Danmarks Nationalbank

Monetary Review 1st Quarter Part 1

2013

DANMARKS NATIONAL BANK 2013

MONETARY REVIEW 1st QUARTER 2013

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

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SUMMARY

Since the autumn, tensions in the financial markets have eased, leading to falling government yields and a reversal of capital flows in Southern Europe. However, this is not yet reflected in the real economy of the euro area, which remains weak. In contrast, the USA and the rest of the world are in a moderate upswing. US employment has risen, but remains significantly below the pre-crisis level. In the euro area, the decline in economic activity has caused employment to fall and unemployment to rise. Consumer price inflation in the advanced economies has been stable in recent months. Inflationary pressures are limited against the backdrop of weak economic activity.

Uncertainty about the growth outlook for the global economy has diminished as the euro area turmoil has abated. The slowdown in activity in the euro area is expected to make way for positive growth from mid-2013. US growth is also expected to accelerate gradually, but for 2013 it will presumably remain slightly below its potential level, partly due to fiscal tightening.

Activity in the Danish economy fell by 0.9 per cent in the 4th quarter, having risen by 0.8 per cent in the 3rd quarter. Private consumption contracted marginally, and a stronger fall was seen in exports than in imports. Residential investment declined, while business investment rose a little. In the public sector, both consumption and investment increased.

Domestic demand and exports are expected to rise at a moderate pace in the next quarters. Against that background, growth in GDP is estimated at 0.8 per cent this year, rising to 1.7 per cent in both 2014 and 2015.

There is a sizeable private-sector savings surplus in Denmark, which entails a considerable potential for higher domestic demand. It is not possible to predict exactly when it will materialise, but the change could be significant. It is decisive to developments many years ahead to respond to such a cyclical reversal with due care – especially if activity increases in a situation where interest rates remain very low.

Underlying inflationary pressures are moderate, and the annual rate of increase in the EU's Harmonised Index of Consumer Prices, HICP, is expected to decline to 1.3 per cent this year. At the same time, wage

inflation is subdued, reflecting among other things the limited pressure on the labour market.

THE INTERNATIONAL ECONOMY AND THE FINANCIAL MARKETS

Economic developments

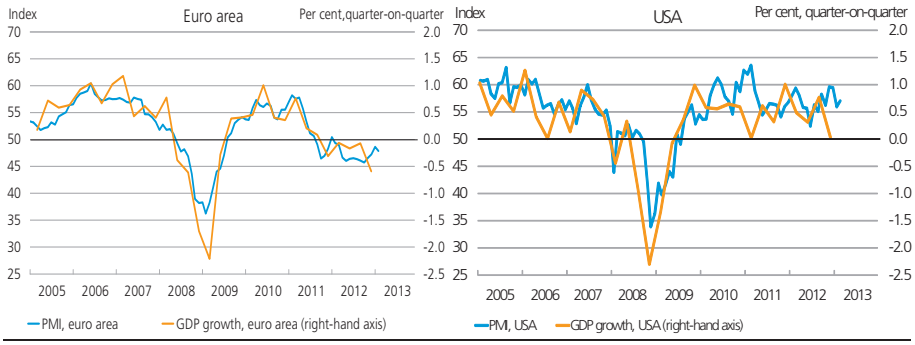
Since the autumn, tensions in the financial markets have eased, particularly in relation to Southern Europe. However, these positive signals are not yet reflected in the real economy of the euro area, which remains weak, while the USA and the rest of the world are in a moderate upswing.

In the advanced economies overall, GDP shrank in the 4th quarter of 2012. The euro area has seen negative GDP growth since the end of 2011 and this trend continued in the 4th quarter of 2012, GDP falling by 0.6 per cent. The most recent indicators point to a further decline in activity in the 1st quarter of 2013. In January and February, the composite PMI, which is an indicator of economic activity, was still at a level signalling a contraction in output, cf. Chart 1 (left).

In the USA, economic activity was virtually unchanged in the 4th quarter, but for the 2nd half of 2012 overall growth was moderate, primarily driven by private consumption and investment. The most recent PMI data for the USA points to activity picking up in early 2013, cf. Chart 1 (right).

In Japan, activity decreased in the last two quarters because of a sharp decline in exports to the EU and to the rest of Asia. Activity in the emerging economies was subdued in the 2nd half of 2012 as a result of lower growth in world trade. However, growth accelerated in e.g. China, Russia and Brazil.

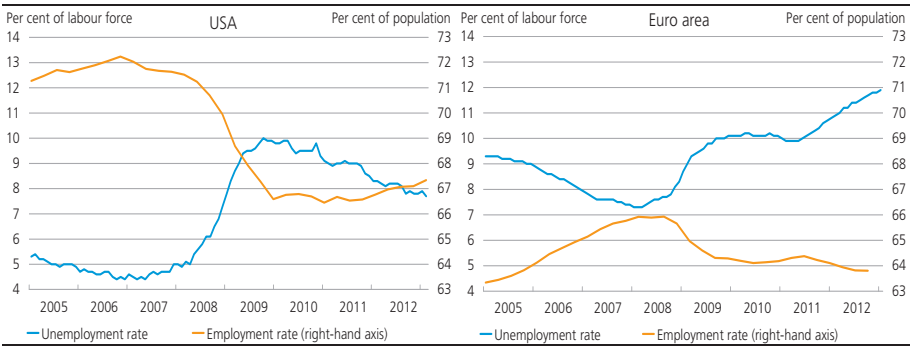
PMI AND GDP GROWTH IN THE EURO AREA AND THE USA — Chart 1



Note: The indices are the Purchasing Managers' Index, PMI, for manufacturing and services (composite output). The most recent data for GDP growth is from the 4th quarter, while the most recent PMI index observations are from February 2013.

Source: Markit and Reuters EcoWin.

EMPLOYMENT AND UNEMPLOYMENT IN THE USA AND THE EURO AREA Chart 2



Note: The employment rate is employment as a percentage of the population aged 20-64.
Source: Reuters EcoWin and OECD.

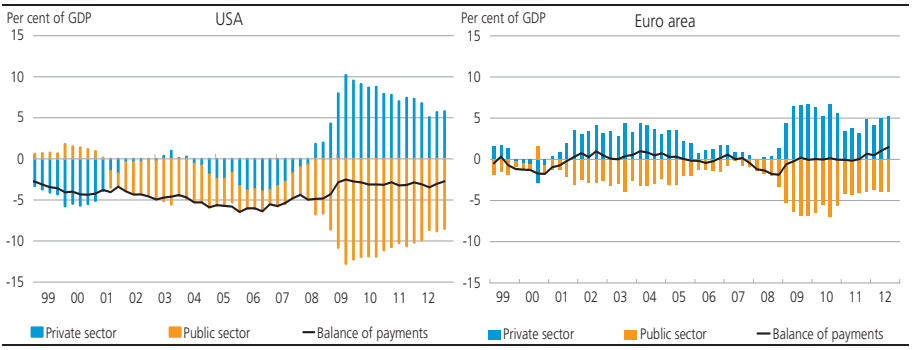
Economic recovery in the USA boosted employment in 2012, although it remains lower than before the crisis despite population growth. This means that the employment rate is significantly below the pre-crisis level, cf. Chart 2 (left). At the turn of the year, the unemployment rate was stable at around 7.9 per cent, falling to 7.7 per cent in February on account of substantial growth in employment, among other factors.

In the euro area, the economic slowdown has reduced employment, so that the unemployment rate was almost 12 per cent in January, cf. Chart 2 (right). This development masks considerable heterogeneity, with high unemployment in some southern member states, which are also struggling with very high long-term and youth unemployment. In Greece and Spain, youth unemployment exceeded 55 per cent at the end of 2012.

The UK has seen strong employment growth despite a weak trend in GDP. This has resulted in significantly lower productivity growth than in e.g. the USA, France and Germany.

In the USA, the private sector has accumulated a large savings surplus, which has constituted more than 5 per cent of GDP since 2009, cf. Chart 3 (left). Consequently, the current-account deficit has been reduced, although it still amounts to approximately 3 per cent of GDP due to large government deficits. The large savings surplus means that financial and non-financial corporations and households have consolidated and reduced their debts. This provides scope for the private sector to increase demand in the near term, thereby to some extent countering the impact of fiscal consolidation. But in the short term growth in private consumption may be halted by the tax increases which took effect at the beginning of the year and which, viewed in isolation, reduce household disposable income by around 1 per cent. The non-financial corporations' savings surplus is mainly a result of large gross savings due to e.g. a

BALANCE OF PAYMENTS AND NET BORROWING/NET LENDING BY INDIVIDUAL SECTORS IN THE USA (LEFT) AND THE EURO AREA (RIGHT) Chart 3

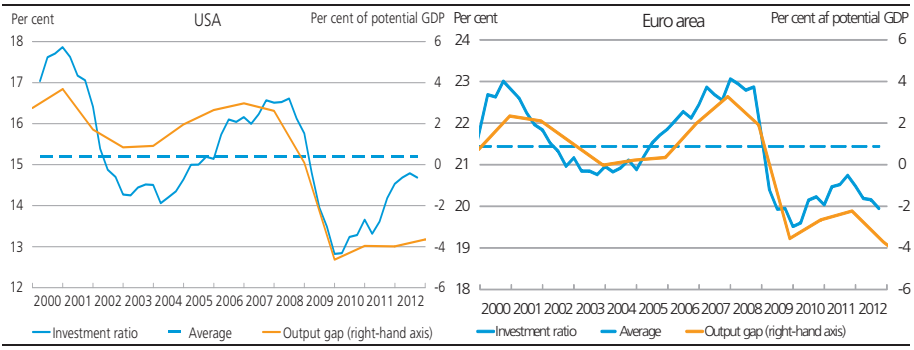


Note: Net borrowing/net lending by individual sectors calculated on the basis of financial accounts for the USA and the euro area, respectively.
Source: Reuters EcoWin.

higher profit ratio. Business investment is slightly below the long-term average, but there is, after all, considerable spare capacity in the, cf. Chart 4 (left).

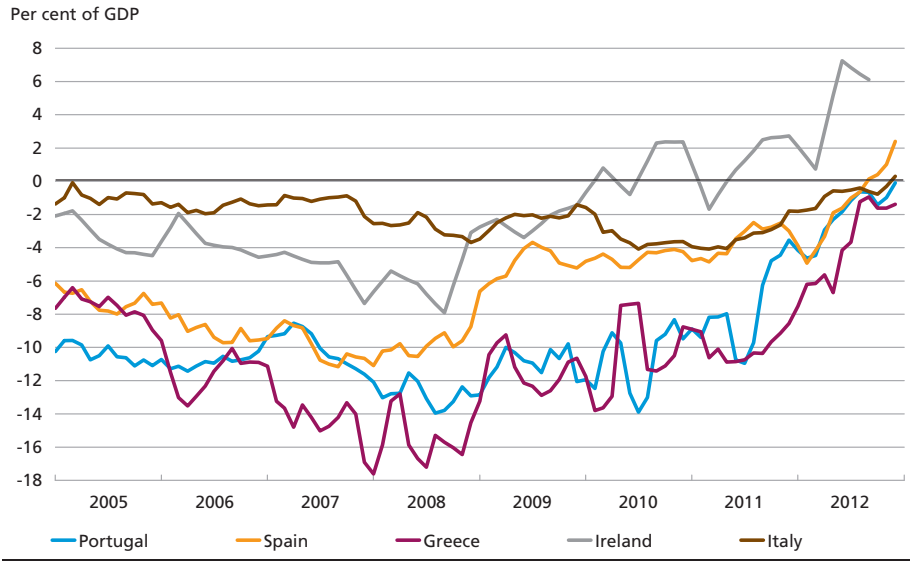
The negative growth rate in the euro area over the last year mainly reflects lower investment and private consumption. Hence, the euro area's private sector has a large and rising savings surplus, cf. Chart 3 (right), which more than offsets the government deficit, and the euro area now has a current-account surplus of approximately 1.5 per cent of GDP. The private sector savings surplus is attributable to, *inter alia*, a low level of investment and consolidation within financial enterprises, many of which undoubtedly want to build up buffers against potential shocks, while also preparing for new regulatory capital requirements. The low investment ratios should be viewed in the light of the weak economy, cf.

FIRMS' INVESTMENT RATIOS AND OUTPUT GAPS IN THE EURO AREA AND THE USA Chart 4



Note: Averages for the period 2000-12. The output gap is calculated as the gap between actual GDP and the estimated potential level of GDP as a percentage of potential GDP.
Source: Reuters EcoWin, Bureau of Economic Analysis and OECD, *Economic Outlook*, No. 92, November 2012.

BALANCE OF PAYMENTS IN SELECTED EURO AREA MEMBER STATES Chart 5



Note: Seasonally adjusted 3-month moving averages of current accounts. Quarterly data for Ireland.
Source: Reuters EcoWin.

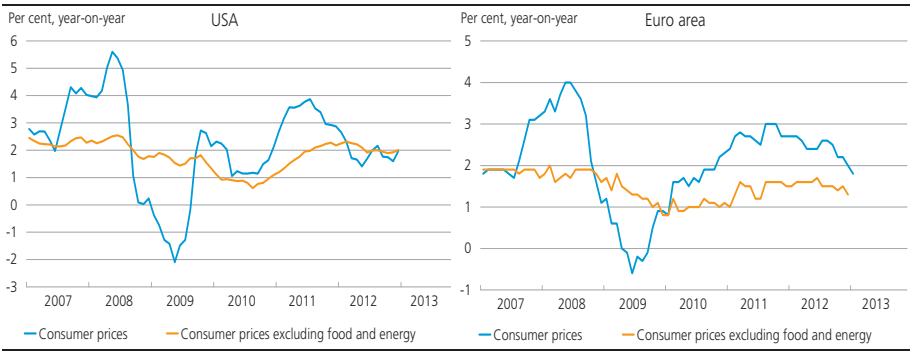
Chart 4 (right). As the economy recovers, investments may therefore begin to pick up. In contrast, the households' consumption ratio is currently high, presumably because households have sought to counter the effect of declining disposable incomes over the last 3-4 years. This points to limited potential for growth in private consumption in the near term.

The development in the euro area balance of payments primarily reflects improvements of the budget balances of crisis-ridden member states in 2012, cf. Chart 5. Ireland has already turned its current-account deficit into a large surplus. Monthly current-account data also indicate that the southern member states virtually eliminated their deficits in the 2nd half of 2012, mainly by reducing domestic demand. There is still a need to adjust competitiveness in Southern Europe, but progress has been made in terms of adapting wage costs in Greece, Spain and Portugal.

Consumer price inflation in the advanced economies has been stable in recent months. In the USA, price inflation declined slightly in 2012, to some extent because the impact of previous years' rising commodity prices has faded away, cf. Chart 6 (left). Core inflation has recently been close to 2 per cent, which is the Federal Reserve's long-term target.

In the euro area, inflation also showed a downward trend throughout 2012, cf. Chart 6 (right). Lately, higher direct and indirect taxes have contributed to increasing euro area consumer prices by around 0.5 per cent.

CONSUMER PRICES IN THE USA AND THE EURO AREA Chart 6



Source: Reuters EcoWin.

Core inflation has been stable at around 1.5 per cent recently, indicating that inflationary pressures are limited at the moment in the context of the weak economic activity.

Financial conditions

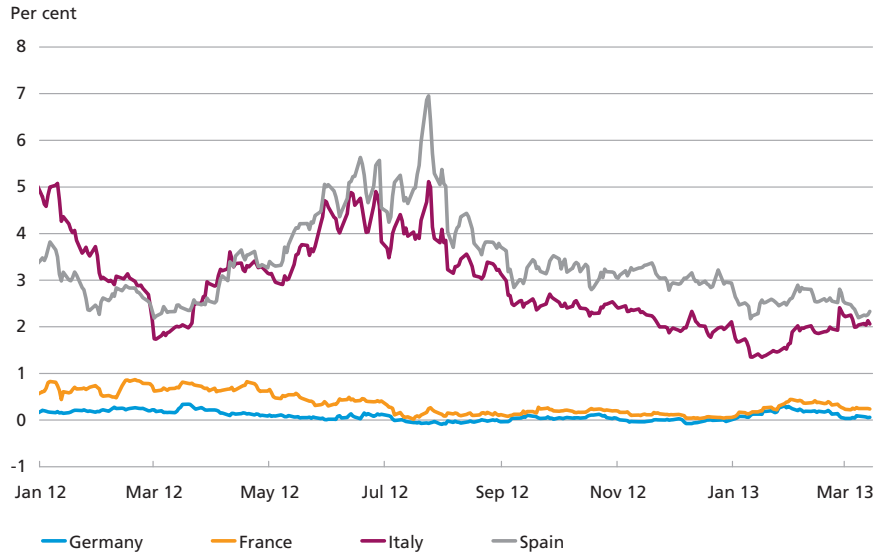
Tensions in the financial markets have eased and confidence has improved after the adoption of a single European supervisory mechanism as part of a banking union in December 2012 and the European Central Bank's, ECB's, announcement of its Outright Monetary Transactions, OMT, programme in September 2012. The improved confidence was reflected in falling government yields in the southern member states in the 2nd half of 2012 and early 2013. In February, government yields in Italy and Spain rose again, particularly after the Italian election, but the trend has subsequently reversed in Spain, cf. Chart 7. Yields in Germany and France rose slightly after New Year in response to the improved confidence, but fell back a little in February. Yields in these two member states remain exceptionally low.

The reduced tensions were also reflected in a reversal of capital flows in Southern Europe. Until the late summer, the southern member states saw a strong outflow of private-sector capital to e.g. Germany and France as a result of the uncertainty linked to the sovereign debt crisis. The cumulative outflow since the beginning of 2011 had reached 17 per cent of GDP by August 2012. It was offset by a capital inflow via these member states' central banks in the form of drawings on the ECB. However, the tide turned in September, and by December the cumulative outflow of private-sector capital from Southern Europe had declined to 13 per cent of GDP, cf. Chart 8.

Market developments also reflect a general improvement of balances in Southern Europe, as current-account deficits have virtually been elim-

NOMINAL YIELDS ON 2-YEAR GOVERNMENT BONDS, SELECTED EURO AREA MEMBER STATES

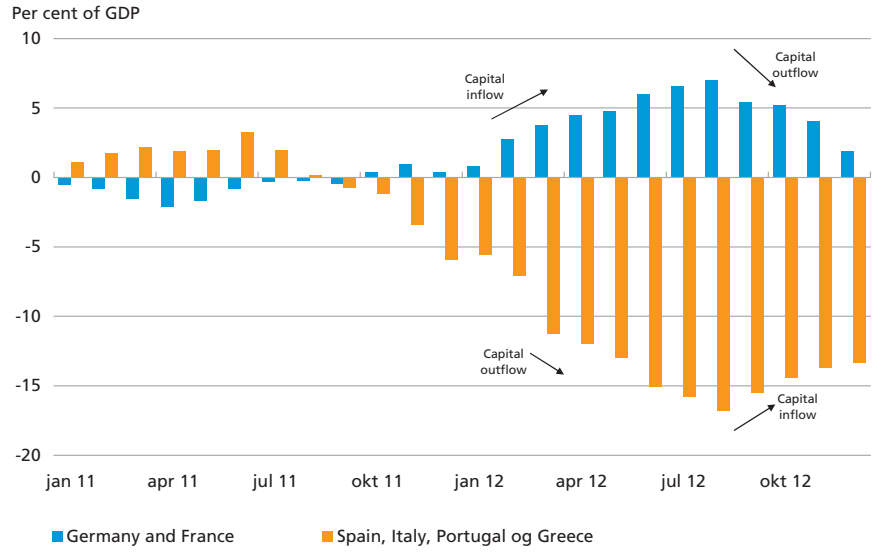
Chart 7



Note: The most recent observations are from 14 March 2013.
Source: Reuters EcoWin.

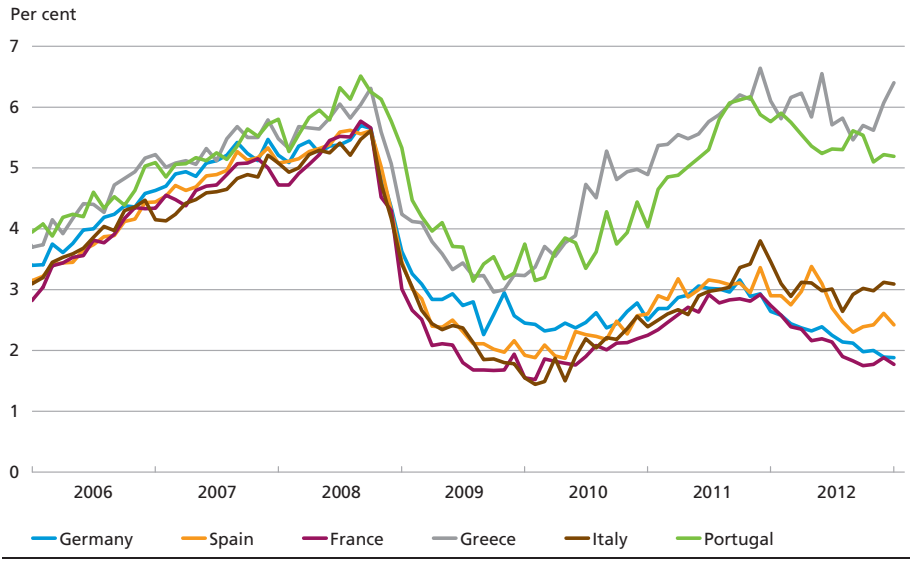
CUMULATIVE PRIVATE-SECTOR CAPITAL FLOWS SINCE THE BEGINNING OF 2011, SELECTED EURO AREA MEMBER STATES

Chart 8



Note: The estimate for private-sector capital flows has been calculated as the sum of portfolio investments and other investments (net) excluding changes in the national central bank's TARGET2 balance as a ratio of the preceding year's GDP (TARGET2 balances are the respective national central banks' balances in the European payment system, TARGET2, which is used for settlement of large-value payments in euro). Accumulated from January 2011. The most recent observations are from December 2012.
Source: The national central banks' balance-of-payments and TARGET2-balance statistics.

