Committee of the Folketing concerning a government guarantee to cover any losses Danmarks Nationalbank may suffer in connection with the takeover and the discontinuation of Roskilde Bank.

It has been agreed that any surplus capital after payment of return on the invested capital base after the termination of Roskilde Bank will be allotted to owners of subordinated loan capital, hybrid core capital and shareholders of the original Roskilde Bank.

29 AUGUST 2008: NEW BOARD OF DIRECTORS IN ROSKILDE BANK

The following persons have agreed to enter the board of directors in Roskilde Bank:

Henning Kruse Petersen, former group managing director in Nykredit A/S, appointed by Danmarks Nationalbank (chairman).

Jakob Brogaard, former vice managing director in Danske Bank, appointed by "Det Private Beredskab".

Niels Heering, attorney-at-law at Gorrissen Federspiel Kierkegaard, appointed by Danmarks Nationalbank.

Jørn Kristian Jensen, former managing director in Nordea Bank, appointed by "Det Private Beredskab".

Visti Nielsen, former managing director in Jyske Bank, appointed by Danmarks Nationalbank.

After the extraordinary general meeting in Roskilde Bank to be held Monday 1 September 2008, The Danish Financial Supervisory Authority will consider the acceptance of Danmarks Nationalbank's and "Det Private Beredskab's" takeover. The process is expected to run for approximately two weeks, during which the issue will be notified to the European Commission.

Meanwhile the existing liquidity facility will apply.

10 SEPTEMBER 2008 FOLLOW UP ON THE RECOMMENDATIONS FROM THE FINANCIAL STABILITY FORUM

Yesterday Danmarks Nationalbank and the Danish Financial Supervisory Authority held a seminar on the recommendations of 11 April 2008 on the international financial crisis from the Financial Stability Forum. The participants were representatives from the financial sector, the Danish Financial Supervisory Authority, Danmarks Nationalbank and the universities.

During the seminar it was decided to appoint a committee of representatives from The Association of Danish Mortgage Banks, Realkreditforeningen, the Danish Bankers Association, the Danish Financial Supervisory Authority and Danmarks Nationalbank. The committee shall discuss and follow up on the recommendations presented by FSF and the process of implementing specific recommendations in Denmark. This task is expected to be finalised before summer 2009.

The report can be found on FSF's homepage www.fsforum.org

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: 10 October 2008.

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 OMX Nordic 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	Danmarks Nationalbank's interest rates: Discount rate	Danmarks Nationalbank's interest rates: Lending and certificates of deposit	The ECB's minimum bid rate	End of period	Inter-bank interest rate, 3-months uncollateralized	Bond yields: 10-year central-government bond	Bond yields: 30-year mortgage-credit bond	Share-price index OMXC20 (prev.KFX)
	Per cent per annum				Per cent per annum			3.7.89 =100
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
2007	4.00	4.25	4.00	2007	4.65	4.48	5.61	464.14
2007 7 Jun ...	4.00	4.25	4.00	Mar 08	4.50	4.19	5.61	428.10
2008 16 May ..	4.00	4.35	4.00	Apr 08	4.85	4.39	5.71	427.00
4 Jul	4.25	4.60	4.25	May 08	4.95	4.67	5.92	460.29
8 Oct ...	4.50	5.00	4.50	Jun 08	5.08	4.81	6.08	424.30
				Jul 08	5.15	4.70	6.49	417.43
				Aug 08	5.10	4.38	6.38	424.11
9 Oct ...	4.50	5.00	4.50	Sep 08	5.15	4.29	6.66	351.15

SELECTED ITEMS FROM DANMARKS 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 Danmarks Nationalbank	The banks' and the mortgage-credit institutes' net position with Danmarks Nationalbank			
				Certificates of deposit	Deposits (current account)	Loans	Total net position
	Kr. billion						
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
2007	168.8	61.6	89.9	200.5	9.4	216.8	-6.9
Apr 08	173.6	60.2	102.9	192.0	16.7	223.7	-14.9
May 08	161.9	60.5	110.5	182.1	12.5	229.3	-34.7
Jun 08	164.7	60.8	95.8	181.2	23.1	223.4	-19.1
Jul 08	164.0	60.7	73.3	196.2	22.1	212.6	5.6
Aug 08	164.8	59.7	64.0	251.5	5.3	240.1	16.7
Sep 08	160.1	59.2	70.2	242.0	37.6	263.3	16.3