LENDING RATES FOR NON-FINANCIAL CORPORATIONS Chart 9



Note: Uncollateralised new loans of over 1 million euro with an initial rate fixation of up to one year. The most recent observations are from January 2013.
Source: ECB.

inated and consolidation of public finances is well underway. At the same time, progress is being made in relation to implementing financial sector reforms in these member states.

One result of the capital inflow is that the downward trend in deposits in the Southern European banks seems to have stopped. All the same, lending rates in Greece and Portugal are still somewhat above the level in Germany, France, Spain and Italy, although interest rates generally fell in all member states in 2012, cf. Chart 9.

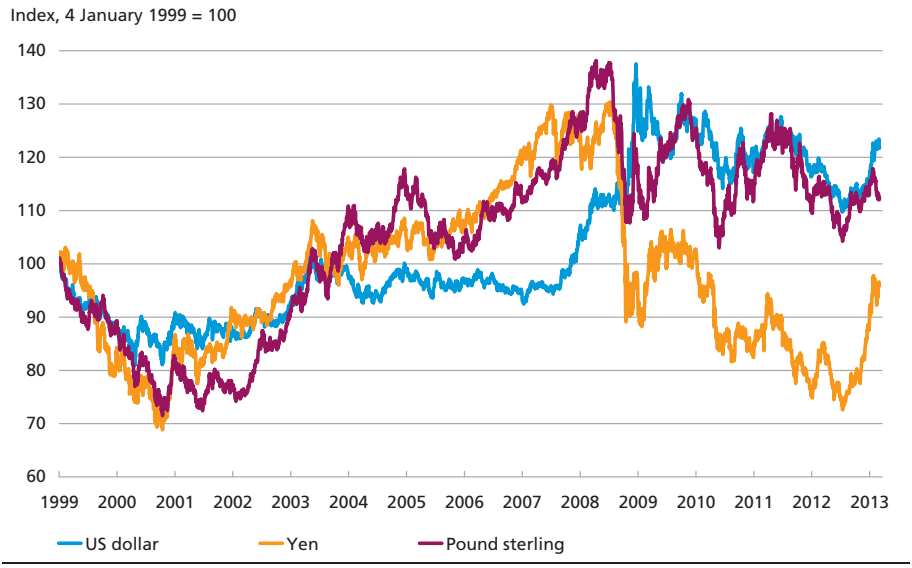
In January and February, a number of euro area banks took advantage of the option to repay loans under the ECB's 3-year Longer-Term Refinancing Operations, LTROs, prematurely[1]. The banks repaid loans totalling 236 billion euro, or approximately 23 per cent of the total original loan volume of 1,019 billion euro. This shows that money-market conditions have gradually improved. Although the repayments have reduced excess liquidity in the euro area, there is still ample liquidity, and hence short-term money-market interest rates have risen only slightly. Early repayments under the 3-year LTROs are expected to be limited in the near future. This is also indicated by the euro area's 1-month forward rate in the money market (EONIA), which shows only a slightly increasing trend over the next year.

[1] The early repayment windows for the first and second 3-year LTROs opened on 30 January and 27 February, respectively.

The positive signals in the financial markets are reflected in the ECB's lending survey for the 4th quarter of 2012, which confirmed that the euro area banks had better access to capital in the 4th quarter within all funding categories. However, terms and conditions for loans to households were tightened further in the 4th quarter compared with the 3rd quarter, while they were more or less unchanged for the corporate sector. Lending by banks to the private sector in the euro area remains subdued. Annual growth in lending to non-financial corporations was -1.4 per cent in the 4th quarter, while growth in lending to households was 0.8 per cent.

Since the summer of 2012, the euro has strengthened vis-à-vis other major currencies, cf. Chart 10. This is partly attributable to increased investor confidence in the euro area economy. But the appreciation against the yen since early December should also be seen in the light of the weaker-than-expected development in the Japanese economy. As a result, the new Japanese government in December eased fiscal policy to the tune of 2 per cent of GDP. Furthermore, in late December the newly elected prime minister also expressed concerns about a strong yen due to accommodative monetary policies in other countries, stating that he regarded a level of around 90 yen per dollar as suitable. After that the yen fell further.

EXCHANGE RATE OF THE EURO VIS-À-VIS SELECTED CURRENCIES — Chart 10



Note: An increase indicates that the euro has strengthened against the currency in question. The most recent observations are from 14 March 2013.
Source: Reuters EcoWin.

Developments in the stock markets have been positive, and benchmark indices in both Europe and the USA have risen since early June 2012. The price of oil rose in early 2013, but is now back at the level at the turn of the year, i.e. around 110 dollars per barrel (Brent). The price for the US oil standard, WTI, is currently about 20 dollars lower per barrel. This should be viewed in the light of e.g. rising oil production in the USA, the limited storage and refinery capacity in Cushing, Oklahoma (where the price of WTI is determined) and the costs of transporting oil away from there. The spread between Brent and WTI is expected to narrow over the coming years as the possibilities for transporting oil from central USA improve.

Growth outlook and economic policy

Uncertainty about the growth outlook for the global economy has diminished as the euro area turmoil has abated. Growth estimates for 2013 have been adjusted downwards a little since the autumn, cf. Table 1, partly on account of the weaker-than-expected activity in the 4th quarter of 2012.

For the euro area, activity is expected to continue to decline in the first months of the year, after which growth will gradually become positive again. Weak domestic demand will still influence economic activity in 2013. Moreover, the effect of further fiscal consolidation in several euro area member states will also play a role.

In the USA, growth is expected to be just under 2 per cent in 2013, which is lower than the estimated potential growth. This reflects *inter alia* that fiscal policy will be tightened by around 2 per cent of GDP. However, legislation in 2012 originally operated with tightening of just

ESTIMATED GDP GROWTH IN SELECTED ECONOMIES — Table 1

				Change relative to November 2012	
Per cent	2012	2013	2014	2013	2014
USA	2.2	1.9	2.6	-0.4	0.0
Euro area	-0.6	-0.3	1.4	-0.4	0.0
Germany	0.7	0.5	2.0	-0.3	0.0
France	0.0	0.1	1.2	-0.3	0.0
Italy	-2.2	-1.0	0.8	-0.5	0.0
Spain	-1.4	-1.4	0.8	0.0	0.0
UK	0.0	0.9	1.9	0.0	-0.1
Sweden	1.0	1.3	2.7	-0.6	0.2
Japan	1.9	1.0	1.6	0.2	-0.3
China	7.8	8.0	8.1	0.3	0.3

Note: Change relative to the European Commission's previous forecast from November 2012.
Source: European Commission's winter forecast, February 2013.

over 4 per cent of GDP (the "fiscal cliff"), but on 1 January a deal was concluded to cancel or postpone a considerable part of these tightening measures. Specifically, the deal meant that most of the tax cuts introduced by the Bush administration became permanent.

However, the automatic savings mechanism adopted when the debt ceiling was raised in 2011 was postponed only until 1 March and has therefore come into force. This mechanism entails automatic cutbacks, mainly on non-mandatory federal expenses, and will be distributed equally on defence and non-defence spending. For the fiscal year 2013, this entails cutbacks of 85 billion dollars, or around 0.5 per cent of GDP, rising to 110 billion dollars in the subsequent years.

Adjustment of the automatic savings mechanism may be part of the budget negotiations that are expected to take place during the spring. Grants for discretionary federal expenses expire on 27 March. If no new grants have been approved by then, the federal government will have to close down for a while, which will also affect the short-term growth outlook and the financial markets. The negotiations will also include discussion of a more permanent increase of the debt ceiling; this has initially been suspended until 19 May.

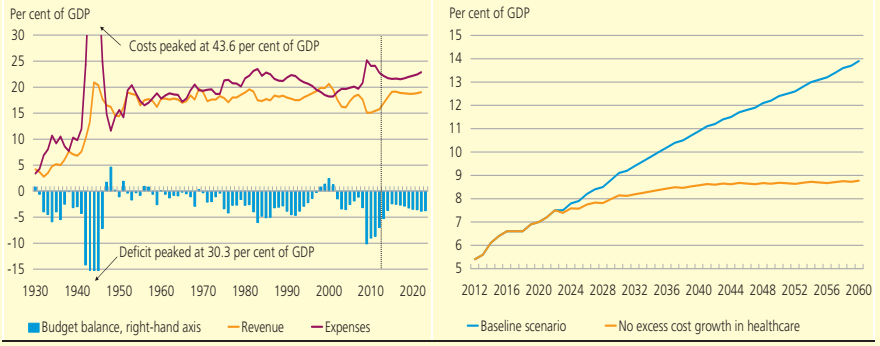
If the fiscal tightening in 2013 is eased, there will be a more pronounced need to consolidate at a later date. International organisations and credit rating agencies have long pointed out that US fiscal policy is not sustainable and that there is an urgent need to adopt a credible medium-term consolidation strategy. Box 1 describes the USA's long-term fiscal challenges.

In Europe, many countries are still faced with major challenges in relation to restoring fiscal sustainability, so fiscal policies are still being tightened. According to the European Commission's latest forecast, public finances in the euro area overall are expected to be consolidated by 0.75 per cent of GDP in 2013, measured by the change in the structural balance. However, it may be difficult for a number of euro area member states to bring their government deficits below 3 per cent of GDP by the deadlines set under the Stability and Growth Pact recommendations. This is partly attributable to the weak economic activity. For France, the Netherlands and Slovenia, among others, the 2013 deficit is expected to exceed 3 per cent, cf. Chart 12, so that they will not immediately comply with the recommendations. The date set for Portugal and Spain is 2014, and especially Spain will have difficulty in meeting this deadline. However, under the Stability and Growth Pact it is possible to extend the deadline by one year if the economy has developed much worse than anticipated and it is assessed that the member states in question have tightened public finances as recommended.

THE USA'S LONG-TERM FISCAL CHALLENGES Box 1

For many years, the USA has had a federal budget deficit, cf. Chart 11 (left). The Congressional Budget Office, CBO, presents an annual long-term projection of the federal budget. The CBO estimates that the federal deficit will narrow somewhat in the coming years in step with economic recovery and fiscal consolidation. In the longer term, the CBO predicts unsustainable federal finances with a growing budget deficit. This is mainly attributable to rising healthcare costs which, in addition to costs related to the ageing of the population, also stem from excess cost growth in healthcare, cf. Chart 11 (right). The latter is most significant to the projection and relates to a historical tendency for increases to reflect improved treatment opportunities. In this context it should be noted that the ageing of the population is not as pronounced as in e.g. Europe and Japan.

DEVELOPMENT IN FEDERAL DEFICIT (LEFT) AND PROJECTIONS OF FEDERAL HEALTHCARE COSTS (RIGHT) Chart 11



Source: Congressional Budget Office and own calculations.

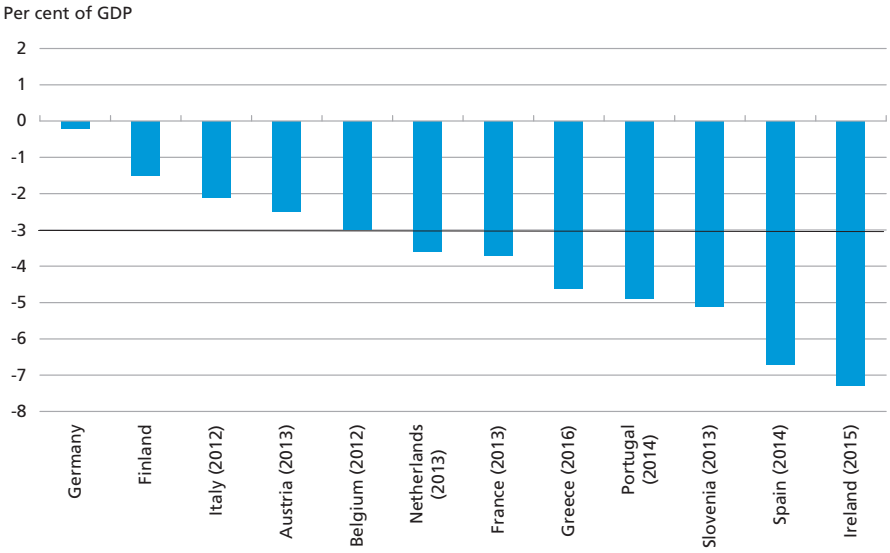
Based on the CBO's long-term projection it is possible to calculate the fiscal tightening required to ensure sustainable federal finances. These calculations indicate permanent tightening in excess of 11 per cent of GDP, mainly on account of the excess cost growth in healthcare. Without this component in the projection, the tightening requirement would be 6 per cent of GDP, primarily due to the current deficit and interest payments on the debt.

The international organisations have long called for a credible fiscal policy plan for the USA which will bring public finances back on a sustainable track. According to both the International Monetary Fund, IMF, and the OECD, the USA has one of the largest consolidation requirements among OECD countries in relation to achieving long-term fiscal sustainability. The IMF estimates that if the government debt in 2030 is to be in line with that in 2011, it is necessary to improve the primary government budget balance by 8 per cent of GDP until 2022.

Since fiscal consolidation has coincided with negative growth rates in a number of countries, there has been renewed discussion of the effect of fiscal policy on economic activity (the size of the "fiscal multipliers"), cf. Box 2. However, for several European countries a sustainable level of

GOVERNMENT BUDGET BALANCES IN 2013 IN SELECTED EURO AREA MEMBER STATES

Chart 12



Note: The figures in brackets indicate the deadline set for reducing the government deficit to less than 3 per cent of GDP. For Greece, the 2016 deadline is for a primary surplus of 4.5 per cent of GDP.
Source: European Commission's winter forecast, February 2013.

debt has only been achievable via fiscal consolidation, irrespective of whether the impact of fiscal policy on activity has been greater or smaller than usual during the crisis.

Following weak signals from the US economy in the spring and over the summer, the Federal Reserve introduced further quantitative easing in September. The Fed announced that its purchases would continue until the outlook for the labour market improved substantially. The Fed also announced that it now expected to keep the federal funds rate at the exceptionally low level until mid-2015. In December, the Fed adjusted the latter statement, saying that the low level will be appropriate at least as long as the unemployment rate remains above 6.5 per cent and expected inflation 1-2 years ahead does not exceed 2.5 per cent. In this context, the Fed added that future interest-rate decisions would also take into account analyses of a broader set of indicators for the labour market, as well as inflation pressures and expectations.

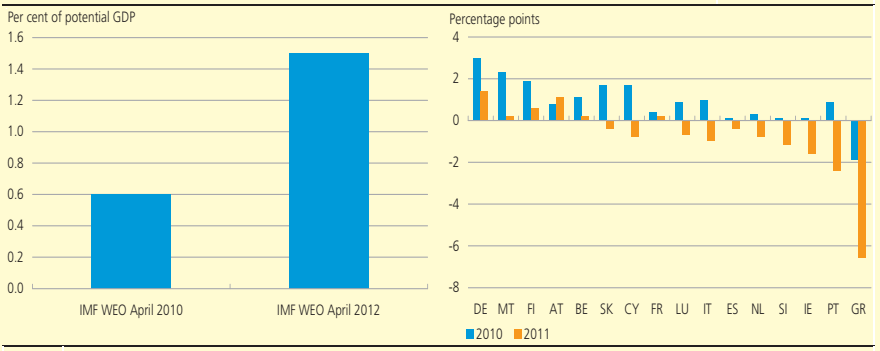
In January, the Bank of Japan decided to aim to lift inflation to 2 per cent as soon as possible, thereby raising the monetary-policy target from 1 to 2 per cent. This decision was announced in a joint statement with the government. To support the new inflation target, an asset purchase programme will be launched in January 2014. No time limit has been set

FISCAL MULTIPLIERS — Box 2

The debate on the impact of fiscal policy on economic activity – i.e. the size of the fiscal multipliers – was rekindled when the IMF in October and January presented analyses concluding that the multipliers were up to three times larger during the crisis than previously assumed. This would mean that fiscal tightening had a much stronger negative impact on economic growth than originally assessed. The IMF's conclusions have given rise to criticism from the European Commission, among others.

The IMF's point of departure is a model, primarily for the euro area member states, in which estimates (from April 2010) of fiscal consolidation in 2010-11 are used to explain errors in the estimation of GDP growth in the same period. A weakness of this method is that the IMF does not consider the errors in the estimation of actual fiscal consolidation in 2010-11. Actual data shows average consolidation in these two years of 1.5 per cent of GDP, while the IMF calculated with average consolidation of just 0.6 per cent of GDP in the forecast from April 2010, cf. Chart 13 (left). Furthermore, the IMF omits factors that may also have influenced GDP growth, including government yields. The Commission demonstrates[1] that the correlation between errors in the estimation of growth and expected consolidation becomes insignificant when government yields are included in the analysis. The Commission also points out that some of the estimation errors are related to underestimation of growth in 2010-11 (i.e. positive estimation errors) in a number of euro area member states which temporarily eased fiscal policy, cf. Chart 13 (right).

EXPECTED AND ACTUAL FISCAL CONSOLIDATION IN 2010-11 (LEFT) AND ERRORS IN THE ESTIMATION OF GDP GROWTH (RIGHT) — Chart 13



Note: Fiscal consolidation is given by the change in the structural government budget balance.
Source: ECB and the European Commission's autumn forecast, November 2012.

The size of the fiscal multipliers depends on a number of factors, including the choice of fiscal-policy instrument, whether changes are permanent or temporary, the openness of the economy and monetary and exchange-rate policies.[2] Irrespective of whether the multipliers are currently higher or lower than usual, it is important to remember that for several European countries there is no alternative to fiscal consolidation, despite the negative short-term effects.

[1] European Commission's autumn forecast, November 2012, Box 1.5.
[2] Cf. e.g. Søren Hove Ravn, Macroeconomic Effects of Fiscal Policy, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2012, Part 2, and Spilimbergo, Symansky and Schindler, Fiscal Multipliers, *IMF Staff Position Note*, 2009.

for this programme. For a more detailed description of unconventional monetary-policy measures in the USA and Japan, see the article "Unconventional Monetary-Policy Measures" in this Monetary Review.

In December, Sveriges Riksbank decided to increase its foreign-exchange reserve by an amount corresponding to 100 billion Swedish kronor. The decision is based on an assessment of the external uncertainty, which in Sveriges Riksbank's opinion constitutes an additional risk to the Swedish financial system. Consequently, Sveriges Riksbank wishes to increase its foreign-exchange reserve so as to be able to provide foreign exchange to the banks if necessary. The increase is temporary and will be phased out in due course. Also in December, Sveriges Riksbank decided to lower its reference rate by 0.25 percentage point, to 1 per cent.

At the EU level, and particularly among the euro area member states, economic and financial cooperation is being enhanced. On 13 December, the Ecofin Council agreed on the first step towards a banking union. It comprises two regulations, one on a single supervisory mechanism anchored in the ECB and one amending the regulation establishing the European Banking Authority, EBA. The ECB will commence its supervisory activities 12 months after the regulation has come into force. The ECB will take over direct supervision of all credit institutions not defined as "less significant". This supervision will comprise all credit institutions in the euro area and in the non-euro area member states opting in. Other steps towards the banking union include harmonisation of national frameworks for the recovery and resolution of credit institutions and for deposit guarantees. The European Commission has tabled proposals for directives in these areas. When they have been adopted, it will need to propose a single resolution mechanism, presumably including elements of joint financing, for the member states participating in the single supervisory mechanism.

Ireland and Portugal have introduced considerable fiscal consolidation measures and economic reforms in connection with their EU and IMF loan programmes, which run until December 2013 and May 2014, respectively. As a result, and combined with the general easing of tensions in the financial markets, these two member states have recently – to some extent – been able to obtain funding in the markets. This is particularly true of Ireland, which, in mid-March, issued 10-year government bonds for 5 billion euro. All the same, both member states have applied for extension of the loans from the European financial stability facilities (EFSF and EFSM) in order to avoid a situation where they need to repay large amounts within a short space of time. On 5 March, the Ecofin Council decided to ask the troika (European Commission, ECB and

IMF) to prepare proposals for how the EFSF and EFSM loans for these two member states can best be handled.

The Irish government has also converted promissory notes issued to the Central Bank of Ireland in connection with recapitalisation of the banking sector. This means that the Irish government's borrowing requirement is reduced by 20 billion euro over the next 10 years, as the promissory notes are converted into long-term government bonds with a maturity of 40 years and without any repayments until 2038.

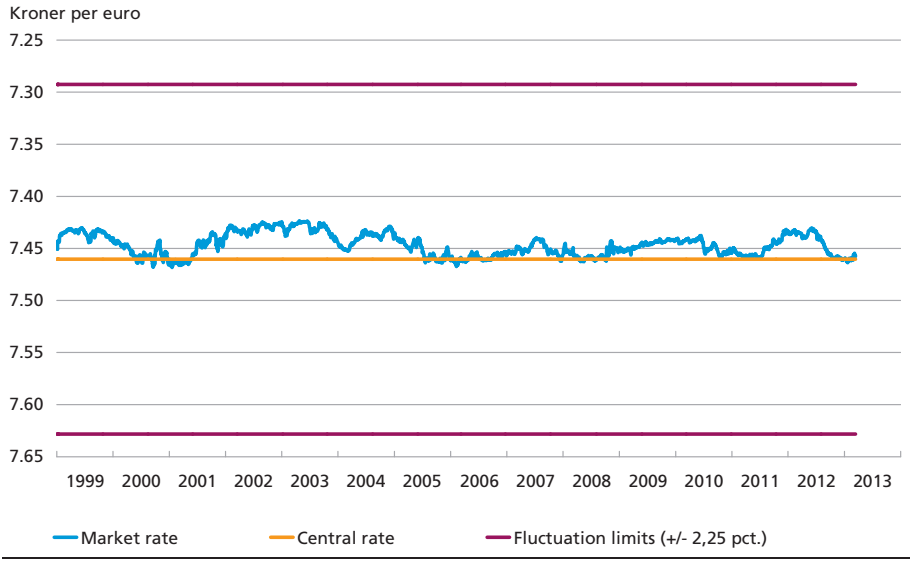
MONETARY AND EXCHANGE-RATE CONDITIONS

In recent months, the krone has been stable vis-à-vis the euro at a level close to its central rate in ERM 2, cf. Chart 14. However, in January the krone weakened a little, to the lowest level against the euro since 2008.