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

Table 3

	Central-government finance			Net purchase of foreign exchange by Danmarks Nationalbank			Net purchase of bonds by Danmarks Nationalbank	Other factors	The banks' and the mortgage-credit institutes' net position with Danmarks Nationalbank	
	Domestic gross financing requirement	Sales of domestic central-government securities, etc.	Liquidity effect	Interventions to purchase foreign exchange, net	Other	Total			Change in net position	End of period
	Kr. billion									
2003	99.7	94.1	5.6	23.7	7.3	31.0	-1.0	-3.1	32.5	122.2
2004	75.5	92.6	-17.1	-12.5	6.1	-6.4	-2.6	-1.2	-27.3	94.6
2005	39.5	30.9	8.6	-18.4	3.0	-15.4	-2.2	-0.5	-9.5	85.1
2006	-14.5	16.2	-30.6	-34.3	4.3	-30.0	-4.9	-1.2	-66.7	18.2
2007	-26.1	2.9	-29.1	-1.7	7.2	5.5	-0.4	-1.4	-25.3	-6.9
Apr 08	11.7	3.0	8.8	-7.8	1.8	-6.0	0.7	-1.5	1.9	-14.9
May 08	-5.5	2.1	-7.6	-11.8	-0.5	-12.3	-0.2	0.3	-19.7	-34.7
Jun 08	0.0	-14.7	14.7	0.0	2.8	2.8	-0.1	-1.8	15.6	-19.1
Jul 08	24.2	1.7	22.5	0.0	-1.3	-1.3	0.1	3.3	24.7	5.6
Aug 08	11.3	2.1	9.2	0.0	0.9	0.9	0.2	0.7	11.1	16.7
Sep 08	-7.2	2.5	-9.6	-0.7	-0.4	-1.1	0.1	10.2	-0.4	16.3

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		Domestic deposits	Bonds, etc. issued	
		Public sector	Private sector	Bonds, etc.	Shares, etc.			
	Kr. billion							
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
2007	5,497.4	119.9	3,353.7	43.3	63.5	1,219.7	1,505.2	-304.5
Mar 08	5,643.1	120.9	3,440.3	42.4	68.3	1,282.3	1,511.9	-373.3
Apr 08	5,716.0	122.1	3,451.6	47.1	80.1	1,293.7	1,514.3	-399.6
May 08	5,764.7	122.8	3,479.7	47.6	79.6	1,314.8	1,488.3	-400.2
Jun 08	5,854.5	125.4	3,532.0	39.9	77.5	1,274.9	1,501.6	-409.6
Jul 08	5,792.5	128.1	3,520.1	42.2	78.6	1,279.4	1,517.2	-434.2
Aug 08	5,834.4	123.5	3,540.7	27.6	78.8	1,255.8	1,534.1	-472.2
	Change compared with previous year, per cent							
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	...
2007	...	2.7	13.5	-16.4	5.2	13.3	5.0	...
Mar 08	...	4.5	12.5	1.0	3.6	13.4	3.8	...
Apr 08	...	6.3	12.5	12.8	22.5	16.1	3.3	...
May 08	...	6.6	12.6	1.4	20.0	16.4	2.6	...
Jun 08	...	6.1	12.4	-7.7	21.7	11.8	3.4	...
Jul 08	...	9.4	12.0	-5.9	26.0	10.9	3.0	...
Aug 08	...	6.6	11.6	-50.8	26.3	6.4	4.4	...

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 original maturity =< 2 years	M3
	Kr. billion								
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
2007	51.9	703.2	755.1	199.7	18.0	972.8	6.2	61.5	1,040.6
Mar 08	50.3	731.0	781.3	203.3	20.2	1,004.8	10.8	99.4	1,115.2
Apr 08	50.6	737.6	788.2	201.1	20.5	1,009.8	16.7	94.4	1,121.0
May 08	51.2	740.5	791.7	215.5	21.0	1,028.2	16.8	93.2	1,138.3
Jun 08	51.4	719.7	771.1	210.2	20.0	1,001.3	18.0	98.2	1,117.7
Jul 08	50.8	726.6	777.4	234.4	19.9	1,031.7	17.0	100.3	1,149.2
Aug 08	50.6	721.4	772.1	225.6	19.8	1,017.5	15.6	98.7	1,131.9
	Change compared with previous year, per cent								
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
2007	...	...	8.0	...	...	13.1	...	...	17.0
Mar 08	...	...	8.6	...	...	10.4	...	...	17.5
Apr 08	...	...	8.0	...	...	10.9	...	...	18.7
May 08	...	...	8.7	...	...	11.9	...	...	19.2
Jun 08	...	...	3.1	...	...	7.4	...	...	15.6
Jul 08	...	...	1.5	...	...	6.4	...	...	14.3
Aug 08	...	...	3.1	...	...	5.3	...	...	12.5