With effect from 25 January 2013, Danmarks Nationalbank raised the rate of interest on certificates of deposit and the lending rate by 0.10 percentage point. The discount and current-account rates remained unchanged. This step came after Danmarks Nationalbank had sold foreign exchange in the market. Subsequently, the rate of interest on certificates of deposit was -0.10 per cent, the lending rate 0.30 per cent, and the discount and current-account rates 0.00 per cent.

At end-February, the foreign-exchange reserve was kr. 483.2 billion, down by kr. 28.9 billion since November 2012. The decrease reflected,

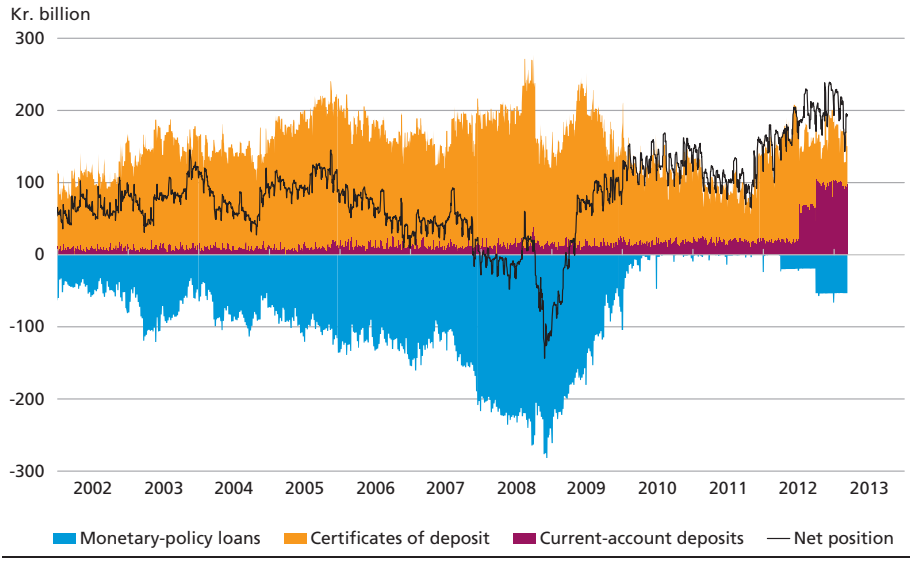
EXCHANGE RATE OF THE KRONE VIS-À-VIS THE EURO — Chart 14



Note: Reverse scale. The most recent observation is from 13 March 2013.
Source: Danmarks Nationalbank.

THE BANKS' AND MORTGAGE BANKS' LOANS FROM AND DEPOSITS AT DANMARKS NATIONALBANK

Chart 15



Note: The most recent observations are from 13 March 2013.
Source: Danmarks Nationalbank.

inter alia, interventions to sell foreign exchange for kr. 14.5 billion in December and January, EU payments and value adjustment of the foreign-exchange reserve.

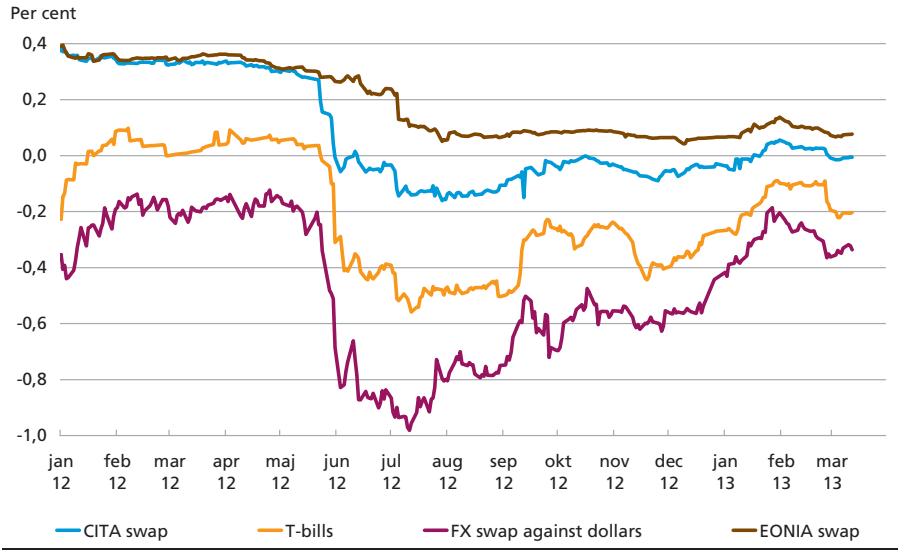
The exchange rate of the krone is affected by the difference between money-market interest rates in Denmark and the euro area. In the current situation with a large and positive net position, the monetary-policy counterparties obviously have a need to place funds at Danmarks Nationalbank, cf. Chart 15. Hence, the rate of interest on certificates of deposit guides money-market interest rates in Denmark. A similar situation applies in the euro area.

Developments in the money and capital markets

From late 2012 until mid-March 2013, there were indications that market participants' assessment of the situation in the euro area was improving. This was reflected in e.g. falling government bond yields in the crisis-ridden EU member states and strengthening of the effective exchange rate of the euro. In the Danish money market, interest rates rose, and the spread between collateralised money-market interest rates in Denmark and the euro area became less negative in this period. Moreover, the FX swap market between kroner and dollars began to normalise.

Interest rates in the Danish money market have been extraordinarily low since May 2012. In late 2012, the collateralised Danish money-

3-MONTH MONEY-MARKET INTEREST RATES Chart 16



Note: The US 3-month OIS rate has been used for the calculation of the implied krone rate via FX swaps between dollars and kroner. The data source for the CITA swap rate is Reuters EcoWin until 31 December 2012 and then the Danish Bankers Association's quoted rate. The EONIA swap rate is given by the quoted rate for the euro area. The most recent observations are from 14 March 2013.
Source: Reuters EcoWin, Danish Bankers Association and Danmarks Nationalbank.

market interest rate, measured by the 3-month CITA swap rate, rose, and in January 2013 it became positive for the first time since mid-June 2012, cf. Chart 16. This reflected expectations in the market that Danmarks Nationalbank would raise its interest rates. The corresponding collateralised money-market rate in the euro area, measured by the 3-month EONIA swap rate, has also risen in recent months, but to a lesser extent. Hence, the collateralised interest-rate spread to the euro area became less negative and was closer to zero in mid-March 2013.

On 2 January 2013, the Danish Bankers Association introduced a new market-based reference rate as agreed with the Ministry of Business and Growth. It is based on the CITA swap rate, cf. Box 3.

The implied interest rate on lending in kroner against collateral in dollars, FX swaps, has become less negative since the summer of 2012, cf. Chart 16.[1] Hence, the distortions in the FX swap market have become less pronounced, and the implied interest rate is now closer to the other money-market interest rates. The reason for the distortions in the FX

[1] The implied interest rate for lending in kroner via FX swaps is an expression of the cost of borrowing in dollars while at the same time entering an FX swap, so that the overall result corresponds to a krone loan. According to the covered interest-rate parity, the price should be equal to the price of a krone loan in the same period. But in practice, deviations from the covered interest-rate parity may occur as a result of e.g. differences in credit risks and the liquidity situation in the various markets.

NEW REFERENCE RATE BASED ON THE CITA SWAP RATE Box 3

On 2 January 2013, the Danish Bankers Association introduced a new market-based reference interest rate based on the CITA swap rate for maturities of 1-12 months. When entering a CITA interest-rate swap, the parties agree to exchange payments of a fixed interest rate (the swap rate for the maturity in question) against a variable overnight interest rate (the T/N rate). Interest payments are calculated on the basis of a principal, which is not exchanged. On expiry of the CITA swap, the parties settle the difference between the agreed fixed rate and the average T/N rate over the term of the agreement.

The reference rate is calculated on a daily basis using quotes from the reporting banks and is published at Nasdaq OMX. The rates of the individual reporting banks are published by the Danish Bankers Association. In mid-March 2013, there were six reporting banks. The Danish Bankers Association holds overall responsibility for the reference interest rate, but the Danish Financial Supervisory Authority monitors that the framework for fixing the reference rate is appropriate.

swap market is that US banks and investors became less willing to lend dollars to non-US banks after the financial crisis. This led to increased demand from non-US banks for dollar funding via the FX swap market. As a result, the rate of interest on dollar funding via FX swaps rose above the rate for direct dollar funding in the US money market. This is referred to as the distortions in the FX swap market.[1]

Danish government bond yields remain low, although they have risen since December 2012. On 27 February 2013, an auction was held of 3-, 6- and 9-month T-bills. The sales volume in the auction totalled kr. 7.4 billion at interest rates of -0.13, -0.07 and 0.00 per cent, respectively. At the previous auction in January, one of the T-bill interest rates was positive for the first time since late May 2012.

The 10-year government bond yield rose slightly from November 2012 to mid-February 2013. The corresponding German yield rose less than the Danish one so that the Danish-German yield spread became less negative; in February it became positive for the first time since the summer of 2012. Following the Italian election in late February, both the Danish and the German yield fell by more than 0.1 percentage point. The Danish 10-year government bond yield was 1.7 per cent in mid-March.

[1] Foreign investors with direct access to dollars in the US money market have been able to utilise the distortions in the Danish FX swap market to achieve high returns by lending dollars in FX swaps against Danish kroner, which were invested in e.g. Danish T-bills. This pushed down the rate of interest on T-bills. The most recent reduction in the distortions in the FX swap market has been accompanied by less negative interest rates on T-bills. For a more detailed description of the distortions in the FX swap market, see Palle Bach Mindested, Martin Wagner Toftdal and Lars Risbjerg, The Danish Money Market at Low Interest Rates, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2012, Part 1.

Danish implied market-based inflation expectations can be derived from the yield to maturity on the nominal and inflation-linked 10-year government bonds. In mid-March 2013, they were in line with the corresponding German expectations at around 1.9 per cent. In other words, the implied market expectations are that average annual inflation will be on the low side of 2 per cent until 2023.

Short- and long-term mortgage yields have been more or less constant in recent months. In mid-March, the short-term mortgage yield was 0.3 per cent while the long-term yield was 3.4 per cent.

Mortgage banks have increasingly spread the auctions of the bonds underlying adjustable-rate loans over the year. In January, Nykredit and Totalkredit announced adjustable-rate loans with rate fixation on 1 July, thereby increasing the annual number of auctions from three to four. Spreading the auction dates helps to reduce the refinancing pressure up to New Year.

The banks' interest rates on outstanding lending and deposits regarding households and the corporate sector were more or less constant from November 2012 to January 2013.

At the end of February 2013, Deutsche Bank ceased to report for CIBOR, which is an uncollateralised interest rate for money-market loans. This leaves six banks reporting for CIBOR.

In late 2012, the Folketing (Danish parliament) passed a bill to establish a Systemic Risk Council tasked with identifying and monitoring systemic financial risks and issuing observations, warnings and recommendations in order to prevent or reduce the accumulation of such risks.[1] Warnings and recommendations may be issued to the Danish Financial Supervisory Authority and – if they relate to legislation – to the government. In February 2013, the Minister for Business and Growth appointed the members of the Council. Governor Lars Rohde, Danmarks Nationalbank, is the chairman of the Council.

In Denmark, the Committee on Systemically Important Financial Institutions presented a report on 14 March 2013. The Committee recommends a system for identification and regulation of systemically important financial institutions, SIFIs, cf. Box 4.[2] Danmarks Nationalbank has participated in the Committee's work and supports its recommendations.

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1 For a more detailed description of the Systemic Risk Council, see Danmarks Nationalbank, Current Economic and Monetary Trends, *Monetary Review*, 4th Quarter 2012, Part 1.

2 Committee on Systemically Important Financial Institutions in Denmark, *Systemisk vigtige finansielle institutter i Danmark: Identifikation, krav og krisehåndtering* (Systemically important financial institutions in Denmark: identification, requirements and crisis management – in Danish only), March 2013.

REPORT FROM THE SIFI COMMITTEE Box 4

The Committee recommends that SIFIs are identified on the basis of the size of their balance sheets relative to GDP, the volume of lending in Denmark relative to the sector's total lending in Denmark and the volume of deposits in Denmark relative to the sector's total deposits in Denmark. If the recommended threshold values are applied, six Danish credit institutions are currently SIFIs. After due consideration, a qualitative element may be included in the identification process. The Committee recommends that the Danish Financial Supervisory Authority designates the Danish SIFIs on the basis of a recommendation from the Systemic Risk Council.

The Committee finds it essential to limit the probability that SIFIs become distressed by imposing a number of requirements on Danish SIFIs. These are in line with future European legislation and requirements in e.g. Sweden. They include extra capital, liquidity requirements, good corporate governance, enhanced supervision and recovery and crisis management plans. The Committee proposes a differentiated capital requirement of 1-3.5 per cent of the risk-weighted items in the form of Common Equity Tier 1, which is to be phased in by 2019. Several credit institutions have already increased their Common Equity Tier 1 in the wake of financial crisis and in preparation for increased capital requirements. Moreover, a "crisis management buffer" of 5 per cent of risk-weighted items is recommended, comprising debt instruments to be converted into Common Equity Tier 1 or written down if the credit institution is subject to crisis management. Additional Tier 1 and Tier 2 capital may, in certain cases, be included as part of this buffer. In that case, the requirement is in effect an additional 1.5 per cent. It is proposed that the crisis management buffer be phased in over a 3-year period from 2020. The Committee believes that the overall impact on the economy of the recommended stricter requirements for SIFIs will be positive.

Besides having a preventive effect, the stricter requirements are also aimed at limiting costs for society and the government if a SIFI becomes distressed. In the Committee's assessment, Bank Rescue Package 3 and the existing resolution scheme for mortgage banks are generally insufficient to handle ailing SIFIs. In the interest of the overall economy, it will be necessary to continue systemic functions rather than resolving them. Hence the Committee recommends that further crisis management tools be made available to the authorities.

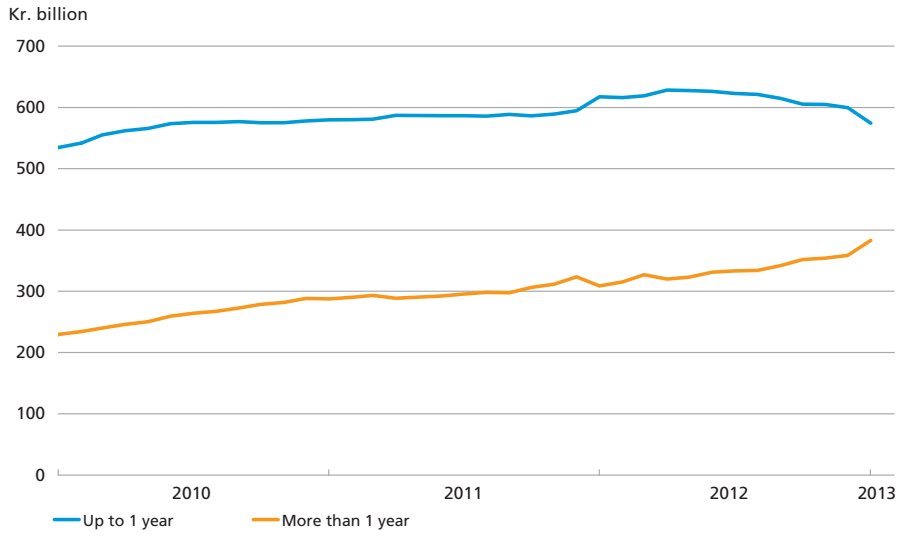
Lending by banks and mortgage banks

Total seasonally adjusted lending by credit institutions has been virtually constant since 2010. The mortgage banks, which account for just over 70 per cent of total lending, increased their lending by around kr. 21 billion from October 2012 to January 2013. In the same period, bank lending fell by almost kr. 34 billion. Most of the change in the credit institutions' lending relates to shifts in corporate lending from banks to mortgage banks. This trend has been seen since 2009.

Adjustable-rate loans account for around two thirds of all mortgage lending for owner-occupied housing and summer cottages. The last six months have seen a shift towards adjustable-rate loans with longer fixed-interest periods. Lending with fixed-interest periods of more than

THE MORTGAGE BANKS' ADJUSTABLE-RATE LOANS FOR OWNER-OCCUPIED HOUSING AND SUMMER COTTAGES BROKEN DOWN BY MATURITY

Chart 17

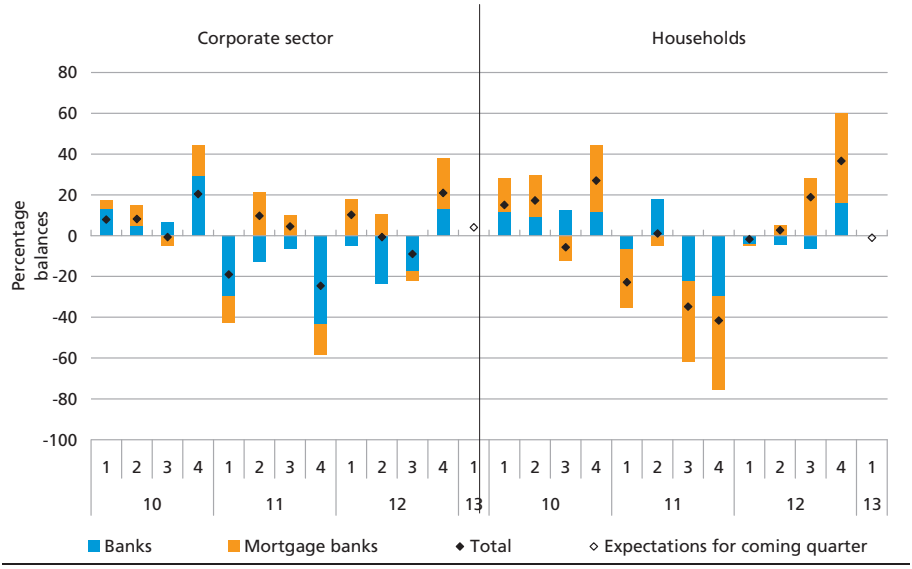


Note: The most recent observations are from January 2013.
Source: Danmarks Nationalbank.

1 year has increased by just over kr. 49 billion, while lending with fixed-interest periods of up to 1 year has fallen by around kr. 47 billion, cf. Chart 17.

CHANGE IN DEMAND FOR LOANS FROM EXISTING CUSTOMERS BROKEN DOWN BY THE CORPORATE SECTOR AND HOUSEHOLDS

Chart 18



Note: The most recent observations are from the 4th quarter of 2012.
Source: Danmarks Nationalbank.

In Danmarks Nationalbank's lending survey for the 4th quarter of 2012, the credit institutions responded that demand for credit had risen, cf. Chart 18. Especially households were increasingly asking for loans. The credit institutions expected demand for credit to remain more or less stable in the 1st quarter of 2013. They also indicated that credit standards were virtually unchanged in the 4th quarter of 2012 and that they did not expect to change their credit policies in the 1st quarter of 2013. A similar survey for the euro area showed that demand for credit fell in the 4th quarter of 2012, both for households and the corporate sector, but to a lesser extent than in previous quarters.

THE DANISH ECONOMY

According to the preliminary national accounts, activity declined by 0.9 per cent in the 4th quarter, following an almost equivalent rise in the 3rd quarter, cf. Table 2. Private consumption contracted marginally, and residential construction also declined. Exports fell by more than imports.

KEY ECONOMIC VARIABLES — Table 2

Real growth on preceding period, per cent	2012	2013	2014	2015	2012 Q2	2012 Q3	2012 Q4
GDP	-0.6	0.8	1.7	1.7	-1.0	0.8	-0.9
Private consumption	0.5	0.7	1.7	1.8	0.0	-0.2	-0.1
Public consumption	0.5	1.0	0.8	0.8	0.5	1.0	0.3
Residential investment	-9.8	-0.6	3.4	2.4	-4.0	-1.0	-1.5
Public investment	10.6	-8.8	-4.8	0.5	10.8	-1.8	1.1
Business investment	4.1	3.1	5.0	4.5	-5.1	2.1	0.8
Inventory investment[1]	-0.5	0.1	0.2	0.1	-1.5	0.9	-0.6
Exports	1.1	2.6	3.3	3.5	2.0	-0.8	-1.6
Industrial exports	2.1	2.9	5.3	5.6	3.0	0.8	-4.9
Imports	2.7	2.7	4.0	4.1	0.5	-0.1	-0.9
Employment, 1,000 persons	2,754	2,752	2,759	2,776	2,754	2,749	2,755
Gross unemployment, 1,000 persons	162	163	163	152	162	163	164
Net unemployment, 1,000 persons	119	128	131	122	118	123	124
Balance of payments, per cent of GDP	5.3	4.6	4.5	4.5	6.2	5.9	5.7
Government balance, per cent of GDP	-3.8	-1.1	-2.9	-2.6	-6.6	-4.2	-2.7
House prices, per cent year-on-year	-3.5	2.0	3.0	2.9	-5.5	-2.7	-0.2
Consumer prices, per cent year-on-year	2.4	1.3	1.9	1.8	2.2	2.4	2.1
Hourly wages, per cent year-on-year	1.8	2.1	2.3	2.7	2.0	1.6	1.7

[1] Contribution to GDP growth.
Note: Calculations based on statistical information up to and including 15 March 2013.