[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							
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
2007	3,993.4	926.6	1,333.6	557.4	551.8	1,065.8	1,444.1	1,345.6
Mar 08	4,181.6	955.3	1,374.1	563.5	566.3	1,110.8	1,444.9	1,416.6
Apr 08	4,235.6	969.3	1,371.4	560.0	562.0	1,163.1	1,518.1	1,423.9
May 08	4,249.9	917.7	1,385.9	559.7	579.7	1,178.1	1,458.2	1,430.8
Jun 08	4,349.5	987.5	1,423.5	577.9	587.8	1,137.9	1,524.3	1,424.4
Jul 08	4,277.5	969.0	1,398.3	574.8	566.3	1,169.9	1,508.8	1,428.9
Aug 08	4,339.5	936.4	1,403.1	573.6	575.0	1,240.1	1,560.3	1,389.1
	Change compared with previous year, per cent							
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
2007	...	29.6	18.6	17.4	20.5	19.8	27.4	17.2
Mar 08	...	25.9	16.3	15.6	16.2	13.7	18.2	18.9
Apr 08	...	26.7	16.4	14.5	15.1	20.5	29.6	18.9
May 08	...	14.1	16.7	13.7	18.5	24.6	20.9	18.7
Jun 08	...	19.7	16.5	13.8	14.9	20.7	28.4	12.7
Jul 08	...	17.8	16.1	12.9	14.1	24.5	34.9	9.4
Aug 08	...	18.8	15.4	11.8	13.1	21.2	29.2	7.0

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							
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
2007	3,088.2	362.8	2,015.5	1,532.5	420.8	649.2	344.2	2,495.2
Mar 08	2,663.0	337.2	2,058.0	1,553.9	436.6	220.7	290.9	2,150.8
Apr 08	2,660.9	309.0	2,071.1	1,560.5	441.4	223.8	287.2	2,152.3
May 08	2,694.2	317.3	2,086.8	1,571.0	445.1	225.8	293.6	2,147.5
Jun 08	2,681.8	352.0	2,102.4	1,579.0	450.2	170.0	291.7	2,090.4
Jul 08	2,692.1	336.0	2,116.0	1,588.1	454.3	175.9	312.1	2,118.5
Aug 08	2,714.0	344.8	2,126.2	1,593.8	457.8	170.2	314.2	2,150.0
	Change compared with previous year, per cent							
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
2007	...	48.0	9.9	8.9	13.5	13.1	52.0	8.6
Mar 08	...	48.2	9.8	8.1	14.6	49.0	52.3	11.4
Apr 08	...	48.3	9.7	7.9	14.7	52.4	50.0	12.0
May 08	...	44.4	9.6	7.7	14.4	48.3	46.0	11.8
Jun 08	...	41.4	9.5	7.4	14.7	4.3	39.2	8.1
Jul 08	...	41.7	9.2	7.2	14.3	9.9	45.7	8.9
Aug 08	...	31.6	8.8	6.7	14.1	11.9	35.5	9.1

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	House-holds, etc.	Business	Total	House-holds, etc.	Business	Total	House-holds, etc.	Business
	Kr. billion								
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
2007	3,387.8	2,090.0	1,189.7	1,372.3	557.4	760.5	2,015.5	1,532.5	429.1
Mar 08	3,474.3	2,117.4	1,248.4	1,416.4	563.5	801.2	2,058.0	1,553.9	447.2
Apr 08	3,488.4	2,120.5	1,256.5	1,417.3	560.0	804.5	2,071.1	1,560.5	452.1
May 08	3,518.7	2,130.7	1,274.8	1,431.8	559.7	819.0	2,086.8	1,571.0	455.9
Jun 08	3,571.8	2,156.9	1,296.0	1,469.4	577.9	835.0	2,102.4	1,579.0	461.0
Jul 08	3,560.2	2,162.9	1,275.5	1,444.2	574.8	810.7	2,116.0	1,588.1	464.8
Aug 08	3,575.2	2,167.4	1,288.5	1,449.0	573.6	820.1	2,126.2	1,593.8	468.3
	Change compared with previous year, per cent								
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
2007	12.9	11.0	17.2	17.7	17.4	19.4	9.9	8.9	13.4
Mar 08	12.3	10.0	17.2	16.3	15.6	18.4	9.8	8.1	15.0
Apr 08	12.4	9.5	18.0	16.8	14.5	19.7	9.7	7.9	15.1
May 08	12.5	9.2	18.7	17.1	13.7	20.9	9.6	7.7	14.9
Jun 08	12.4	9.1	18.3	16.9	13.8	20.1	9.5	7.4	15.2
Jul 08	12.0	8.6	17.7	16.5	12.9	19.6	9.2	7.2	14.5
Aug 08	11.5	8.0	17.5	15.7	11.8	19.5	8.8	6.7	14.2

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						
2003	99.5	795.0	499.0	250.0	1,393.5	85.7	44.4
2004	94.6	733.9	659.8	382.2	1,488.4	84.9	170.5
2005	88.6	720.3	853.9	616.0	1,662.8	80.5	315.5
2006	83.5	797.5	951.7	720.5	1,832.7	85.7	432.2
2007	77.9	889.2	1,045.6	796.6	2,012.7	123.8	547.0
Mar 08	78.3	885.8	1,091.5	843.1	2,055.6	134.4	567.3
Apr 08	78.5	886.1	1,106.0	852.6	2,070.6	136.1	575.6
May 08	78.1	888.2	1,120.2	875.4	2,086.5	138.6	585.6
Jun 08	75.5	890.1	1,137.2	887.7	2,102.8	142.5	593.7
Jul 08	75.1	891.8	1,149.9	896.1	2,116.8	144.9	601.3
Aug 08	75.2	892.8	1,159.1	901.6	2,127.0	146.8	606.3

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							
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
Q3 07	6.1	7.4	6.0	4.1	3.6	3.3	3.6	4.0
Q4 07	6.2	7.4	6.1	4.3	3.7	3.4	3.7	4.1
Q1 08	6.2	7.5	6.1	4.5	3.7	3.5	3.8	4.2
Q2 08	6.5	7.7	6.3	4.6	3.8	3.6	3.9	4.2
Mar 08	6.2	7.5	6.0	4.5	3.8	3.5	3.8	4.2
Apr 08	6.4	7.6	6.2	4.5	3.8	3.5	3.8	4.2
May 08	6.5	7.7	6.3	4.7	3.8	3.6	3.8	4.2
Jun 08	6.5	7.7	6.4	4.7	3.9	3.6	3.9	4.3
Jul 08	6.6	7.8	6.4	4.8	4.0	3.6	4.1	4.4
Aug 08	6.6	7.8	6.4	4.7	4.0	3.6	4.1	4.5

SELECTED ITEMS FROM THE BALANCE SHEET OF THE INVESTMENT ASSOCIATIONS

Table 11

End of period	Total balance	Assets		Liabilities			
		Holdings of securities		Certificates issued by investment associations by owner			
		Bonds, etc.	Shares, etc.	House-holds, etc.	Insurance compa-nies and pension funds	Other residents	Abroad
	Kr. billion						
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
2007	1,020.7	477.9	411.6	295.2	336.8	322.1	29.2
Q2 07	980.2	429.8	426.7	299.4	319.8	321.0	30.0
Q3 07	1,002.2	442.6	428.8	299.8	340.9	322.8	31.1
Q4 07	1,020.7	477.9	411.6	295.2	336.8	322.1	29.2
Q1 08	963.9	466.4	356.2	268.6	329.3	304.0	23.9
Q2 08	951.4	467.2	352.0	256.5	324.1	310.9	23.0
	Quarterly transactions, kr. billion						
Q2 07	...	5.5	9.2	2.6	12.8	6.8	-3.4
Q3 07	...	17.7	8.4	-0.1	22.5	0.3	0.0
Q4 07	...	40.1	2.8	-0.2	3.7	6.6	-2.7
Q1 08	...	4.0	12.0	-3.8	11.8	2.6	0.4
Q2 08	...	12.7	9.0	1.2	2.8	20.9	-0.8