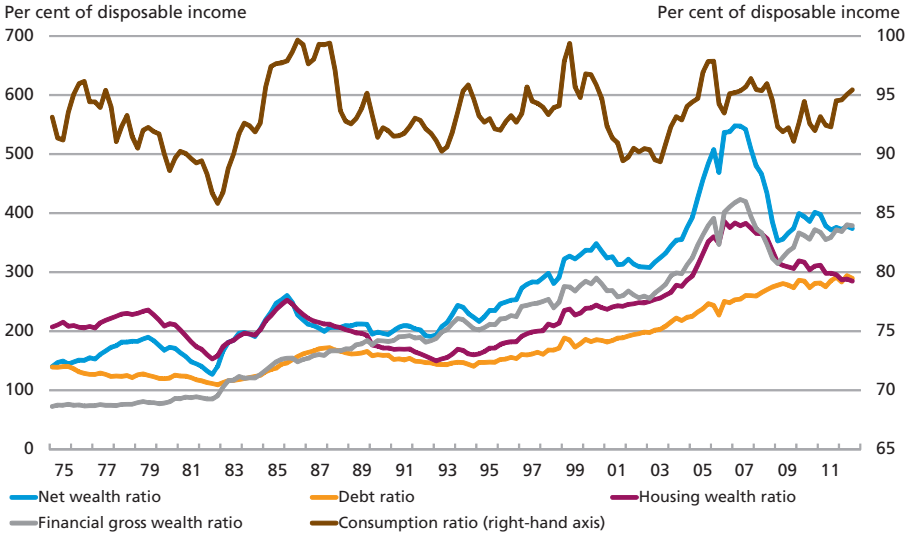
Business investment rose a little, driven by increased investment in plant and equipment, while building and construction investment was unchanged. Public demand also increased in the 4th quarter.

For 2012 overall, GDP fell by 0.6 per cent. This masks growing public demand, private consumption and exports, while residential construction declined. Business investment also rose, primarily on account of substantial imports of aircraft. Hence, final domestic demand increased by 0.6 per cent. However, output did not keep up with demand, since the rise in demand was more than met via inventory reductions and increased imports. Despite the fall in activity, employment and unemployment were virtually unchanged.

The decline of 0.1 per cent in private consumption in the 4th quarter was mainly attributable to a decrease of almost 6 per cent in vehicle sales. Car sales have been rising since early 2010 and are currently at a high level.

Throughout 2012, households reduced consumption and investment. This should be viewed in the light of virtually unchanged wealth and weak development in disposable income as a result of low wage inflation. However, disposable income has been supported by low interest expenses. The households' gross debt relative to disposable income stabilised at a high level in 2012. At the same time, the consumption ratio has risen over the last couple of years and is now slightly above the average since 1975, cf. Chart 19.

THE HOUSEHOLDS' NET WEALTH, DEBT AND CONSUMPTION RATIOS — Chart 19



Note: Disposable income is household disposable income plus net pension contributions. The financial gross wealth ratio and net wealth have been calculated after taxation of pension savings. Debt is the households' financial liabilities. The consumption ratio is shown as a 2-quarter moving average.
Source: Statistics Denmark, Danmarks Nationalbank and own calculations.

In the projection, private consumption grows at a moderate pace. This should be viewed against the backdrop of subdued wage inflation and modest growth in employment. Furthermore, housing prices are expected to rise only little.

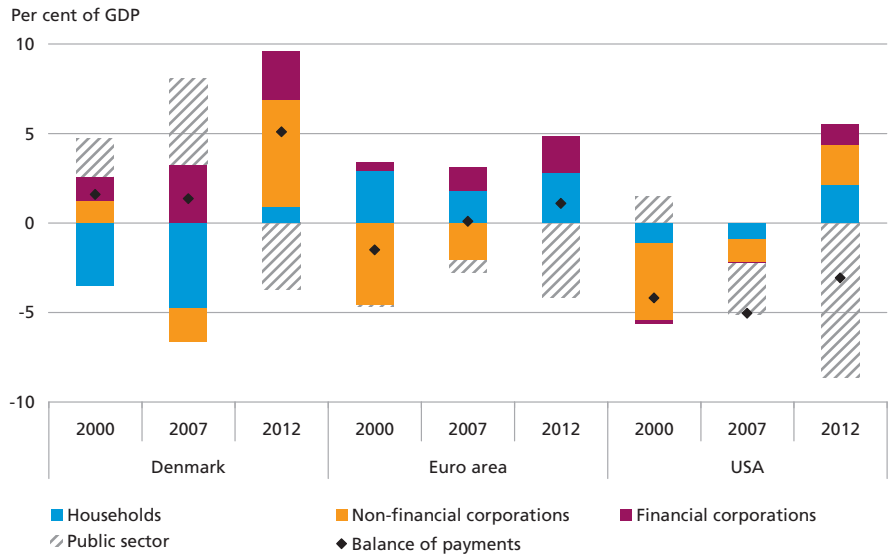
Business investment rose by 0.8 per cent in the 4th quarter. When quarterly fluctuations are eliminated, the level has been more or less constant since 2009. Investment in plant and equipment increased in the 4th quarter, while building and construction investment was at an unchanged low level.

Looking ahead, investment in plant and equipment is expected to rise somewhat as interest rates are low and depreciation rules are favourable in 2012-13. Furthermore, industrial confidence has improved since the autumn, to a slightly positive level in February. Business investment in building and construction is anticipated to increase gradually over the forecast period, but will remain low.

At approximately 9 per cent of GDP in 2012, the financial savings surplus of Danish firms and households is very high, cf. Chart 20. This is in fact the highest level seen in the period covered by the statistics, i.e. since 1971 – higher than during the deep recessions in the early 1980s and 1990s. In comparison, there was a deficit of 3.4 per cent of GDP during the boom in 2007. The private-sector savings surplus normally

NET BORROWING/NET LENDING BY SECTOR IN DENMARK, THE EURO AREA AND THE USA

Chart 20



Note: Total net borrowing/net lending does not necessarily fully match the current-account balance due to e.g. unilateral capital transfers. The figures for 2012 are based on the quarterly national accounts for the first nine months.

Source: Reuters EcoWin, OECD and Statistics Denmark.

mirrors cyclical fluctuations. Due to the automatic stabilisers, the public-sector savings surplus typically shows the opposite pattern so that the fluctuations to some extent cancel out each other.

Compared with the euro area and the USA, the private-sector savings surplus in Denmark is considerable. This is attributable to a substantial savings surplus among non-financial corporations. For financial corporations, the savings surplus has increased in Denmark, the euro area and the USA alike, reflecting the need and requirements for higher solvency in the banking sector after the financial crisis.

A small share of the private-sector savings surplus in Denmark is attributable to the households. Combined with a low level of investment and reimbursement of early retirement contributions, the subdued development in consumption meant that the households' savings surplus was slightly positive in 2012. This is in contrast to the general trend in recent decades, which has been a savings deficit in the household sector.

Exports declined by 1.6 per cent in the 4th quarter, reflecting the weak development in activity in the export markets. Lower wage inflation than abroad increased Denmark's competitiveness in 2012, but the recent strengthening of the effective exchange rate of the krone has had the opposite effect. Consequently, market shares are expected to remain unchanged in the coming quarters, after which activity in the export markets is expected to pick up, leading to higher export growth. Despite spare capacity in the Danish economy, imports rose by more than exports in 2012. One reason was extraordinarily large imports of aircraft for around kr. 10 billion.

Underlying inflationary pressures are moderate, and the annual rate of increase in the Harmonised Index of Consumer Prices, HICP, is expected to decline to 1.3 per cent this year. At the same time, wage inflation is subdued, reflecting factors such as the limited pressure on the labour market.

Overall, GDP growth is expected to be moderate at 0.8 per cent this year, rising to 1.7 per cent in 2014 and 2015. This means that the growth estimates for this year and next year are lower than in the previous forecast, cf. Appendix 2.

The risks to the projection are assessed to be balanced. With a considerable savings surplus in Danish firms, an improved outlook for demand could trigger pronounced growth in investment. The change could be swifter and stronger than expected.

The forecast operates with moderate GDP growth this year, while euro area growth is expected to be slightly negative. This follows a long period in which GDP in Denmark has been in sync with that of the euro area.

IMPACT IN 2013-15 OF THE GOVERNMENT'S VÆKSTPLAN DK Box 5

In February, the Danish government presented its growth plan, Vækstplan DK, aimed at, *inter alia*, boosting employment. This year and next year, this is to be achieved by reintroducing the tax deductibility of home repairs and improvements and raising the limit for renovation of subsidised housing. In our calculations, the former is expected to increase activity in the construction sector by kr. 1.5 billion a year from the 3rd quarter of 2013, while the latter will increase residential investment by a further kr. 0.3 billion in 2013 and 1.25 billion in both 2014 and 2015. Since subsidised housing is not part of the public sector in the national accounts, this will not have any direct impact on public finances. The government also contemplates easing production-related taxes by kr. 2 billion or so a year in 2014-15. Furthermore, corporate tax is to be reduced by 1 percentage point a year, from 25 per cent at present to 22 per cent in 2016. However, set-offs will apply for financial enterprises and energy extraction.

Measures to finance these initiatives include a lower rate of increase in public consumption, which is reduced from the previously planned 0.8 per cent in 2014-15 to 0.4 per cent in 2014 and 0.5 per cent in 2015. Add to this lower wage inflation in the public sector; this has already been incorporated into our forecast.

The expansionary measures will have only a marginal impact on activity in the forecast period. Growth in GDP increases by 0.1 percentage point this year and next year, but decreases by 0.2 percentage point in 2015 when the tax deductibility of home repairs and improvements is due to cease. So according to our calculations, the level of activity in 2015 is the same with and without Vækstplan DK. However, higher activity in 2013-14 will boost private-sector employment by just over 4,000 people and these jobs will more or less be retained in 2015. The activity effect calculated here does not take into account that it will be more attractive to produce and invest in Denmark if corporate tax and indirect taxes are lowered. On the other hand, lower growth in public consumption means that public-sector employment growth will be lower with Vækstplan DK than in our forecast. The net impact of the initiatives will be almost 2,000 fewer jobless people in 2014, when the calculated short-term effect peaks.

The government has proposed that the option to pay early tax on capital pensions at a lower rate is extended to 2014. This would affect the estimates of the government balance in 2013 and 2014, but not otherwise have any impact on the above calculations.

In February, the Danish government presented its proposals for reforming the student grant system and cash benefits, and its Vækstplan DK (Growth Plan DK) proposes a number of initiatives aimed at the business sector, including construction. No political agreement has been concluded, so the proposals have not been incorporated into the forecast. Calculations based on Vækstplan DK show that these initiatives would lift GDP growth marginally in 2013 and 2014, but reduce it slightly in 2015, cf. Box 5.

The housing market

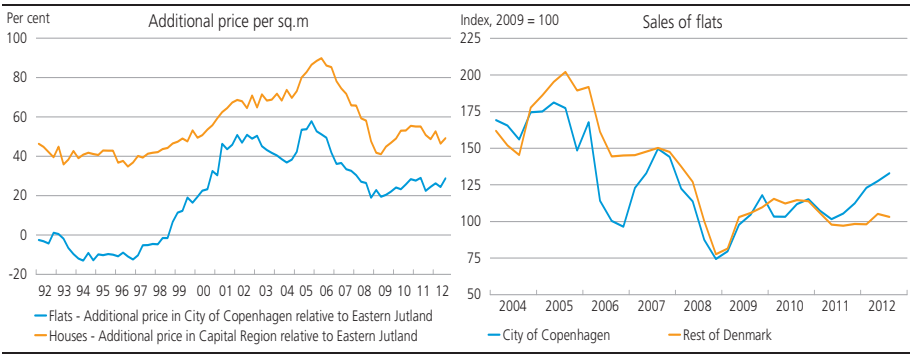
Housing prices have stabilised. Seasonally adjusted house prices have fluctuated at around the same level since the spring of 2012, while prices for flats have risen. This should be seen in the context of low interest rates, which have contributed to reducing the housing burden. For homeowners with fixed-rate loans with amortisation, the housing burden is well below the average since 1980. Housing prices are estimated to be below the level indicated by e.g. the current income, interest-rate and tax levels. The forecast predicts slightly higher housing prices.

Turnover of houses remains low. The supply has been flat since September 2012, following a one-year declining trend. Time on market has increased a little over the last year and is long at 300 days. For owner-occupied flats, turnover has risen slightly since the summer of 2011, and over the same period the supply has fallen by more than one third, to a relatively low level compared with recent years. Time on market remains long, although it has decreased to 200 days.

Developments in the housing market mask considerable geographical differences. The market is picking up in and around Copenhagen, while it is stagnant in many other parts of Denmark. Rising prices in and around the capital mean that the spread in prices per square metre relative to the rest of Denmark has stopped narrowing, cf. Chart 21 (left). This has followed a considerable reduction since 2006, after a period in the mid-2000s when prices per square metre in the Copenhagen area and North Zealand rose at a much faster pace than in the rest of the country.

Regional differences in the housing market are also reflected in turnover. Sales of owner-occupied flats in Copenhagen have risen consider-

REGIONAL DIFFERENCES IN HOUSING PRICES AND SALES — Chart 21



Note: Seasonally adjusted quarterly data. The most recent observations are from the 3rd quarter of 2012. In the left-hand chart, prices in Eastern Jutland have been used as indicators of prices outside the Copenhagen area.
Source: Association of Danish Mortgage Banks, Danish Association of Chartered Estate Agents, Danish Mortgage Banks' Federation and Danish Bankers Association.

ably since mid-2011, while the level has been virtually constant in the rest of Denmark, cf. Chart 21 (right).

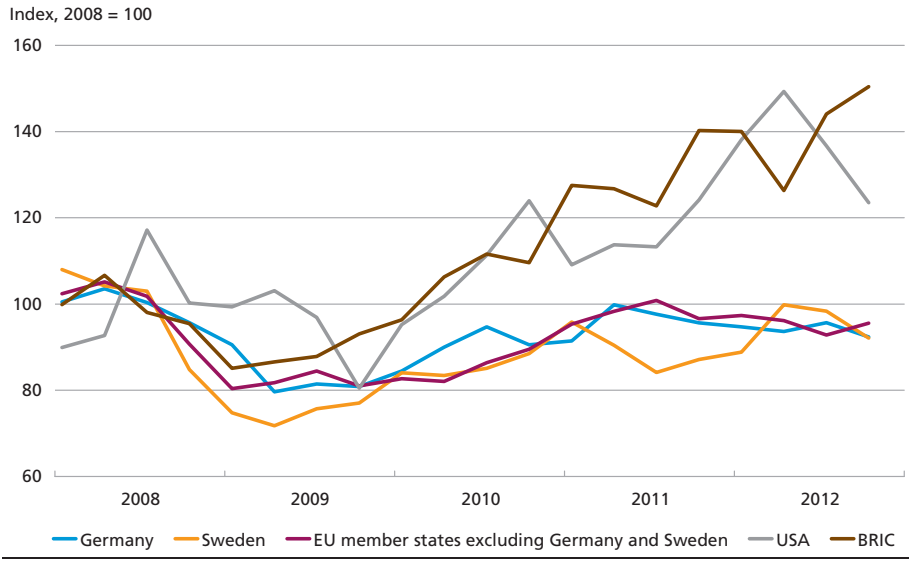
Foreign trade and balance of payments

Exports fell by 1.6 per cent and imports by 0.9 per cent in the 4th quarter. The downturn in exports reflected a large decline in industrial exports, which was only partially offset by rising energy exports. The latter were back at their normal level following a fall in the 3rd quarter due to maintenance work at North Sea production fields.

The weak development in activity among Denmark's trading partners towards the end of 2012 put a damper on Danish exports. The value of exports of goods to EU member states decreased, partly due to lower exports to both Sweden and Germany, which are Denmark's largest trading partners, cf. Chart 22. Exports to the USA also fell after having risen steadily since the beginning of 2010. On the other hand, sales of Danish goods to the BRIC countries – Brazil, Russia, India and China – rose, continuing the positive trend since 2009. Growth in exports to the BRIC countries is not attributable to an increasing Danish market share, but rather to higher growth in these countries than among Denmark's traditional trading partners.

Growth in the Danish export markets is expected to be modest in the coming years, cf. Appendix 1. This will entail moderate growth in Danish

VALUE OF DANISH EXPORTS OF GOODS TO SELECTED COUNTRIES Chart 22



Note: Seasonally adjusted quarterly observations. The BRIC countries are Brazil, Russia, India and China.
Source: Statistics Denmark.

exports, which are expected to increase by 2.6 per cent in volume terms this year, rising to 3.5 per cent by 2015.

The current-account surplus was kr. 26.7 billion in the 4th quarter, which was in line with the 4th quarter of 2011.

However, a notable decrease was seen in December. This was caused by a fall in the value of goods exports, and the trade surplus declined to kr. 4.1 billion, the lowest level since 2008. In January the value of goods exports rose, and the trade surplus was kr. 6.6 billion.

In 2012, the balance of payments showed a surplus of kr. 95 billion, corresponding to 5.3 per cent of GDP. This was almost kr. 6 billion lower than in 2011. The surplus in 2012 comprised a surplus of kr. 82 billion on goods and services, a surplus of kr. 58 billion on investment income, a deficit of kr. 10 billion on the income account and a deficit of kr. 34 billion on current transfers. The substantial investment income shows that Denmark has improved its international investment position over a number of years, cf. the article "Denmark as a Creditor Nation" in this Monetary Review.

The current-account surplus is high and is expected to decline only little in the coming years. The reason is that domestic demand is expected to grow at more or less the same pace in Denmark and abroad.

Public finances

Public consumption is assumed to grow by 1.0 per cent this year, declining to 0.8 per cent in 2014 and 2015. In recent years growth has been lower; it was even negative in 2011. From 2014 onwards, the Budget Act, which lays down 4-year current spending limits for central, regional and local government, will help to prevent higher-than-planned consumption growth.

Public investment is expected to decline this year, but will remain high as a ratio of GDP. Investment will, to some extent, be buoyed up by the agreement between Local Government Denmark and the central government, which allows local governments to reallocate up to kr. 2 billion from services to construction projects.

The government deficit is estimated at kr. 19 billion this year, equivalent to 1.1 per cent of GDP. This should be viewed in the light of the technical assumption that the option to pay tax on existing capital pension schemes this year at a reduced rate will bring revenue of kr. 40 billion in early tax payments. The estimate is subject to considerable uncertainty. If this extraordinary revenue is disregarded, Denmark could have difficulty in observing the EU recommendation to reduce the government deficit to 3 per cent or less of GDP in 2013.

According to the government, the structural budget balance will improve by 1.5 per cent of GDP in the period 2011-13. Hence, it looks as if Denmark will just observe the EU recommendation, but there is no scope to ease fiscal policy further without violating the EU's fiscal rules.

Compliance with the recommendation is a necessary, but not sufficient condition if the excessive deficit procedure is to be abrogated for Denmark. In its spring 2014 forecast, the European Commission will also assess that Denmark will not exceed the reference limit of 3 per cent of GDP in 2014 and 2015. In Danmarks Nationalbank's projection, the government deficits in those two years are estimated at 2.9 and 2.6 per cent, respectively, of GDP.

The labour market

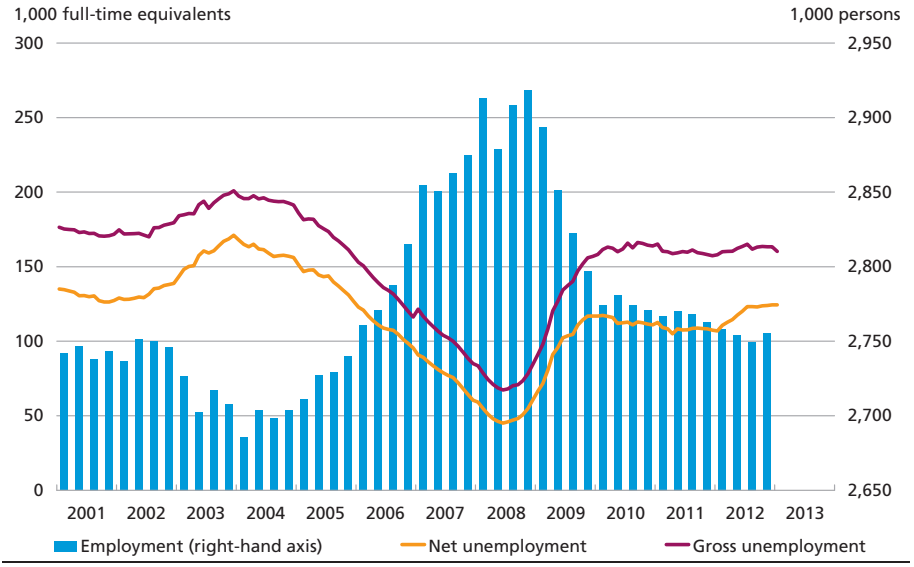
According to the preliminary national accounts, seasonally adjusted employment rose by 0.2 per cent from the 3rd to the 4th quarter. 2,200 more people were employed in the private sector and 3,600 more in the public sector. This is the first increase in public-sector employment since mid-2010, and the increase is expected to continue at a moderate pace throughout the forecast period, while the private sector will follow suit from 2014 as activity picks up.

Gross unemployment has been more or less flat since early 2010. It has stagnated at a somewhat lower level than before the overheating in 2006-08, cf. Chart 23. In January 2013, gross unemployment was 160,200, corresponding to 6.0 per cent of the labour force. This was 3,100 lower than in December. Gross unemployment comprises recipients of unemployment benefits as well as those receiving cash benefits who are ready to enter the labour market. The latter include people receiving the newly introduced training allowance targeted at people whose period of entitlement to unemployment benefits expires in the 1st half of 2013. In accordance with the Fiscal Consolidation Agreement from the summer of 2010, entitlement to unemployment benefits has been reduced from four to two years. This will result in lower structural unemployment.

Unemployment is expected to rise slightly in the coming quarters and then to fall from mid-2014 in step with the expected economic recovery.

Capacity pressures in the economy are often assessed on the basis of the output gap, which indicates how much actual output exceeds potential output, i.e. the output level which the economy can sustain without inflationary pressures arising. Danmarks Nationalbank estimates the current output gap at around -2½ per cent of potential GDP. This is because productivity and the labour force are below their structural levels and actual net unemployment is some 15,000 persons above its

UNEMPLOYMENT AND EMPLOYMENT Chart 23



Note: Seasonally adjusted data. Employment according to the national accounts. The most recent observations are from the 4th quarter of 2012 for employment and January 2013 for unemployment.
Source: Statistics Denmark.

structural level. In the forecast period, the output gap gradually narrows, but it is not expected to have closed completely by end-2015. Initially the narrowing of the output gap is expected to be effected via a lift in productivity towards its structural level.

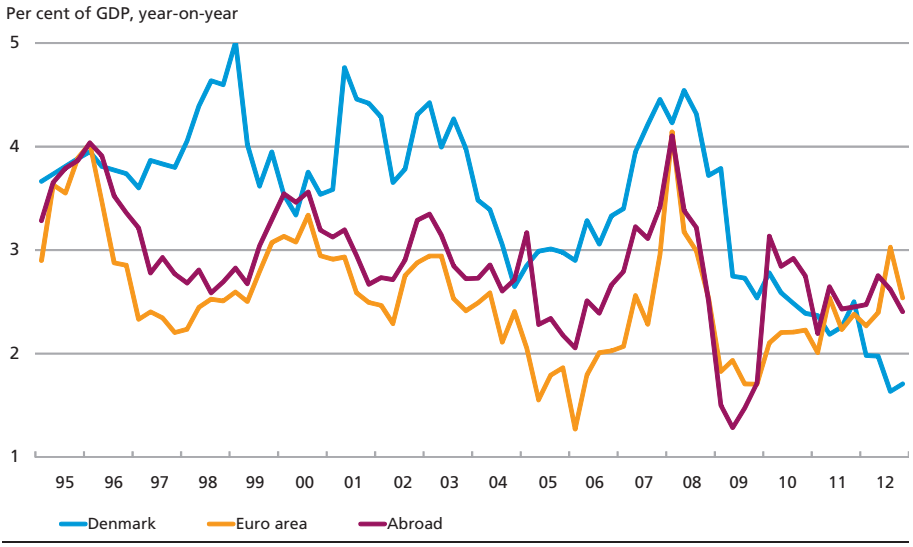
Wages

In both the 3rd and 4th quarters of 2012, private-sector wages rose by 1.4 per cent year-on-year. Wage inflation has generally been declining since 2008.

In the competitive manufacturing sectors, annual wage inflation rose a little in the 4th quarter, to 1.7 per cent. Weighted by the krone-rate index, the wages of Denmark's trading partners rose by 2.4 per cent year-on-year in the 4th quarter. This means that Danish wage increases were lower than those abroad throughout 2012, cf. Chart 24. However, for many years the opposite was the case – and at times the rate of increase was substantially higher in Denmark. Since the excess wage increases in Denmark were not based on stronger productivity growth than abroad, this led to a pronounced deterioration of wage competitiveness.

In the public sector, wages rose by 2.3 per cent year-on-year in the 4th quarter. The rate of increase was 1.8 per cent in central government and 2.4 per cent in regional and local government. In general, public-sector

INDUSTRIAL WAGES IN DENMARK AND ABROAD Chart 24



Note: Wages in the euro area and abroad are calculated by applying the weights used for the real effective krone rate.
Source: Statistics Denmark, Confederation of Danish Employers, OECD and own calculations.

wages rose by more than private-sector wages in 2012, which means that the regulatory mechanism will curb public-sector wage inflation in 2013. The new 2-year collective agreements for the public sector which are to take effect on 1 April 2013 also operate with moderate wage increases.

In the forecast, wage inflation is expected to remain subdued. This reflects the low pressures on the labour market and the existing collective agreements for the area covered by the Danish Confederation of Trade Unions/the Confederation of Danish Employers, which run until the spring of 2014. Annual wage inflation is expected to be 2.1 per cent this year, rising to 2.7 per cent in 2015.

Prices

Annual HICP inflation was 1.0 per cent in January and February, cf. Table 3. This was considerably lower than in December 2012, when HICP inflation was 1.9 per cent, cf. Chart 25. Just under half of the decline is attributable to lower contributions from indirect taxes, e.g. because the fat tax was abolished at the turn of the year. Moreover, HICP inflation was pushed down by price falls for insurance products and lower increases in bank fees than one year ago.

Core inflation, which excludes the development in food and energy prices, was 0.7 per cent in February, compared with 0.4 per cent in Janu-

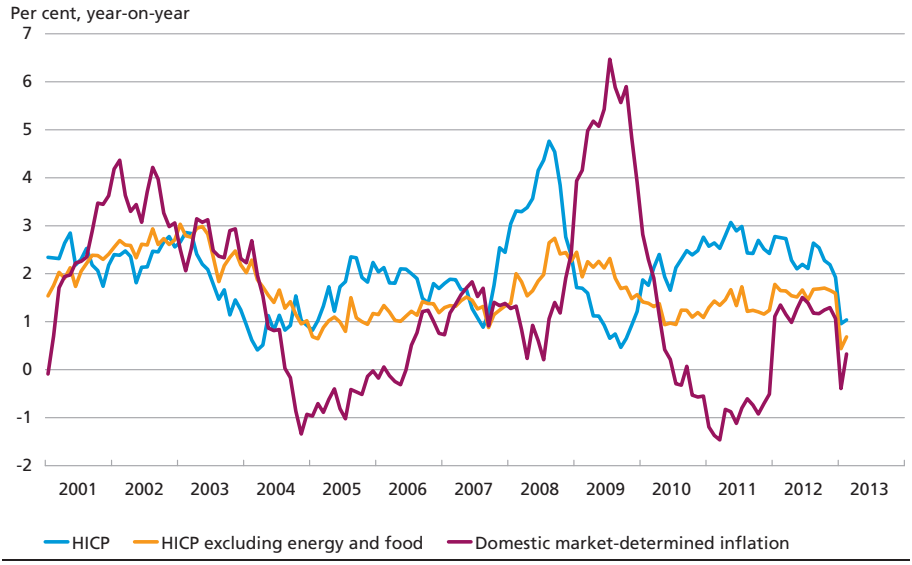
CONSUMER PRICES — Table 3

Per cent, year-on-year	Weight[1]	2012	2013	2014	2015	2012/13					
						Q4	Q1	Q2	Feb.	Mar.	Apr.
HICP		2.4	1.3	1.9	1.8	2.1	1.1	1.3	1.0	1.0	1.2
Index of net retail prices	100	1.9	1.4	1.9	1.7	1.8	1.2	1.5	1.2	1.1	1.4
Exogenous:											
Energy	7.6	3.2	0.7	-1.1	-1.6	1.5	0.0	3.5	1.8	-1.4	1.9
Food	13.7	2.5	2.9	2.5	2.5	2.8	3.1	2.9	2.4	2.7	3.2
Adm. prices	4.5	2.3	2.4	2.0	2.4	2.4	2.8	2.5	2.6	2.7	3.1
Rent	22.3	2.6	2.2	2.6	2.2	2.6	2.4	2.4	2.3	2.3	2.3
Excl. exogenous	51.9	1.1	0.7	1.9	1.7	1.2	0.2	0.4	0.3	0.4	0.4
Imports	14.7	0.8	0.6	1.6	1.4	1.1	0.3	0.3	0.1	0.1	0.2
IMI	37.2	1.2	0.7	2.0	1.8	1.2	0.1	0.4	0.4	0.5	0.5

Note: The most recent actual figures are from February 2013.
[1] Weight in the index of net retail prices, per cent.

ary and 1.6 per cent in December. Domestic market determined inflation, IMI, which reflects the development in payrolls and profits, also fell sharply in January, to -0.4 per cent, and was only marginally positive in February. This shows that the explanation for the weak price development in early 2013 can be found in the Danish market, not in changes in import prices or administered prices.

PRICE DEVELOPMENTS — Chart 25



Note: HICP is the EU's Harmonised Index of Consumer Prices.
Source: Statistics Denmark.

The price index for the domestic supply of goods, the wholesale price index, illustrates price developments in the first link of the sales chain and is stated net of taxes. In February, it was 1.1 per cent higher than one year earlier, which was somewhat below the year-on-year increase of 2.9 per cent in December. The annual increase in February was primarily driven by higher prices for food products.

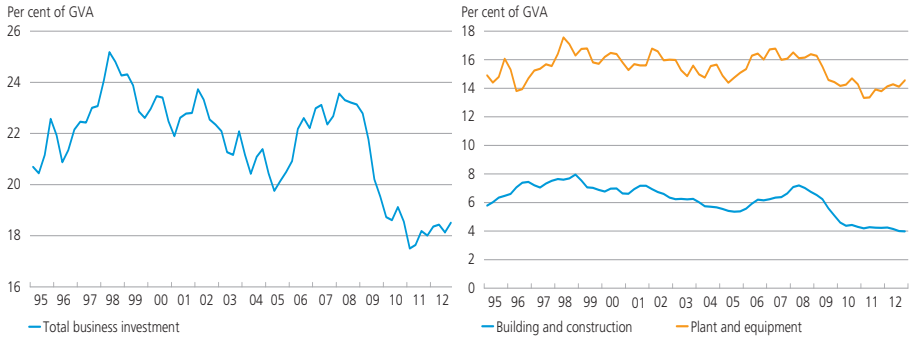
On balance, underlying inflationary pressures in the Danish economy are weak. Consequently, the annual rate of increase in HICP is expected to be 1.3 per cent this year and just below 2 per cent in 2014 and 2015.

Business investment in recent years

Business investment plummeted during the economic downturn in 2008-09, and since then its share of gross value added, GVA, has been below the average for the last couple of decades, cf. Chart 26 (left). The decline affected business investment in both plant and equipment and building and construction, but subsequently there has been a clear diverging pattern, cf. Chart 26 (right). The investment ratio for building and construction has continued the downward trend seen since the late 1990s and was low in 2012. Conversely, the investment ratio for plant and equipment has risen in the last couple of years and was only slightly below the average since 1995 at the end of 2012.

It is normal for business investment to be cyclically sensitive, cf. Chart 27 (left). So investment in plant and equipment began to rise again in 2010, reflecting renewed growth in activity. The moderate growth in this investment category in the last couple of quarters should be seen in the context of the very weak development in activity. But building and construction investment has continued to fall, although the curve has flattened somewhat.

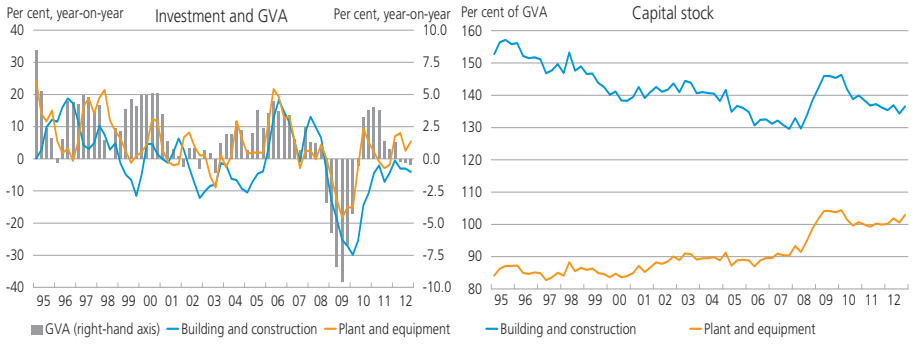
INVESTMENT RATIO FOR TOTAL BUSINESS INVESTMENT AND BROKEN DOWN BY PLANT AND EQUIPMENT AND BUILDING AND CONSTRUCTION — Chart 26



Note: The series are shown as a 2-quarter moving averages. GVA is gross value added.
Source: Statistics Denmark.

INVESTMENT IN AND CAPITAL STOCK OF PLANT AND EQUIPMENT AND BUILDING AND CONSTRUCTION

Chart 27



Note: The series are measured as chain values in 2005 kroner. The left-hand chart shows annual growth rates as 2-quarter moving averages. GVA is gross value added.

Source: Statistics Denmark and own calculations.

The tendency for investment in plant and equipment to rise ahead of building and construction investment was also seen during the upswing in the 2000s. This emphasises that firms can increase their capacity relatively rapidly and efficiently during an upswing by investing in new machinery and technology. Moreover, at the beginning of an upswing there are usually many vacant business premises which can be taken over without requiring heavy investments. As these options are exhausted, it becomes more attractive to invest in buildings and facilities. In addition, building projects take time to plan, which further delays the increase in investment. Economic activity has moved forward at a relatively weak pace since 2010 so it would seem natural that firms have not yet increased their building investment.

Investment increases the capital stock, while depreciation due to wear and tear and obsolescence reduces it. Over the past 10 years, investment in plant and equipment has been sufficient to maintain the plant and equipment share of GVA, cf. Chart 27 (right). However, the share rose in 2008 as a result of the drastic decline in GVA; this increase has only partially been reversed.

Because building and construction investment has generally been low since 1995, this category accounts for a decreasing share of GVA. In other words, Danish trade and industry has moved towards less building-intensive production. This is to a large extent due to the service sectors, where the buildings' share of GVA has been decreasing, while it has been virtually unchanged in the manufacturing sectors. Services play an increasingly important role in the economy. This has put a structural damper on building investment, and its declining share of GVA should be viewed in that light.

Economic policy

Denmark is positioned for growth. Current-account surpluses are robust and the underlying position of the public finances will be almost balanced this year. The output gap is somewhat negative, but will gradually be closed in the coming years. Despite an increase during the economic downturn, unemployment is moderate and only slightly above its structural level. Low wage inflation has also helped to improve competitiveness.

The government has tabled proposals to reform the student grant system and cash benefits and presented its growth plan, Vækstplan DK. These plans include structural improvement of the potential for growth, employment and investment. It is important to stay on the reform path.

The point of departure for Vækstplan DK is observance of the EU recommendation on excessive budget deficits. The government envisages lower growth in public spending. This will require sharp prioritisation and is important in relation to public finances. It will also to some extent redress the pronounced increase in the ratio of public spending to GDP seen in connection with the economic downturn in 2008-09.

Some of the Vækstplan DK initiatives this year and in the coming years are aimed at the construction sector. Previously, shortage of labour in this sector has been seen to push up wages in other sectors, including the manufacturing sectors competing with abroad. At the same time, the large private-sector savings surplus entails a considerable potential for higher domestic demand. It is not possible to predict exactly when it will materialise, but the change could be significant. It is decisive to developments many years ahead to respond to such a cyclical reversal with due care – especially if activity increases in a situation where interest rates remain very low.

The EU is working to establish a banking union with a view to preventing financial crises and containing their impact should they nonetheless arise. Danmarks Nationalbank supports the overall vision of a banking union, which makes good sense in an integrated financial market such as the EU.

Initially, focus has been on establishing a single supervisory mechanism. Non-euro area EU member states will be able to opt in, with due consideration of differences in relation to the euro area member states. It would be in Denmark's interest to participate in this cooperation and to ensure a high level of ambition in the EU in terms of developing the crisis management directive, a credible crisis management mechanism for distressed banks, and in the longer term presumably also a single deposit guarantee scheme.

Denmark already has a resolution scheme which has proved its worth, and Denmark has retained its high credit rating throughout the crisis. It is important to establish a single bank resolution framework in Europe.

APPENDIX 1: ASSUMPTIONS IN THE FORECAST FOR THE DANISH ECONOMY

The forecast has been produced using the macroeconometric model MONA[1] and is based on available economic statistics, including Statistics Denmark's preliminary quarterly national accounts for the 4th quarter of 2012. The projection is based on a number of assumptions concerning the international economy, financial conditions and fiscal policy.

The international economy

The international organisations expect weak growth in global activity this year and slightly stronger growth next year. Euro area growth is expected to be negative this year. However, growth among Denmark's most important trading partners, including Germany and Sweden, is expected to be positive this year. Against that background, the market for Danish exports is assumed to grow by 3.9 per cent this year, rising to more than 6 per cent in 2014 and 2015, cf. Table 4.

The weak growth outlook means that foreign prices are expected to rise at a modest pace. The same applies to price developments in the export market. Wage inflation abroad is estimated to rise only moderately throughout the projection period due to continued weak labour markets in most countries.

Interest rates, exchange rates and oil prices

Developments in short- and long-term interest rates in the forecast are based on the expectations of future developments that can be derived from the yield curves in the financial markets. Short-term Danish interest rates are expected to mirror money-market interest rates in the euro area. The 3-month money-market interest rate, measured by the CITA swap rate, was just below 0 per cent at the beginning of March and is expected to fall a little this year, followed by a slight increase in 2014.

The average bond yield is an average of the yields to maturity on outstanding government and mortgage bonds. It was 1.5 per cent at the beginning of March and is expected to rise to 2.7 per cent by the end of 2015.

The effective krone rate has strengthened since mid-August, although it has weakened a little since the beginning of February. In the projection, the dollar rate and the effective krone rate are assumed to remain constant at the level from the beginning of March.

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

OVERVIEW OF FORECAST ASSUMPTIONS Table 4

	2012	2013	2014	2015
International economy:				
Export market growth, per cent year-on-year	1.8	3.9	6.2	6.3
Export market price[1], per cent year-on-year	0.9	1.2	0.8	0.4
Foreign price[2], per cent year-on-year	1.1	1.2	0.8	0.4
Foreign hourly wages, per cent year-on-year	2.6	2.1	2.3	2.6
Financial conditions, etc.:				
3-month money-market interest rate, per cent p.a.	0.1	-0.1	0.0	0.1
Average bond yield, per cent p.a.	1.7	1.7	2.1	2.6
Effective krone rate, 1980 = 100	100.6	101.5	101.5	101.5
Dollar exchange rate, DKK per USD	5.8	5.7	5.7	5.7
Oil price, Brent, USD per barrel	111.6	108.7	101.6	97.5
Fiscal policy:				
Public consumption, per cent year-on-year	0.5	1.0	0.8	0.8
Public investment, per cent year-on-year	10.6	-8.8	-4.8	0.5
Public-sector employment, 1,000 persons	828	834	839	843

[1] Weighted import price for all countries to which Denmark exports.
[2] Weighted export price for all countries from which Denmark imports.

At the time of forecasting, the oil price was 111 dollars per barrel. In the projection, the oil price is assumed to develop in line with futures prices, falling to 96 dollars per barrel by the end of 2015.

Fiscal assumptions

The fiscal assumptions in the forecast are based on the planned fiscal policy, including the Finance Act for 2013, local and regional government budgets for 2013 and the agreement between Local Government Denmark and the central government, which allows local governments to reallocate up to kr. 2 billion from services to construction projects. The government's growth plan, Vækstplan DK, has not been incorporated into the forecast.

Technically it is assumed that the option to pay tax on existing capital pension schemes this year at a reduced rate will yield kr. 40 billion in early revenue. The government's proposal to extend this option so that it will also apply in 2014 has not been incorporated into the forecast.

Real public consumption is assumed to rise by 1.0 per cent this year and 0.8 per cent in 2014 and 2015. Public investment is expected to decline this year and next year.

APPENDIX 2: REVISIONS IN RELATION TO THE PREVIOUS FORECAST

Estimated GDP growth has been revised substantially downwards this year and marginally downwards in 2014 compared with the December forecast, cf. Table 5, which shows a breakdown of the revisions to GDP and consumer prices by key background factors.

The lower growth estimate for 2013 (0.5 percentage point) reflects, *inter alia*, Statistics Denmark's registration of an unexpectedly strong fall in GDP in the 4th quarter of 2012. As a result, annual growth in 2012 was 0.2 percentage point lower than projected in Danmarks Nationalbank's December forecast, and the point of departure for 2013 becomes weaker, indicating lower growth this year when compared with 2012 overall. This effect is included in the "Other factors" item. Furthermore, since December the euro and hence also the krone have strengthened against the currencies of Denmark's trading partners. This makes Danish goods more expensive outside the euro area, thereby weakening exports while also increasing imports at the expense of Danish goods. This will curb GDP growth in both 2013 and 2014. Demand in the export markets has changed a little during 2012-13, which has led to slight shifts in growth between these two years – but the underlying trend is more or less unchanged compared with the December forecast.

Consumer price inflation (HICP) has been adjusted downwards by 0.4 percentage point, to 1.3 per cent this year, reflecting an unexpectedly large fall in inflation in January, predominantly as a result of lower growth in payrolls and profits. Firms are expected to restore profits in the coming quarters, which is one of the reasons why expected inflation in 2014 has been adjusted marginally upwards, from 1.8 to 1.9 per cent.

REVISIONS IN RELATION TO THE PREVIOUS FORECAST Table 5

	GDP			Consumer prices, HICP		
Per cent, year-on-year	2012	2013	2014	2012	2013	2014
Forecast, December 2012	-0.4	1.3	1.8	2.4	1.7	1.8
Contribution to revised estimate from:						
Export market growth	-0.1	0.1	-0.1	0.0	0.0	0.0
Interest rates	0.0	0.0	0.0	0.0	0.0	0.0
Exchange rates	0.0	-0.1	-0.2	0.0	0.0	0.0
Oil prices	0.0	0.0	0.0	0.0	0.0	0.0
Other factors	-0.1	-0.4	0.1	-0.1	-0.3	0.1
This forecast	-0.6	0.8	1.7	2.4	1.3	1.9

Note: The transition from the previous to this forecast may not add up due to rounding. "Other factors" includes data revisions.

Long-Term Yield Spreads to Germany

Kim Abildgren, Lars Risbjerg and Casper Ristorp Thomsen, Economics, David Altenhofen and Jane Lee Lohff, Market Operations, and Nicolaj Hamann Christensen, Jacob Wellendorph Ejsing, Signe Skovgaard Hansen and Susanne Hougaard Thamsborg, Financial Markets

INTRODUCTION AND SUMMARY

In the years leading up to the introduction of the euro, the government yield spreads among the euro area member states were virtually eliminated. The narrowing of yield spreads took place despite the remaining considerable variations between the euro area member states in terms of government debt levels and the extent of macroeconomic imbalances. In light of recent years' debt crisis in certain European countries, there is renewed focus on credit risk in the pricing of government bonds from different sovereign issuers.