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							
2003	2,143.3	400.0	505.9	191.1	1,525.5	207.2	506.6	209.6
2004	2,379.2	434.4	498.8	213.6	1,768.7	218.4	604.3	245.2
2005	2,559.7	461.2	434.9	205.1	2,002.9	252.5	845.2	300.5
2006	2,541.3	464.7	380.1	172.6	2,034.9	285.9	989.4	361.8
2007	2,701.2	475.8	301.9	176.2	2,247.1	287.7	996.1	445.4
Mar 08	2,340.3	479.2	310.4	184.6	1,882.6	279.4	909.1	381.7
Apr 08	2,328.5	475.1	307.3	178.8	1,868.8	276.9	909.7	390.4
May 08	2,336.8	457.7	300.2	179.6	1,882.2	259.0	951.0	428.8
Jun 08	2,263.3	456.2	280.0	178.3	1,824.6	258.8	882.1	410.8
Jul 08	2,288.4	457.3	280.3	181.0	1,847.1	256.3	856.3	399.5
Aug 08	2,306.1	443.2	255.6	171.5	1,886.7	252.2	858.7	411.8

Note: Comprise quoted and unquoted securities registered with the VP Securities Services (VP).

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							
2003	622	166	400	1,262	2,451	1,505	947	2,452
2004	674	174	473	1,403	2,724	1,640	1,085	2,725
2005	755	172	618	1,616	3,161	1,830	1,331	3,161
2006	808	180	717	1,681	3,385	2,033	1,352	3,385
2007	869	192	706	1,723	3,490	2,212	1,278	3,490
Q1 07	824	177	735	1,697	3,433	2,094	1,339	3,433
Q2 07	857	180	750	1,688	3,475	2,111	1,364	3,475
Q3 07	858	186	746	1,713	3,504	2,137	1,366	3,503
Q4 07	869	192	706	1,723	3,490	2,212	1,278	3,490
Q1 08	871	188	636	1,717	3,412	2,250	1,161	3,411

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								
2003	662	121	643	1,426	1,159	109	1,131	-973	1,426
2004	647	164	746	1,557	1,223	142	1,248	-1,056	1,557
2005	739	167	971	1,876	1,354	143	1,496	-1,117	1,876
2006	773	147	1,076	1,997	1,586	140	1,578	-1,307	1,997
2007	843	137	1,124	2,104	1,715	119	1,738	-1,469	2,104
Q1 07	780	141	1,105	2,025	1,648	139	1,634	-1,395	2,026
Q2 07	853	140	1,159	2,152	1,673	134	1,743	-1,398	2,152
Q3 07	860	135	1,176	2,171	1,674	120	1,801	-1,424	2,171
Q4 07	843	137	1,124	2,104	1,715	119	1,738	-1,469	2,104
Q1 08	797	134	1,083	2,014	1,765	117	1,663	-1,531	2,014

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					
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	45.1	38.3	83.4	9.9	-25.0	68.3
2006	17.3	42.0	59.3	15.9	-27.4	47.8
2007	-5.5	40.5	35.0	10.8	-28.0	17.8
Aug 06 - Jul 07	4.6	36.0	40.6	14.4	-30.0	25.0
Aug 07 - Jul 08	-9.2	47.3	38.1	9.7	-28.1	19.7
Feb 08	0.6	3.0	3.6	-0.2	-4.0	-0.5
Mar 08	-3.0	2.7	-0.3	-4.0	-2.9	-7.2
Apr 08	-1.2	4.7	3.5	2.1	-2.3	3.3
May 08	0.2	3.1	3.3	3.9	-2.4	4.8
Jun 08	-0.4	4.2	3.8	1.9	-2.0	3.7
Jul 08	-0.1	4.3	4.2	2.2	-2.5	4.0