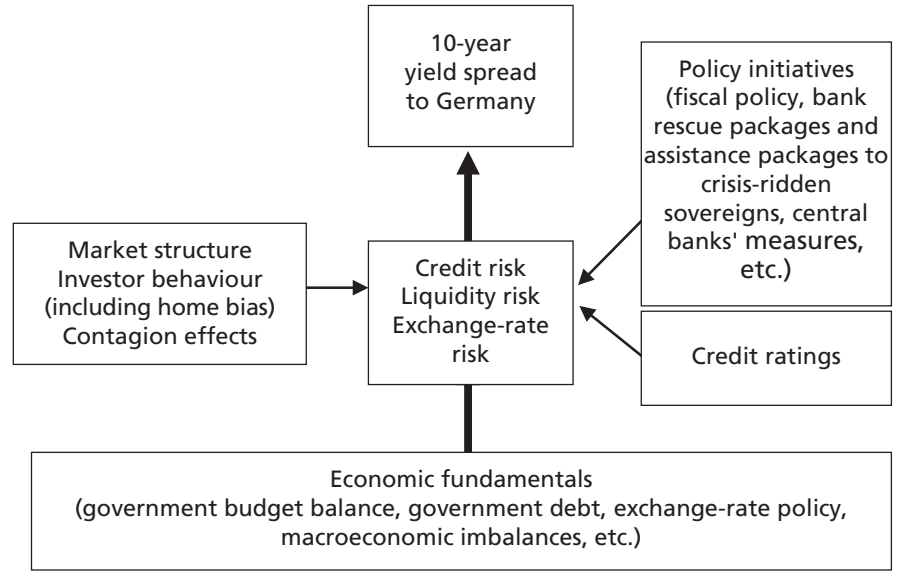
Cross-country yield spreads reflect differences in the credit, liquidity and exchange-rate risks that are perceived as being inherent in investment in the respective government bonds. The size of yield spreads depends on historical and expected future patterns in countries' macroeconomic fundamentals, on the one hand, and on market-related and institutional factors such as market structure, regulation and other policy initiatives, investor behaviour and contagion effects, on the other, cf. Chart 1.

Part 2 of this Monetary Review presents four analyses[1] with focus on various determinants of the development in long-term government yield spreads across countries in the short and the long term. This overview article contains a non-technical summary of the most important findings and conclusions of the articles.

According to the analysis, long-term yields tend to be lower in countries with sound public finances and macroeconomic balances under control than in countries with substantial government debts and macroeconomic imbalances. This emphasises that fiscal consolidation and addressing macroeconomic imbalances are important if the European coun-

[1] The analyses have benefited from lectures and discussions at the conference "The European Sovereign Debt Crisis: Background and Perspectives", which was held in Copenhagen by UC Santa Cruz, Copenhagen Business School and Danmarks Nationalbank on 13-14 April 2012. The conference documents are available at the website: https://conference.cbs.dk/index.php/crisis/crisis/index.

DETERMINANTS OF 10-YEAR YIELD SPREADS Chart 1



tries that have been hit by the debt crisis in recent years are to obtain low government yield spreads to Germany.

However, the analysis also shows that government yield spreads are far from always driven only by economic fundamentals. In the years up to and after the introduction of the euro, several southern European countries' long-term yield spreads to Germany narrowed to a very low level clearly below the level warranted by real economic factors according to the estimated models. The market did not focus on the macroeconomic imbalances which were accumulating in the countries that were later hit hard by the debt crisis.

Conversely, during the recent sovereign debt crisis, some crisis-ridden countries' yield spreads to Germany have been wider than the spreads that can be explained by economic fundamentals. This indicates that yield spreads have been more influenced by market-related and institutional factors in certain periods.

The analysis also indicates that contagion effects across euro area member states have caused rising interest rates in the most heavily indebted member states to be reflected in higher interest rates in other member states with large government debts. This has rendered it difficult for the debt-ridden member states to obtain sustainable market financing. As a result, global financial firewalls have been created as part of the efforts to address the sovereign debt crisis. These include European support facilities (EFSF, European Financial Stability Facility, and ESM, European Stability Mechanism), on the one hand, and IMF lending, on the other.

The analyses in this article focus on the determinants of the 10-year yield spread to Germany for selected European countries. Box 1 discusses the real economic factors that, in principle, determine the level of

REAL ECONOMIC DETERMINANTS OF THE GERMAN LONG-TERM GOVERNMENT BOND YIELD — Box 1

The German long-term government bond yield can be assumed to have two elements:
(a) The long-term risk-free interest rate.
(b) A premium for the credit and liquidity risks perceived by the investors as being associated with bonds issued by the German government.

Re (a): The long-term risk-free interest rate

According to the expectations hypothesis, the long-term risk-free interest rate can be calculated as an average of the expected future short-term risk-free interest rates over the relevant horizon plus a premium reflecting the uncertainty about the development in the future short-term risk-free interest rates in the given period.

The short-term risk-free interest rate can also be assumed to consist of two parts: inflation and real interest rates. For euro area member states, the inflation element can, in practice, be equated with the ECB's target of keeping inflation below, but close to, 2 per cent p.a. According to the theory of economic growth, the real-interest-rate element corresponds to real growth in the potential gross domestic product, GDP, plus a (usually modest) time preference premium. The time preference premium depends on the households' willingness to substitute between their current and future consumption. The sum of the inflation and real-interest-rate elements is approximately equal to the economy's nominal potential growth rate.

The premium for the uncertainty about the future course of the short-term risk-free interest rate reflects firstly an inflation risk and thus the credibility of the ECB's monetary policy. Secondly, it reflects uncertainty about the future real growth in potential GDP, which is influenced by technological advances and the use of new technology, among other factors.

Re (b): Credit and liquidity risk premium

The credit risk on German government bonds is the risk of the German government failing to meet its payment obligations. The credit risk will depend on the level of government debt and the expected future budget deficits in Germany. Macroeconomic imbalances (e.g. large current-account deficits) may be indicators of future budget deficits, given the risk that macroeconomic imbalances may entail future public spending.

Liquidity risk is the risk that it will not be possible to sell the bonds without considerable costs and loss of value. Real economic determinants of liquidity risks are difficult to pinpoint, but one indicator may be the absolute size of Germany's government debt: the larger the bond market, the better the opportunities, all else equal, of trading in securities without any notable effect on the price.

In conclusion, economic growth, the credibility of the ECB's monetary policy and the perception of fiscal sustainability in Germany are the principal determinants of long-term government yields in Germany.

German long-term government yields. As will appear, economic growth, the credibility of the ECB's monetary policy and the perception of fiscal sustainability in Germany are the principal determinants of long-term government yields in Germany.

MACROECONOMIC FUNDAMENTALS

Given free capital flows, the long-term nominal yield spread between government bonds from two countries depends on the investor perception of the differences in credit risk on the bonds (i.e. the risk of the issuer failing to meet its payment obligations), liquidity risk (i.e. how easily the bonds can be sold without significant costs and loss of value) and exchange-rate risk (if the bonds are denominated in different currencies). In the longer term, these factors will predominantly be determined by differences in economic fundamentals between the countries, e.g. variations in government debt levels and macroeconomic imbalances.

Abildgren and Thomsen (2013) analyse the relationship between developments in 10 countries' 10-year yield spreads to Germany and economic fundamentals since the early 1990s.

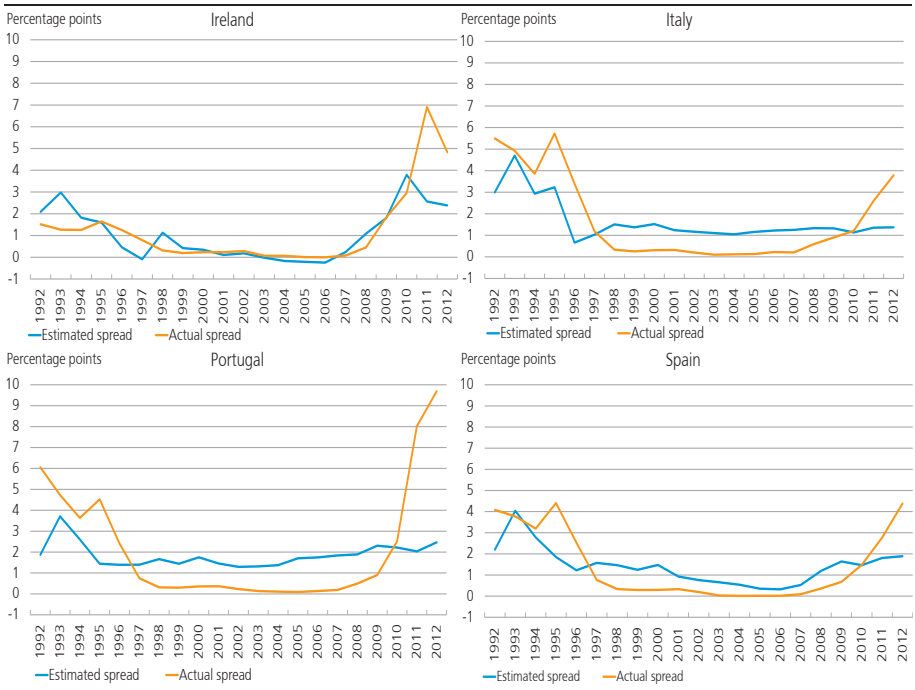
The analysis shows that the larger a country's government budget deficit and debt as a ratio of GDP are, compared with Germany's, the wider the yield spread to Germany is. An increase in the current-account deficit as a ratio of GDP calculated relative to Germany also widens the yield spread.

Using one of the regression models in the analysis, it is possible to estimate the long-term yield spreads to Germany that would have prevailed historically if yield spreads were determined solely by the government budget deficit and debt and (before the introduction of the euro) the bilateral development in exchange rates vis-à-vis Germany. These estimated yield spreads to Germany are compared with the actual yield spreads in Charts 2 and 3.

For Southern European countries, there is a clear tendency for actual yield spreads to be lower than estimated yield spreads in the years from the late 1990s to the outbreak of the debt crisis in recent years. In the period up to the introduction of the euro, yield spreads between the euro area member states were virtually eliminated, although considerable cross-country differences remained as regards fiscal sustainability and marked deterioration of the current account in some member states. The market did not focus on the macroeconomic imbalances which were accumulating in the countries that were later hit hard by the debt crisis.

ESTIMATED AND ACTUAL YIELD SPREADS TO GERMANY – COUNTRIES HARD HIT BY THE DEBT CRISIS

Chart 2



Note: Estimated spreads are calculated based on a regression model in which government budget deficits as a ratio of GDP and gross government debt for the preceding year as a ratio of GDP are used as indicators of credit risk. Both the budget deficit and the gross debt have been calculated relative to Germany, e.g. as the government budget deficit in Ireland as a ratio of GDP less the government budget deficit in Germany as a ratio of GDP. The applied indicator of exchange-rate risk for the period 1991-98 is the year-on-year change in the bilateral exchange rate vis-à-vis Germany.

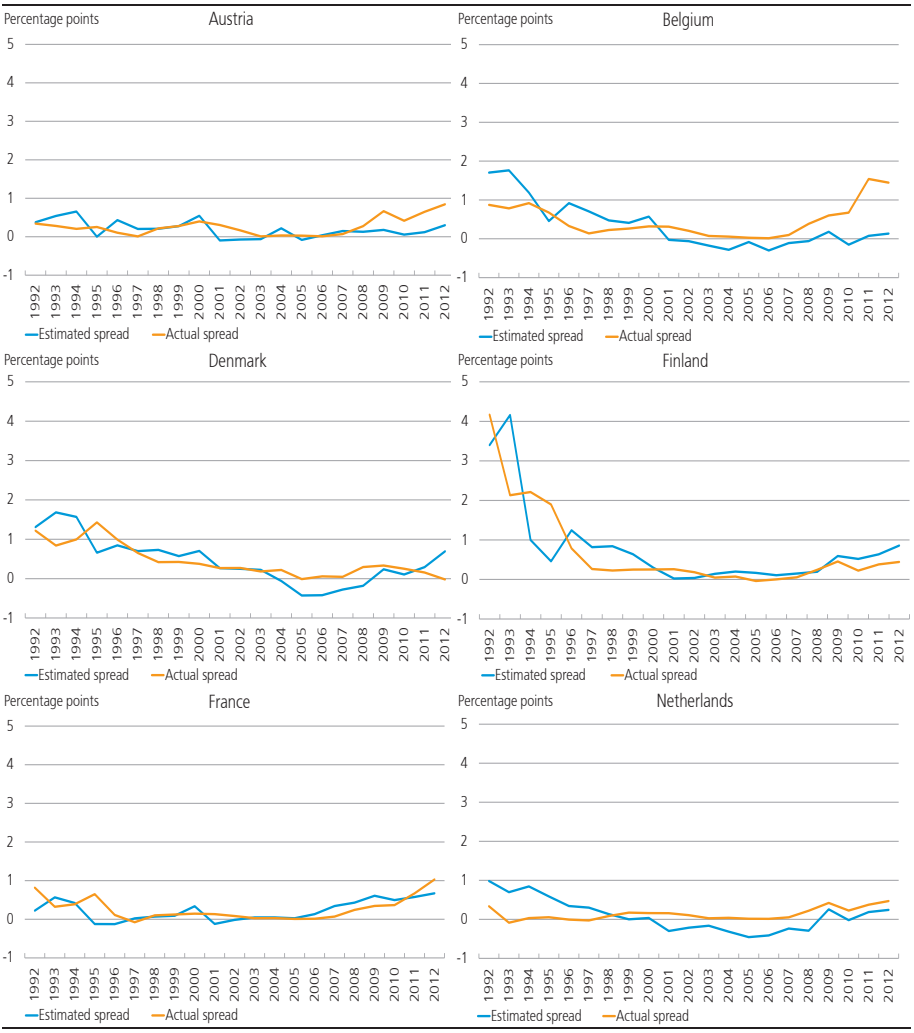
Source: Abildgren and Thomsen (2013).

Conversely, during the crisis in recent years, the yield spreads to Germany of Southern European countries have been wider than the spreads estimated on the basis of economic fundamentals. The reason is that yield spreads have been more influenced by market-related and institutional factors, including contagion effects and the risk of certain member states' exit from the euro. Uncertainty about the strength of the banking sector may also have contributed to recent years' gap between actual and estimated yield spreads. Moreover, international studies in this field show that the significance of government deficits and debts varies over time and that orderly public finances play an even larger role in governments' borrowing costs in times of crisis ("non-linearities").

In addition, it appears from Chart 2 that the actual yield spreads of Italy, Spain and Portugal were also higher than the estimated spreads in the early 1990s. This shows that non-linearity elements, such as contagion and speculation, also played a role in developments in the financial markets during the ERM crisis in the early 1990s.

ESTIMATED AND ACTUAL YIELD SPREAD TO GERMANY – OTHER COUNTRIES

Chart 3



Note: Estimated spreads are calculated based on a regression model in which government budget deficits as a ratio of GDP and gross government debt for the preceding year as a ratio of GDP are used as indicators of credit risk. Both the budget deficit and the gross debt have been calculated relative to Germany, e.g. as the government budget deficit in Denmark as a ratio of GDP less the government budget deficit in Germany as a ratio of GDP. The applied indicator of exchange-rate risk for the period 1991-98 is the year-on-year change in the bilateral exchange rate vis-à-vis Germany.

Source: Abildgren and Thomsen (2013).

The actual yield spreads of a number of small European core countries such as Denmark, the Netherlands and Belgium, were higher than the estimated spreads throughout most of the 2000s. The background is that the estimated yield spreads contain only indicators of credit and exchange-rate risk as explanatory variables and not measures of liquidity in the national bond markets. All else equal, the degree of liquidity can be assumed to be lower in the bond markets of small countries than in a

large bond market such as the German one. This is underpinned by the perception of German government bonds as benchmark bonds in Europe even after the introduction of the euro.

For Denmark, another possible influencing factor may be that the yield contains a risk premium because Denmark retains its national currency, notwithstanding the consistent fixed-exchange-rate policy vis-à-vis the euro. As a result, the Danish yield spread to Germany is normally positive and, all else equal, tends to be wider than warranted by real economic factors such as government debt and government budget deficit.

Finally, the differentials between actual and estimated yield spreads may reflect cross-country differences as regards domestic investors' preferences of domestic government securities ("home bias"). As regards Denmark, a home bias may e.g. reflect that the obligations of Danish pension funds are denominated in Danish kroner, implying an incentive for them to hold Danish securities.

CREDIT AND LIQUIDITY RISK DURING THE CRISIS

Long-term yield spreads across countries can be decomposed into various components of yield spreads among euro area member states, mainly credit and liquidity spreads. The credit spread is to compensate investors for the risk that issuers are unable or unwilling to meet their payment obligations. The liquidity spread is compensation for the risk that it will not be possible to sell the bonds without considerable costs and loss of value.

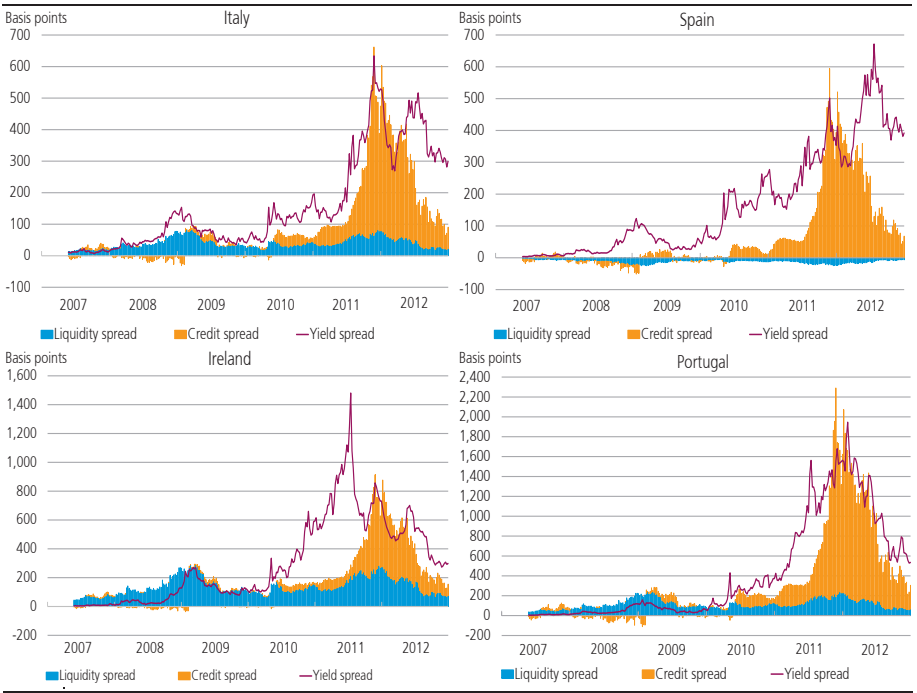
As illustrated above, yield spreads in the euro area reflect differences in economic fundamentals between the issuing countries. However, Christensen and Ejsing (2013) base their analysis directly on indicators of credit and liquidity spreads in yield spreads. It is then examined to which extent yield spreads have been driven by credit and liquidity risks during the recent crisis, cf. Charts 4 and 5.

Following the collapse of Lehman Brothers, higher yield spreads were driven mainly by a widening of the liquidity spread, while higher yield spreads during the European sovereign debt crisis may also be attributed to a wider credit spread. The factors with the greatest impacts on the individual countries' yield spreads vary. In the countries hardest hit by the sovereign debt crisis, credit spread widening has played the largest role, while liquidity spreads have been relatively more important in countries with low yield spreads.

Patterns in Denmark have been different, however, since the Danish long-term yield spread to Germany has, at times, been negative during

DECOMPOSITION OF YIELD SPREADS TO GERMANY – COUNTRIES SEVERLY AFFECTED BY THE SOVEREIGN DEBT CRISIS

Chart 4



Note: 5-year yield spreads. Credit and liquidity spreads have been estimated based on a regression model, the explanatory variables of which are a credit factor (the yield spread between French and German government-guaranteed bonds) and a liquidity factor (the yield spread between German government-guaranteed bonds and German government bonds). The decomposition does not sum up to the actual yield spread, since the estimation has unexplained residuals.

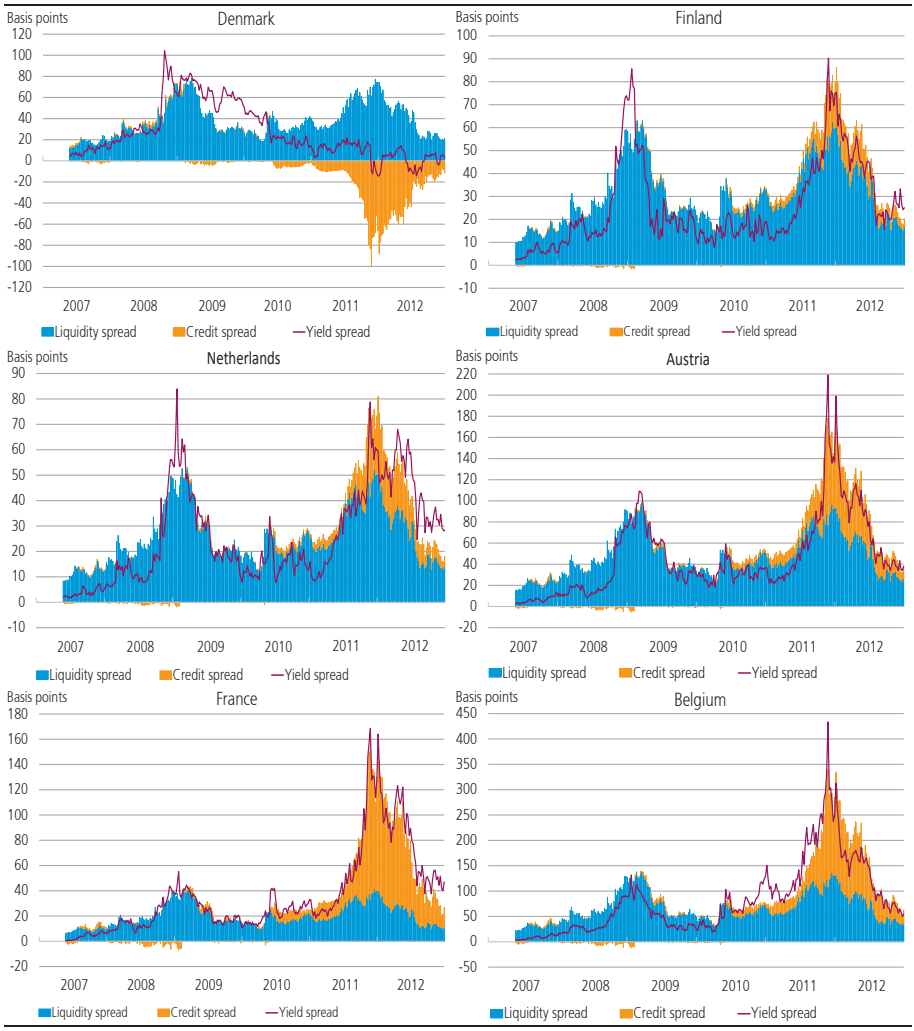
Source: Christensen and Ejsing (2013).

the debt crisis. A possible reason may be that increased uncertainty about euro area developments and the costs of resolving the debt crisis has led to increased demand for non-euro denominated government securities with a high credit rating. Danish government securities have the highest credit rating and, therefore, have been attractive to investors ("safe haven"), which explains the negative contribution of the credit spread to the Danish yield spread in Chart 5, resulting in lower Danish yields and lower government borrowing costs.