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 [2]	Danmarks Nationalbank's transactions with abroad [3]
		Direct investments		Portfolio investments [1]	Other capital import		
		Danish abroad	Foreign in Denmark				
	Kr. billion						
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	59.4	-6.2
2005	71.2	-97.1	77.3	-67.6	23.7	-19.3	-11.8
2006	47.8	-50.5	21.5	-110.9	82.4	-28.6	-38.3
2007	18.1	-92.5	61.1	-51.5	50.6	13.0	-1.2
Aug 06 - Jul 07	24.9	-67.0	9.6	28.8	-25.4	32.4	3.2
Aug 07 - Jul 08	20.2	-130.1	96.6	-74.4	119.5	-47.4	-15.7
Feb 08	-0.5	-18.0	4.4	-2.6	2.9	18.5	4.7
Mar 08	-7.2	-6.8	5.0	31.0	0.7	-22.2	0.6
Apr 08	3.4	-3.8	1.4	-23.4	20.4	-3.0	-4.8
May 08	4.8	-73.6	17.0	2.7	31.8	5.9	-11.4
Jun 08	3.8	8.4	3.4	3.1	-32.8	15.8	1.8
Jul 08	4.0	-8.4	7.0	-4.4	20.8	-18.8	0.2

[1] This item may differ from the total of the below Table 17, as portfolio investments are published 1-2 weeks earlier than the rest of the balance of payments.
[2] Including errors and omissions and until end-December 2004 unrecorded trade credits.
[3] 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 [1]
	Kr. billion					
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	-18.9	-108.2	-85.0	-68.8
2006	16.3	70.0	-34.4	-21.5	-133.8	-103.3
2007	26.0	72.6	17.2	-97.1	-52.8	-34.1
Mar 08	7.9	11.4	-3.0	14.3	0.9	31.5
Apr 08	3.3	-0.7	3.1	-14.7	-13.9	-22.9
May 08	-10.5	16.5	14.7	-16.9	-0.7	3.1
Jun 08	1.7	2.5	8.7	-31.1	22.8	4.6
Jul 08	-4.9	13.5	-1.9	-11.0	3.5	-0.8
Aug 08	-18.0	13.4	-1.3	-16.9	-8.0	-30.8

Note: A negative sign (-) indicates residents' net purchase of foreign securities, or non-residents' net sale of Danish securities.
[1] This item may differ from "Portfolio investments" in the above Table 16, as the rest of the balance of payments is published 1-2 weeks later.

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										
2003	413	198	309	446	17	57	518	31	230	2,221
2004	471	220	369	547	48	34	584	20	223	2,515
2005	564	253	556	684	85	37	720	19	217	3,136
2006	583	257	741	674	47	41	823	30	178	3,374
2007	629	284	789	733	-3	49	1,035	32	176	3,724
Q2 07	636	278	824	679	-6	49	933	29	181	3,604
Q3 07	633	290	823	661	1	47	1,022	31	191	3,700
Q4 07	629	284	789	733	-3	49	1,035	32	176	3,724
Q1 08	619	302	678	691	14	51	1,073	32	185	3,646
Q2 08	675	318	647	741	-4	53	1,154	33	169	3,784
Liabilities										
2003	434	162	186	762	...	28	801	13	4	2,391
2004	429	208	241	857	...	20	816	20	2	2,593
2005	506	231	311	1,019	...	27	967	21	3	3,084
2006	488	273	358	1,067	...	32	1,144	34	4	3,401
2007	528	272	427	1,122	...	36	1,407	37	5	3,835
Q2 07	528	272	424	1,154	...	34	1,236	34	1	3,683
Q3 07	542	259	439	1,153	...	32	1,306	37	3	3,772
Q4 07	528	272	427	1,122	...	36	1,407	37	5	3,835
Q1 08	520	281	388	1,143	...	36	1,448	35	3	3,855
Q2 08	525	292	416	1,135	...	39	1,534	38	2	3,980
Net assets										
2003	-21	36	123	-315	17	29	-283	19	226	-170
2004	42	12	128	-310	48	14	-233	0	221	-78
2005	59	22	245	-335	85	10	-247	-2	214	51
2006	94	-16	382	-393	47	9	-321	-5	174	-27
2007	100	12	363	-389	-3	13	-372	-5	171	-112
Q2 07	108	6	400	-474	-6	15	-302	-5	180	-78
Q3 07	91	31	384	-493	1	15	-284	-6	188	-72
Q4 07	100	12	363	-389	-3	13	-372	-5	171	-112
Q1 08	99	21	289	-452	14	15	-375	-3	183	-209
Q2 08	150	26	230	-394	-4	14	-380	-5	167	-196

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							
2003	1,400.7	666.9	371.2	271.8	3.2	1,313.1	635.1	547.6
2004	1,466.2	707.2	389.0	285.0	13.5	1,394.8	665.0	593.6
2005	1,548.2	759.8	401.3	306.9	3.8	1,471.8	761.6	685.2
2006	1,641.5	805.2	421.2	357.1	13.0	1,596.5	851.1	806.0
2007	1,696.3	839.8	438.8	388.2	8.2	1,675.0	885.0	863.7
Q2 07	421.5	207.6	108.8	95.8	3.2	415.4	216.6	210.5
Q3 07	424.1	205.3	109.1	95.4	3.9	413.7	224.5	214.1
Q4 07	444.2	224.5	114.3	105.2	-3.7	440.4	233.4	229.6
Q1 08	417.9	210.6	110.2	92.3	5.3	418.4	225.4	226.0
Q2 08	441.9	219.3	113.5	102.9	-0.2	435.5	243.6	237.3
	Real growth compared with previous year, per cent							
2003	0.4	1.0	0.7	-0.2	...	0.0	-1.0	-1.6
2004	2.3	4.7	1.8	3.9	...	4.4	2.8	7.7
2005	2.5	5.2	0.9	6.1	...	3.5	8.3	11.3
2006	3.9	3.8	2.0	14.0	...	6.1	9.0	14.1
2007	1.7	2.3	1.6	5.9	...	2.6	1.9	3.8
Q2 07	-0.2	0.7	1.3	0.8	...	0.7	-0.3	1.1
Q3 07	1.7	3.4	0.9	2.9	...	2.4	2.2	3.7
Q4 07	1.5	4.5	2.2	4.7	...	2.6	0.2	2.7
Q1 08	-0.8	1.6	0.3	-1.9	...	0.6	0.3	2.9
Q2 08	0.9	2.8	0.1	4.7	...	1.8	4.9	6.6
	Real growth compared with previous quarter (seasonally adjusted), per cent							
Q2 07	-1.2	-0.2	0.0	-6.4	...	-1.7	-2.4	-1.6
Q3 07	1.4	1.3	0.1	3.9	...	1.6	2.5	2.4
Q4 07	-0.2	1.9	1.3	0.9	...	1.5	0.0	1.8
Q1 08	-0.6	-1.3	-1.1	-0.8	...	-1.1	0.4	0.3
Q2 08	0.4	1.0	-0.1	1.0	...	0.7	2.2	2.1

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									
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
2007	1.7	0.3	3.7	1.3	2.1	0.6	1.2	1.4	1.4	1.4
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
Q3 07	1.0	-1.4	2.0	1.2	2.2	0.8	1.0	1.2	0.9	1.4
Q4 07	2.2	3.3	5.2	1.2	2.0	1.0	1.2	1.6	2.0	1.4
Q1 08	3.2	7.5	6.0	1.7	2.2	2.4	1.6	2.0	3.6	1.2
Q2 08	3.7	9.7	7.4	1.7	2.6	4.0	1.4	1.8	4.2	0.6

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 50.7 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			
2003	5.7	102.5	107.8	3,039	96,501	1	-6	-18	-2
2004	5.8	102.1	113.4	2,640	122,543	7	3	-5	13
2005	5.1	103.8	120.1	1,874	148,578	9	1	7	20
2006	3.9	108.0	124.0	1,231	156,719	10	9	21	24
2007	2.8	112.6	125.1	1,392	162,479	7	4	9	20
				Seasonally adjusted					
Apr 08	1.8	120.6	126.3	196	14,694	-3	-2	-6	9
May 08	1.7	116.4	125.7	202	13,459	-4	-1	-10	8
Jun 08	1.7	112.9	123.6	159	13,144	-6	-5	-14	9
Jul 08	1.6	115.1	120.5	270	13,251	-9	-5	-13	7
Aug 08	1.6	...	121.3	257	13,001	-13	-9	-16	8
Sep 08	...	...	...	...	...	-11	-12	-23	5