MARKET STRUCTURE, INVESTOR BEHAVIOUR AND CONTAGION EFFECTS

Although government yield spreads across countries reflect economic fundamentals, market-related factors such as market structure and investor behaviour may also contribute to narrowing or widening yield spreads. Altenhofen and Lohff (2013) discuss in more detail how market-related factors have influenced yield spreads between selected government bonds during the sovereign debt crisis in recent years.

DECOMPOSITION OF YIELD SPREADS TO GERMANY – OTHER COUNTRIES Chart 5



Note: 5-year yield spreads. Credit and liquidity spreads have been estimated based on a regression model, the explanatory variables of which are a credit factor (the yield spread between French and German government-guaranteed bonds) and a liquidity factor (the yield spread between German government-guaranteed bonds and German government bonds). The decomposition does not sum up to the actual yield spread, since the estimation has unexplained residuals.

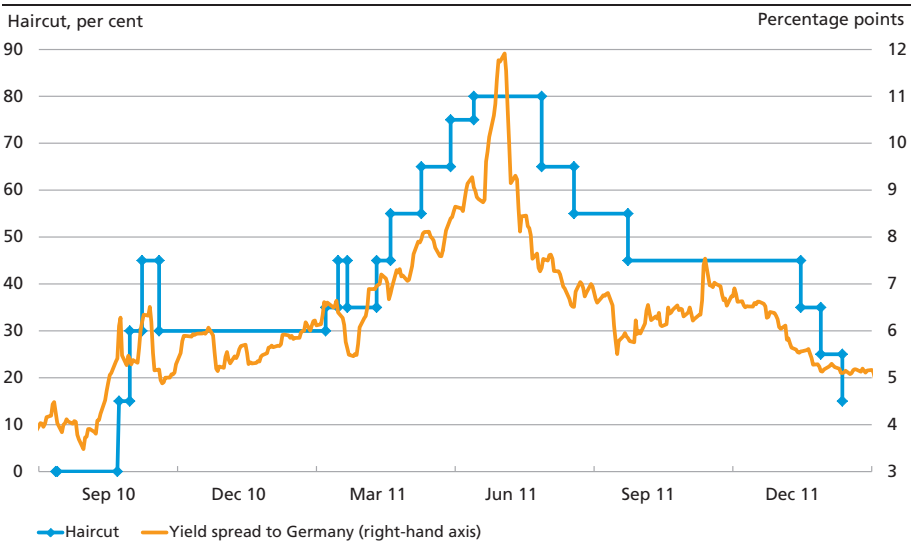
Source: Christensen and Ejsing (2013).

The value of a bond depends *inter alia* on the extent to which the bond can be used as collateral for loans. The difference between a bond's market value and its value as collateral is referred to as the haircut. Haircuts are used both by central banks and private market participants and are to contribute to protecting the lender from losses.

For example, during the recent debt crisis close correlation has been observed between the collateral value of Irish government bonds for loans among private market participants and the Irish government yield

ADDITIONAL HAIRCUT ON IRISH GOVERNMENT SECURITIES AND 10-YEAR YIELD SPREAD TO GERMANY

Chart 6



Note: Haircut as per cent of the amount of trading in Irish government bonds with LCH relative to an AAA-rated bond benchmark.

Source: London Clearing House, LCH, and Bloomberg. LCH is a central counterparty, acting as intermediary between borrower and lender.

spread to Germany, cf. Chart 6. The same trend applied to Spanish government securities.

In response to the financial crisis, international standards for payment and settlement systems (financial infrastructures) have been tightened, cf. BIS (2012). The new standards specify e.g. that stable and conservative haircuts should be established that are calibrated to include periods of stressed market conditions. This may help to ensure e.g. that increased haircuts resulting from interest rate rises do not impose further upward pressure on yields ("procyclicality").

The price of a bond also depends on whether the bond series can be traded in large volumes without significant costs and loss of value. Other things being equal, investors are willing to pay higher prices for bonds traded with narrow bid-ask spreads. During the recent sovereign debt crisis, the bid-ask spread in the countries hit hardest by the crisis widened considerably. As a result, markets' ability to absorb large buying and selling orders from customers weakened, which may have contributed to a wider cross-country yield spread.

In addition, the analysis indicates that there may have been contagion effects and closer correlation between bond yields across the debt-ridden euro area member states during the recent debt crisis. This has reduced the investors' opportunities to obtain diversification gains in their bond portfolios.

POLICY INITIATIVES AND CREDIT RATINGS

Hansen et al. (2013) examine how the announcement of a number of selected initiatives and events in the wake of the financial crisis and the debt crisis have influenced the 10-year government bond yield spreads to Germany for Denmark and selected euro area member states. The article examines the total effect on the date of announcement and the next day.

The analysis shows, among other things, that announcement of expansions of the credit lines and mandates of the European financial firewalls, the EFSF and the ESM, narrowed Spanish and Italian yield spreads to Germany. Announcements concerning the ECB's purchase of government bonds also resulted in the intended narrowing of yield spreads for Spain and Italy.

Moreover, the article finds that negative announcements about credit ratings have tended to widen yield spreads. This indicates that the announcements were not fully incorporated in prices in the government securities markets beforehand.

Danmarks Nationalbank's liquidity measures in the form of additional credit facilities and expansions of the collateral basis for loans from Danmarks Nationalbank were primarily aimed at the banks' liquidity and the functionality of the money market. The analysis shows a clear tendency for Danmarks Nationalbank's liquidity measures to reduce the spread between unsecured and secured money-market interest rates in Denmark.

The first Danish bank rescue package (Bank Rescue Package 1), which increased the government's commitments in the form of general guarantees to the banks, led to a widening of the Danish 10-year yield spread to Germany. Bank Rescue Package 1 was introduced in a period of market turmoil when yield spreads may have been affected by several factors. But the result is in line with the findings of studies of the effects of bank rescue packages in the euro area member states.

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Denmark as a Creditor Nation

Jonas Staghøj, Economics and Jesper Jensen, Statistics

INTRODUCTION AND SUMMARY

At the end of the 3rd quarter of 2012, Denmark's foreign assets totalled kr. 5,120 billion and its foreign liabilities kr. 4,531 billion. The difference, kr. 589 billion, reflects the net international investment position, IIP, of Danish households, firms and the public sector. This corresponds to 33 per cent of the gross domestic product, GDP, i.e. the net assets are now almost the same size – albeit with the opposite sign – as when the foreign debt peaked at 38 per cent GDP in the mid-1980s. At that time, the large foreign debt and the high level of interest rates were a burden on the Danish economy due to considerable interest payments to abroad. Today, Denmark's situation is quite different, with positive net assets and very low interest rates.

The reversal reflects a sustained current-account surplus rooted in structural improvements of private savings and a marked reduction of total government debt. Value adjustments that reflect fluctuations in equity and bond prices have led to periodic fluctuations in the net foreign assets. However, the valuation adjustments tend to cancel each other out over a number of years.

The return on net foreign assets improves consumption opportunities and, moreover, the net assets widen Denmark's economic room for manoeuvre without denting financial market confidence. During the strong downturn since 2008, Denmark has therefore been able to pursue a more expansionary fiscal policy than most other countries. However, it is crucial to sustain the improvement of the savings balances to maintain the accompanying low yield spread.

Being a creditor nation, Denmark would benefit from a higher return on investment overall. This is especially true of the return on foreign direct investment, FDI, for which Denmark has a large, positive net position, which accounts for a considerable share of the investment income. As regards interest-bearing investments, Denmark still has net foreign debt and, viewed in isolation, higher interest rates would therefore not benefit Denmark's investment income from abroad. In 2011 and 2012, Denmark received positive net interest payments in spite of its net debt,

reflecting differences in the composition of assets and liabilities in respect of e.g. duration and credit risk.

A sensitivity analysis of interest payments indicates that a general increase in interest rates of 1 percentage point will not have a significant impact on net interest flows, while an asymmetrical rise in interest rates, with only Danish interest rates rising by 0.5 percentage point, will have a more pronounced impact. In the latter case, Denmark will probably return to a situation with negative net interest payments to abroad. However, in such a scenario, the total investment income will remain positive.

Moreover, a change in the level of interest rates often coincides with changes in other returns, e.g. dividend on equities and earnings of foreign subsidiaries, which will also have an impact on the investment income. Finally, changes in the level of interest rates entail value adjustments of Denmark's net foreign assets. However, even if the large, positive value adjustments of bonds and derivatives triggered by the decline in interest rates since 2005 were completely reversed, Denmark would still have positive net assets.

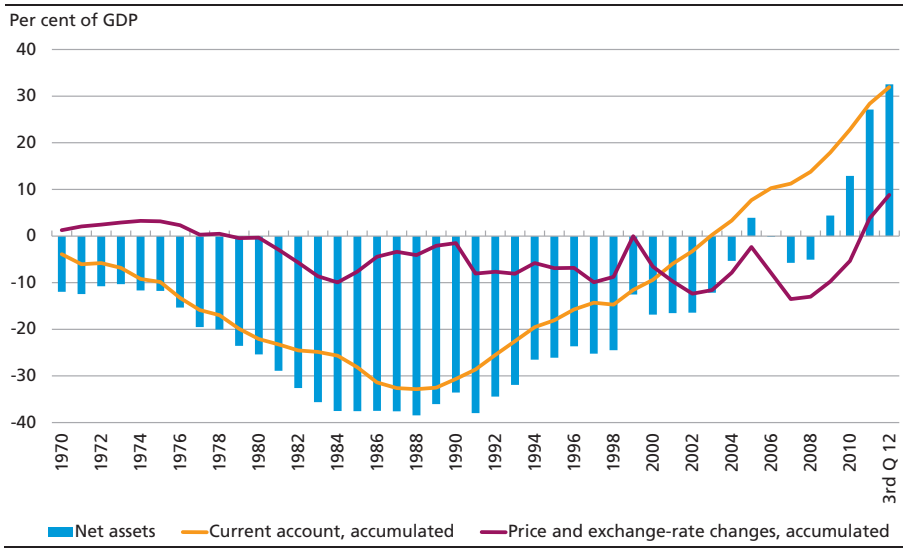
DENMARK'S NET INTERNATIONAL INVESTMENT POSITION

Denmark's IIP reflects developments in the current account of the balance of payments and value adjustments of Danish investments abroad and non-residents' investments in Denmark. Throughout the 1970s and 1980s, Denmark accumulated net foreign debt due to persistent current-account deficits, cf. Chart 1.

However, with the exception of 1998, Denmark has posted a current-account surplus every year since 1990. It is clear from the Chart that in the long term, the current account determines the development in Denmark's net IIP because the value adjustments tend to cancel each other out over time. Considerable value adjustments may occur in some years due to fluctuations in equity and bond prices, as was the case during the recent financial crisis. In the period 2006-08, Denmark's net position deteriorated by kr. 193 billion due to value adjustments. Subsequently, the trend has been reversed, and since 1970 the accumulated value adjustments have boosted the net assets by almost 10 per cent of GDP.[1] Since 2005, value adjustments have primarily been attributable to derivatives, cf. the section on interest-rate sensitivity below.

[1] In some countries, accumulated value adjustments have, for longer periods of time, shown major fluctuations and hence blurred the relationship between the current account and the IIP. See e.g. Lane and Milesi-Ferretti (2007).

NET IIP, THE CURRENT ACCOUNT AND VALUE ADJUSTMENTS Chart 1



Note: A data break occurred in 1991 when the foreign debt was adjusted upwards by kr. 68 billion as a result of a new compilation method. Prior to 2005, price and exchange-rate changes were calculated as the changes in net assets less the current account.

Source: Statistics Denmark and Danmarks Nationalbank.

The reversal of Denmark's current-account balance from deficit to surplus was fuelled by initiatives to increase the propensity to save, primarily due to changes in the tax system, most importantly a reduction of the tax value of interest deductibility and healthier public finances, cf. Pedersen (2003). Moreover, the establishment of labour-market pensions has strengthened total savings to the extent that it has not prompted the households to reduce other savings correspondingly.[1]

The change towards a positive IIP was also underpinned by Denmark's access to natural resources and a self-reinforcing effect with lower debt and thus lower interest payments to abroad. Both factors contribute to increased income, and the impact on the net IIP ultimately depends on whether the additional income has resulted in increased savings, cf. the discussion in Box 1 of the significance of North Sea production.

CREDITOR AND DEBTOR NATIONS

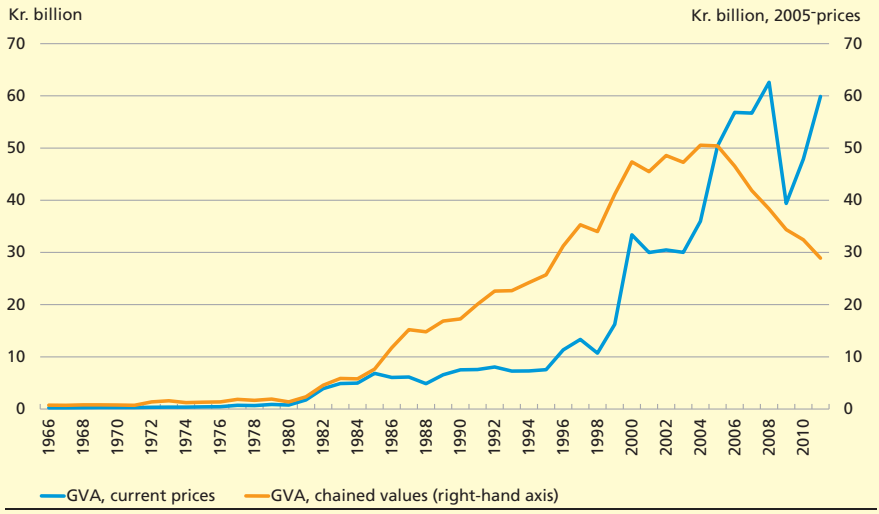
The net IIP of a country basically depends on whether savings have exceeded investment over time. Savings are not decided by a central decision-maker but are the sum of the savings decisions taken by households, firms and the public sector.

[1] Pension savings in Denmark have previously been analysed in Kramp, Lohff and Maltbæk (2012).

SIGNIFICANCE OF OIL PRODUCTION TO THE BALANCE OF PAYMENTS AND NET IIP — Box 1

The production of oil in the Danish sector of the North Sea increased steadily from the early 1980s up to 2004. Since then, it has shown a declining trend, but oil prices have been higher. Measured by current prices, the gross value added, GVA, of raw material extraction was kr. 60 billion in 2011, or 3.3 per cent of GDP.

GROSS VALUE ADDED OF RAW MATERIAL EXTRACTION — Chart 2



Source: Statistics Denmark.

According to the Danish Energy Agency (2012), the value of the total energy production in the period 1963-2011 is calculated as kr. 831 billion. Deducted for exploration and extraction expenses, this figure arrives at approximately kr. 539 billion, of which government revenue has been kr. 325 billion. Some of the surplus has been accounted for by non-residents. In 2011, companies owned by non-residents accounted for 60.9 per cent of the oil production, and the non-resident owners received a return of approximately kr. 10 billion.

Due to derived effects it is difficult to calculate the overall significance of oil production to the current account and the net IIP compared to a situation where Denmark would not have access to the same natural resources. At first, the value of oil production accrues to the owners of the oil and gas companies and the central government via tax payments. The extent to which the additional revenue from oil has contributed to the accumulation of net foreign assets depends on whether the revenue is ultimately used for consumption or savings.

In a world of integrated capital markets, it is rarely optimal for a country to maintain a balance between its foreign assets and liabilities, i.e. a net position of zero. In some periods, a current-account deficit may be preferred because investment exceeds savings, typically for small, less developed countries with a need for larger investment in capital stock and

infrastructure than can be financed by domestic savings.[1] However, not all countries can have deficits at the same time. Net foreign debt is only possible if other countries accept to have net assets.

Creditor nations

With the accumulation of net foreign assets, Denmark has moved from being a debtor nation to being a creditor nation, reflecting increased private savings and a considerable reduction of total government debt.

Total savings in an economy are impacted by several factors, not least demographic trends. Like Denmark, several other western countries will be facing a sharply ageing population in the future.

Oil-exporting countries may have a natural wish for distributing the profits from natural resources between present and future generations. If a country decides to extract its resources, it could save some of the revenue and, hence, improve its net external position. Several of the major creditor nations shown in Chart 3 are oil-producing countries with large current-account surpluses.

The accumulation of net foreign assets could also be a deliberate strategy towards maintaining high domestic output and employment via strong competitiveness. This is often a controversial issue since the exchange rate is kept artificially low for a period of time at the expense of other currencies.

Debtor nations

In 2011, the USA was the world's largest debtor country with net foreign debt of kr. 23,156 billion; however, measured as a ratio of GDP – 26.7 per cent – the US debt is not exceptionally high, cf. Chart 3. The dollar's status as an international reserve currency has provided the USA with the opportunity to finance large trade deficits by selling bonds at low yields in the international financial markets. And due to the substantial US FDI, which offers a higher return, the USA's investment income from abroad has exceeded its expenses for a number of years despite the net debt. In 2011, the USA's net investment income accounted for 1.5 per cent of GDP.[2]

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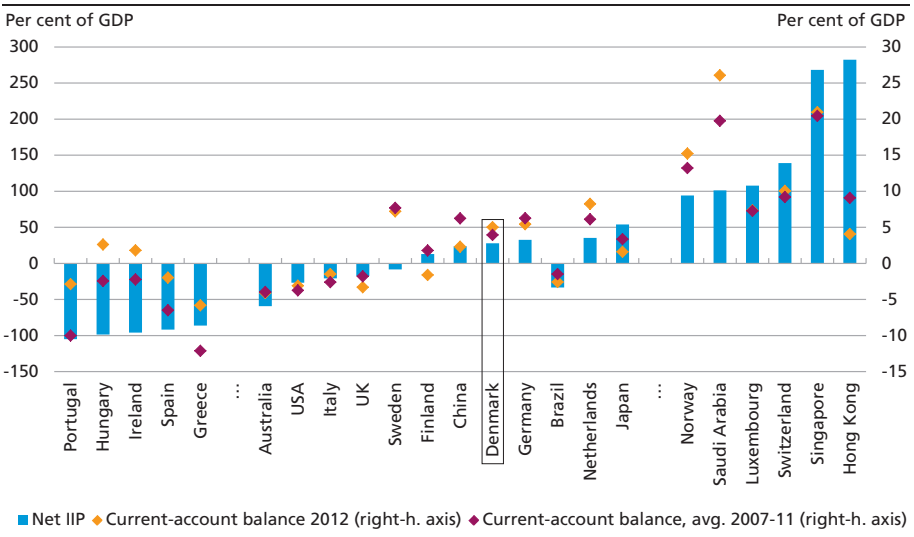
1 In the years 1890-1913, Denmark moved from having a foreign debt of around zero to a debt corresponding to approximately 41 per cent of GDP. This period was characterised by rapid economic growth driven by substantial corporate investment as well as railway and residential construction. The general public and politicians at large agreed that it was desirable to raise foreign loans for this expansion, cf. Christensen and Hald (2000).

2 This apparent paradox has prompted a discussion about the errors and omissions of statistical data. Hausmann and Sturzenegger (2007) argued that by backwards deduction, it could be concluded that a positive investment income inevitably was the result of positive net assets, i.e. if assets and liabilities were measured at their true value. They termed the missing values "dark matter". However, others reject the idea of a paradox and explain the development by varying compositions of assets and liabilities. See e.g. Boonstra (2008).

NET IIP AND BALANCE OF PAYMENTS Chart 3



Note: Net IIPs are calculated at end-2011. The largest creditor and debtor nations are shown in the Chart (except Mauritius whose positive net assets account for 927 per cent of GDP), while only some countries in the centre group are included, e.g. Denmark. The current account data stem from the IMF's *World Economic Outlook*, October 2012. The data for 2012 are estimates.

Source: IMF

Among the largest debtor nations, measured by the debt-to-GDP ratio, are a number of crisis-ridden Southern European economies. A clear picture emerges of a large net foreign debt posing a problem, particularly in periods of financial market turbulence and flight to safety. At present, countries such as Greece and Portugal are, de facto, not at liberty to pursue fiscal policy and have been forced to request support from the EU, the ECB and the IMF to be able to service their debt. For the largest debtor nations, current-account adjustments are taking place and deficits were smaller in 2012 than in the period 2007-11.