[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 2006
	1,000 persons		1996=100			
2003	2,756	1,914	133.3	133.8	124.1	64.4
2004	2,739	1,898	137.4	138.0	127.5	70.1
2005	2,763	1,919	141.4	141.8	130.7	82.5
2006	2,808	1,965	145.8	146.2	134.0	100.3
2007	2,854	2,010	151.3	152.0	137.1	104.9
			Seasonally adjusted			
Q2 07	2,845	2,001	150.2	151.1	136.6	105.5
Q3 07	2,859	2,015	152.3	152.7	137.4	106.0
Q4 07	2,867	2,022	153.7	154.3	138.8	103.9
Q1 08	2,891	2,043	155.4	155.8	140.7	102.2
Q2 08	2,889	2,049	157.0	158.2	141.1	...
			Change compared with previous year, per cent			
2003	-1.1	-1.2	3.7	4.2	3.0	3.2
2004	-0.6	-0.8	3.1	3.1	2.7	8.9
2005	0.9	1.1	2.9	2.7	2.5	17.6
2006	1.6	2.4	3.1	3.1	2.5	21.6
2007	1.6	2.3	3.8	3.9	2.3	4.6
Q2 07	1.4	2.0	3.7	3.9	2.3	4.9
Q3 07	1.8	2.5	4.0	4.2	2.3	2.9
Q4 07	1.3	2.0	4.3	4.3	2.7	1.2
Q1 08	1.7	2.2	4.4	4.3	3.7	-1.9
Q2 08	1.5	2.4	4.5	4.7	3.2	...

EXCHANGE RATES — Table 23

	EUR	USD	GBP	SEK	NOK	CHF	JPY
	Kroner per 100 units						
	Average						
2003	743.07	658.99	1,074.99	81.45	93.03	488.88	5.6840
2004	743.98	598.93	1,096.69	81.54	88.90	481.96	5.5366
2005	745.19	600.34	1,090.02	80.29	93.11	481.30	5.4473
2006	745.91	594.70	1,094.32	80.62	92.71	474.22	5.1123
2007	745.06	544.56	1,089.81	80.57	92.99	453.66	4.6247
Apr 08	746.03	473.73	938.40	79.63	93.69	467.61	4.6216
May 08	746.09	479.42	941.78	80.12	94.85	459.18	4.5943
Jun 08	745.86	479.36	942.21	79.54	93.32	462.16	4.4828
Jul 08	745.99	473.07	940.65	78.89	92.69	460.71	4.4286
Aug 08	745.95	498.34	940.97	79.37	93.57	460.13	4.5601
Sep 08	745.83	519.17	933.27	77.99	91.46	467.85	4.8701

EFFECTIVE KRONE RATE — Table 24

Average	Nominal effective krone rate	Consumer-price indices: Denmark	Consumer-price indices: Abroad	Real effective krone rate based on consumer prices	Real effective krone rate based on hourly earnings	Consumer-price index in the euro area
	1980=100					2005=100
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	227.9	107.8	109.4	100.0
2006	101.6	246.2	232.2	107.9	110.2	102.2
2007	103.2	250.5	237.6	108.8	113.5	104.4
Apr 08	106.6	258.7	244.0	112.7	...	107.6
May 08	106.3	259.6	245.3	112.2	...	108.2
Jun 08	106.5	260.5	246.2	112.4	118.3	108.6
Jul 08	106.7	259.6	246.7	112.0	...	108.5
Aug 08	105.8	260.0	247.2	111.2	...	108.3
Sep 08	105.4	...	...	...	...	...
	Change compared with previous year, per cent					
2003	3.6	2.1	1.7	3.9	4.7	2.1
2004	1.0	1.2	1.7	0.4	1.3	2.1
2005	-0.6	1.8	1.7	-0.5	-0.3	2.2
2006	0.0	1.9	1.9	0.1	0.7	2.2
2007	1.6	1.7	2.3	0.8	3.0	2.1
Apr 08	3.5	3.2	3.0	3.5	...	3.3
May 08	3.1	3.4	3.3	3.0	...	3.7
Jun 08	3.3	3.8	3.6	3.4	4.5	4.0
Jul 08	3.3	4.0	3.8	3.4	...	4.0
Aug 08	2.5	4.3	3.9	2.9	...	3.8
Sep 08	1.9	...	...	...	...	...

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.

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Danmarks Nationalbank releases new financial statistics to the public in electronic publications composed of 2 elements:

- **"Nyt" (News)** describing the key development trends.
- **Tabeltillæg (Tables Supplement)** containing tables with as detailed specifications as possible.

"Nyt" is available in Danish only, whereas the tables supplement and the corresponding sources and methodologies also are available in English.

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