The IIP is just one angle of a country's total assets and liabilities and should be viewed in connection with the domestic sector distribution. A country such as Japan has considerable net foreign assets of about 55 per cent of GDP and a very high debt-to-GDP ratio of 230 per cent. This reflects large private domestic savings, implying that foreign investors only own 9.1 per cent of Japan's government debt.[1] An assessment of whether a country's sovereign debt poses a problem should therefore also be based on other debt specifications.

[1] The debt ratio for 2012 stems from the IMF's *World Economic Outlook,* October 2012, while the domestic ownership share was calculated in September 2012, cf. Ministry of Finance, Japan (2013).

CONSEQUENCES OF DENMARK'S POSITIVE IIP

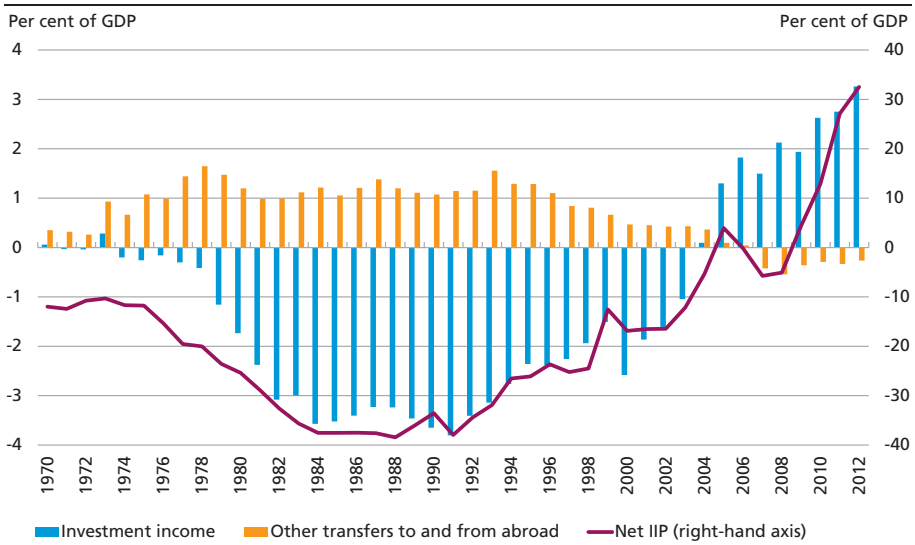
Contribution to consumption opportunities

When Denmark has positive net foreign assets, Danish investors have a right to receive part of the value of the future output abroad. In 2012, Denmark received net investment income of kr. 59 billion from abroad. This entails that the net assets contribute to the gross national product, GNP, which, besides domestic output, also includes investment income and other transfers to and from abroad, cf. Chart 4. Whereas Denmark had to transfer 2-3 per cent of domestic output via payments to abroad for a long period, net payments from abroad are now positive by 2-3 per cent. The return on net foreign assets thereby enhances consumption opportunities.

Net assets and competitiveness

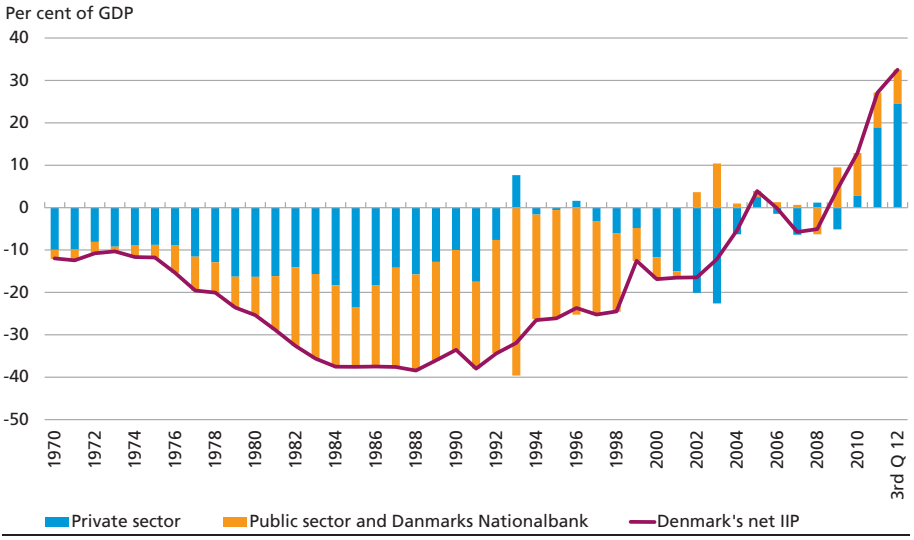
A derived effect of positive investment income from abroad is that it contributes to pushing up domestic demand. This puts upward pressure on wages, which erodes competitiveness and in this way acts as an equilibrium mechanism. In the period 2000-11, high wage increases and low productivity growth led to a rise in Danish unit labour costs of close to 20 per cent more than that of our foreign competitors, calculated using the trade weights of the effective exchange rate of the krone. Part of the

INVESTMENT INCOME AND NET ASSETS — Chart 4



Note: In the Chart, the difference between GNP and GDP is split into investment income and other transfers from abroad. Here, investment income follows the definition in the national accounts. Other transfers to and from abroad comprise wages to Danish residents abroad and wages to non-residents in Denmark as well as output and import taxes and subsidies. Net IIP for 2012 are calculated at the end of the 3rd quarter.
Source: Statistics Denmark and Danmarks Nationalbank.

NET IIP BY SECTOR Chart 5



Note: The private sector comprises financial and non-financial corporations as well as households. The public sector is shown together with Danmarks Nationalbank.
Source: Statistics Denmark and Danmarks Nationalbank.

deterioration reflects the accumulation of net foreign assets and the resulting net investment income from abroad. In a country with a floating exchange rate, such effects would alternatively have resulted in a strengthening of the exchange rate.

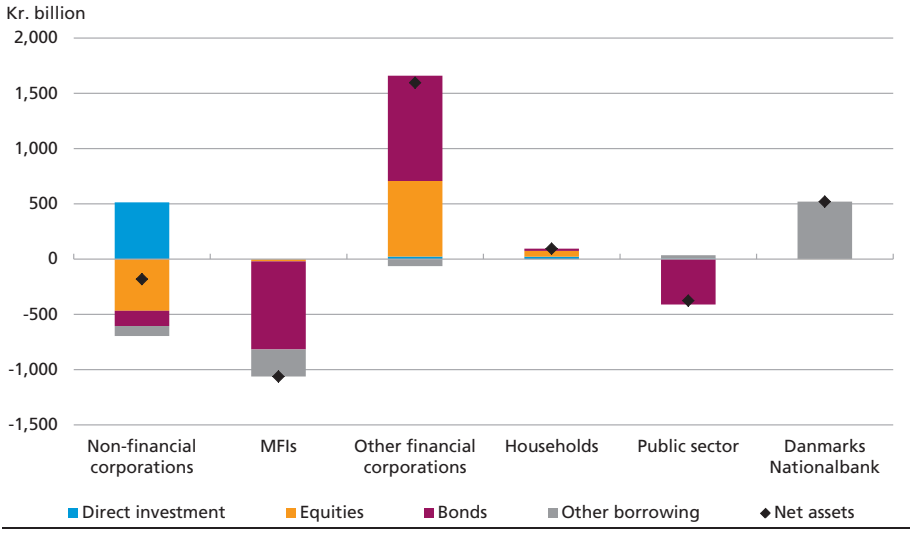
Net assets broken down by sector

The growth of the foreign debt in the 1970s and 1980s mainly reflected the rising government debt, cf. Chart 5. Towards the end of the 1990s, public net debt was reduced, resulting in a positive net position today when the public sector is viewed together with Danmarks Nationalbank. For a long period of time, Danish firms also had net foreign debt, but this has been reversed over the past decade into considerable net foreign assets today.[1]

Chart 6 illustrates a breakdown of the sectors' net IIP by various types of investment in the 3rd quarter of 2012. The net foreign debt of non-financial corporations of kr. 182 billion comprised net assets in the form of FDI and foreign liabilities such as foreign investors' holdings of shares in Danish companies.[2] This asymmetry is essential to the calculation of investment income and is discussed in more detail below.

1 A thorough review of business savings and investments is contained in Brandt et al. (2012).
2 The classification into portfolio investments in equities and direct investment depends on whether the ownership share is lower or higher than 10 per cent.

NET IIP BROKEN DOWN BY SECTOR AND INSTRUMENT, 3RD QUARTER 2012 Chart 6



Note: In the Chart, the private sector is split into non-financial corporations, MFIs (banks and mortgage banks), other financial corporations and households. Other financial corporations comprise insurance and pension companies and other financial intermediaries, including investment funds. Other borrowing comprises loans, derivatives and, in the case of Danmarks Nationalbank, reserve assets.
Source: Danmarks Nationalbank.

In the 3rd quarter of 2012, foreign investors held bonds issued by the MFI sector worth kr. 940 billion. Almost half constituted mortgage bonds, so households' home financing accounted for a major share of the foreign debt.[1]

Other financial corporations, such as insurance and pension companies and investment funds, have net foreign assets of kr. 1,690 billion. Investments are fairly evenly distributed on equities and bonds. The large bond holdings reflect, *inter alia*, the pension companies' need to invest in assets matching their long-term pension obligations.

Households's direct ownership of foreign assets and liabilities is limited as they typically make investments via Danish investment funds and pension funds and obtain finance via Danish credit institutions. Public sector debt comprises government bonds issued, while Danmarks Nationalbank owns the foreign-exchange reserve.

Recipients of investment income

In 2011, Denmark's total investment income amounted to kr. 41.3 billion. The surplus on FDI was kr. 25.2 billion, of which kr. 24.2 billion was attributable to residents' FDI holdings exceeding non-residents' holdings of FDI in Denmark (balance effect), while kr. 1 billion was attributable to

[1] A thorough review of households' savings and debt is contained in Andersen et al. (2012).

RATES OF RETURN ON DENMARK'S FOREIGN ASSETS AND LIABILITIES

Table 1

	Income					Expenses				
Per cent	FDI	Equities	Bonds	Other loans	Total	FDI	Equities	Bonds	Other loans	Total
1999	5.6	1.2	10.0	3.3	4.0	5.2	1.7	4.7	5.1	4.7
2000	8.5	1.4	7.1	4.2	5.0	11.2	1.7	4.9	5.4	6.3
2001	5.5	1.5	5.0	4.4	4.2	5.8	1.4	4.7	5.3	4.9
2002	3.5	1.8	4.9	3.6	3.5	5.1	1.8	3.8	4.4	4.2
2003	4.9	1.5	4.2	2.1	3.2	4.9	1.9	3.6	3.1	3.6
2004	6.2	2.2	4.7	1.7	3.7	5.4	1.8	3.3	2.7	3.5
2005	10.4	2.2	4.8	2.5	5.1	9.4	2.5	3.6	2.6	4.6
2006	8.6	3.7	4.3	3.0	4.9	6.7	3.0	3.6	3.5	4.2
2007	8.5	3.6	4.2	3.9	5.0	7.5	1.6	3.6	4.1	4.4
2008	7.1	4.1	4.5	3.9	4.9	5.2	2.4	3.4	3.9	3.9
2009	5.2	2.6	4.0	1.5	3.2	4.3	1.6	3.0	1.5	2.6
2010	6.1	2.4	3.5	1.0	3.2	5.7	1.1	2.7	0.9	2.4
2011	5.1	2.5	4.1	1.2	3.2	5.0	1.5	2.9	0.9	2.4
Mean	6.6	2.4	5.0	2.8	4.1	6.3	1.8	3.7	3.3	4.0
Memo: (Balance, kr. billion)										
End-1999	380	387	151	766	1,685	353	160	610	659	1,782
End-2011	1,316	735	1,041	1,513	4,603	806	451	1,467	1,514	4,238

Note: Rates of return are calculated as investment income divided by average holdings. In the case of equities, only distributed profits are included, while in the case of direct investment, profit for the year is included. The mean return on the various instruments is calculated as a simple mean of the annual rates of return over the 13-year period.

Source: Danmarks Nationalbank.

the rate of return on assets exceeding that on liabilities. For equities, the aggregate investment income of kr. 11.6 billion was equally distributed on the balance effect and the rate-of-return effect. Finally, bonds and loans contributed kr. 4.6 billion to the investment income, the latter masking a balance effect of kr. -14.6 billion and a rate-of-return effect of kr. 19.2 billion.[1]

Since 2004, the rate of return on Danish outward investment has generally been higher than the rate of return on non-residents' inward investment in Denmark, cf. Table 1. The rate of return is highest on FDI and lowest on equities. The main reason for the large difference in the calculated return on two fairly similar types of investment is that only paid-out dividend is included in the investment income for equities, while profit for the year is included for direct investment. As regards equities, the part of earnings that is not paid out as dividend will nor-

[1] The calculations of balance and rate-of-return effects show what the investment income would have been if the balance and the rates of return had been the same on the assets side and the liabilities side, respectively. Wederkinck (2011) offers similar calculations for 1999-2010.

mally result in an increase in equity prices, i.e. value adjustment in a balance of payments context.

In the case of FDI, the rate of return on non-residents' inward investment in Danish firms was generally higher than that on Danish firms' outward investment up until 2003. However, after 2004 this situation reversed to the effect that Danish outward FDI produced the highest return. This may have contributed to the fact that since 2006 Danish firms have been looking for foreign direct investment to a greater extent than foreign firms have been looking for investment in Denmark. This change should, however, be viewed in light of the fact that Denmark's current-account surplus in itself would result in higher external claims.

Throughout the entire period, banks and mortgage banks have paid interest on foreign bonds and loans. At the same time, pension and investment funds have received a return on their investment in foreign equities and bonds. Throughout most of the period, the return on Danish investment in foreign bonds exceeded the return on Danish bonds.

Denmark's status as a creditor nation has probably played a key role in the low rates of interest paid by Danish borrowers. Both the private and the public sector benefit from Denmark's safe-haven status due, *inter alia*, to its net assets and fairly healthy public finances, which resulted in low rates of interest and, in some periods, even a negative yield spread to Germany.

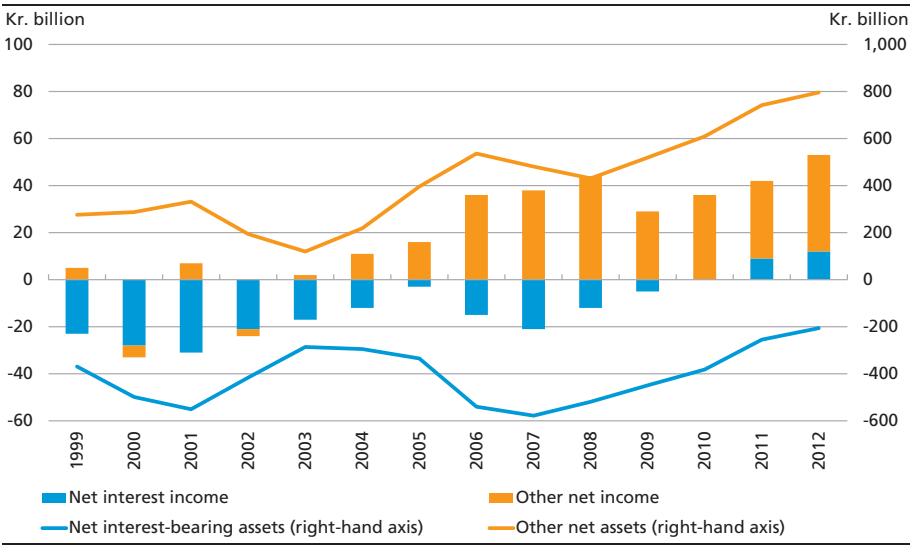
THE PAST AND PRESENT ROLE OF INTEREST RATES IN DENMARK

Interest rates are a key macroeconomic variable affecting the financial decisions made by consumers, firms and investors.[1] To the consumers, real interest rates are essential to decisions of whether to consume now or save for future consumption, and to firms, the real interest rate is essential to the relevant capital costs irrespective of whether investment is funded by loans or by means of own savings.[2] However, there is no reason to believe that these behavioural patterns should have changed markedly as a result of Denmark's status as a creditor nation. The impact of changes in interest rates on interest flows and value adjustments is discussed in more detail below.

1 In economic theory, a distinction is made between substitution effects and income effects. The substitution effect of a rise in interest rates will entail that consumers save more as the opportunity costs of consumption now rather than later have increased. The income effect is the change in consumption attributable to a change in real income at the new level of interest rates.

2 The real interest rate is the nominal rate less the expected change in prices over the relevant time horizon.

INTEREST FLOWS AND INTEREST-BEARING EXTERNAL DEBT — Chart 7



Note: Bonds, loans between direct investment enterprises, other investments and the foreign-exchange reserve are categorised as interest-bearing instruments, while portfolio equities, equity and derivatives are categorised as non-interest-bearing instruments. Net assets for 2012 are calculated at the end of the 3rd quarter.
Source: Danmarks Nationalbank.

Interest flows

Interest payments constitute part of the investment income and are, in consequence, included in the current account. Denmark continues to run a net debt on interest-bearing instruments, cf. Chart 7.[1] At the end of the 3rd quarter of 2012, the net interest-bearing debt was kr. 206 billion, while in 2007 it was three times as large.

At the beginning of the 2000s, Denmark made annual net interest payments of approximately kr. 20 billion to abroad. However, in the past two years, interest flows have been reversed, and today Denmark receives net interest payments in spite of remaining a net debtor in the case of interest-bearing instruments.

This reflects the composition of interest-bearing investment, where especially the interest rates on Denmark's liabilities have dropped sharply in step with Denmark obtaining a safe-haven status, cf. above. Overall, Denmark's interest-bearing assets have carried higher interest rates, implying that they have been assets with higher associated risk. The sensitivity of interest flows to various interest-rate scenarios is shown in Box 2.

[1] Bonds, loans between direct investment enterprises, other investments and the foreign-exchange reserve are categorised as interest-bearing instruments, while portfolio equities, equity and derivatives are categorised as non-interest-bearing instruments. If instead, derivatives were categorised as interest-bearing instruments, Denmark's net debt would be kr. 79 billion.

SENSITIVITY ANALYSIS OF INTEREST FLOWS — Box 2

A static sensitivity analysis of interest-bearing assets and liabilities may be used to illustrate how interest flows to and from abroad respond to various interest-rate scenarios.[1] Two scenarios are considered: a general increase in interest rates by 1 percentage point in Denmark and abroad, and an asymmetric interest-rate increase where only Danish interest rates rise by 0.5 per cent. The interest-rate changes are assumed to have the same impact on all interest rates irrespective of instrument, currency, credit risk and duration and, moreover, to have a full and immediate impact on all interest-bearing instruments. In reality, it would take longer time to achieve full impact because interest rates on many bonds and time deposits are fixed; however, in connection with refinancing and remortgaging, the full impact will be gradually passed through. The analysis does not allow for any hedging or changes in other payment flows. Table 2 shows a comparison of 1988 and 2012, when Denmark was a debtor nation and a creditor nation, respectively.

INTEREST FLOWS TO AND FROM ABROAD — Table 2

	Debtor nation, 1988			Creditor nation, 2012		
Kr. billion	Income	Expenses	Net	Income	Expenses	Net
Actual interest payments	20	48	-28	66	54	12
Scenario 1: general interest-rate increase of 1 percentage point	24	55	-31	98	88	10
Scenario 2: asymmetric interest-rate increase of 0.5 percentage point	20	52	-32	66	71	-5

Note: See the text for the assumptions behind the calculations. The investment income calculated for 1988 contains both interest and dividend payments. Interest payments accounted for by far the largest share because interest-bearing instruments accounted for approximately 98 per cent of the balances then. The calculations for 2012 are made on the basis of balances measured at the end of the 3rd quarter of 2012.
Source: Own calculations based on data from Statistics Denmark and Danmarks Nationalbank.

In 1988, Denmark had net interest-bearing foreign debt of kr. 310 billion, and net foreign interest payments amounted to kr. 28 billion, or 3.7 per cent of GDP. A general increase in interest rates at the time would have lifted interest income and expenses by kr. 4 and 7 billion, respectively, which would have led to a marked deterioration of net payments of kr. 3 billion, or 0.4 per cent of GDP. Similarly, an asymmetric interest-rate increase would increase net interest payments by kr. 4 billion.

Both interest-bearing assets and liabilities have multiplied up to 2012. Measured in terms of GDP, the assets have grown from 52 to 176 per cent, while the liabilities have grown from 92 to 188 per cent. In 2012, Denmark received interest payments from abroad of kr. 66 billion, while its interest expenses amounted to kr. 54 billion. Thus, Denmark received net interest payments in spite of having net interest-bearing debt. A general increase in interest rates in 2012 would reduce the net interest income by kr. 2 billion, or 0.1 per cent of GDP. Therefore, compared with 1988, the current interest flows are relatively less sensitive to changes in the level of interest rates. Conversely, due to the large gross balances, the Danes are more exposed to asymmetric changes

[1] Damgaard (2007) contains similar sensitivity analyses of changes in various rates of return.

CONTINUED Box 2

in interest rates. A unilateral increase in Danish interest rates of 0.5 percentage point would, other things being equal, boost interest expenses by kr. 17 billion, or close to 1 per cent of GDP, and net interest payments would turn negative again. However, the deterioration is lower than the investment income from non-interest-bearing investment of kr. 41 billion in 2012, so the aggregate investment income remains positive.

A similar breakdown into interest-bearing and other investment provides an indication of the change in interest flows for domestic sectors. Since non-financial corporations had net debt in 2012, a general rise in interest rates of 1 percentage point would increase their net interest payments by approximately kr. 8 billion. The public sector's net interest payments would be approximately kr. 4 billion higher. As mentioned above, foreign investors would receive approximately kr. 2 billion. For the MFI sector, including Danmarks Nationalbank, net interest payments would decline by close to kr. 3 billion. Households would be adversely impacted by higher interest payments on loans but would receive higher interest payments from investment funds and pension savings.

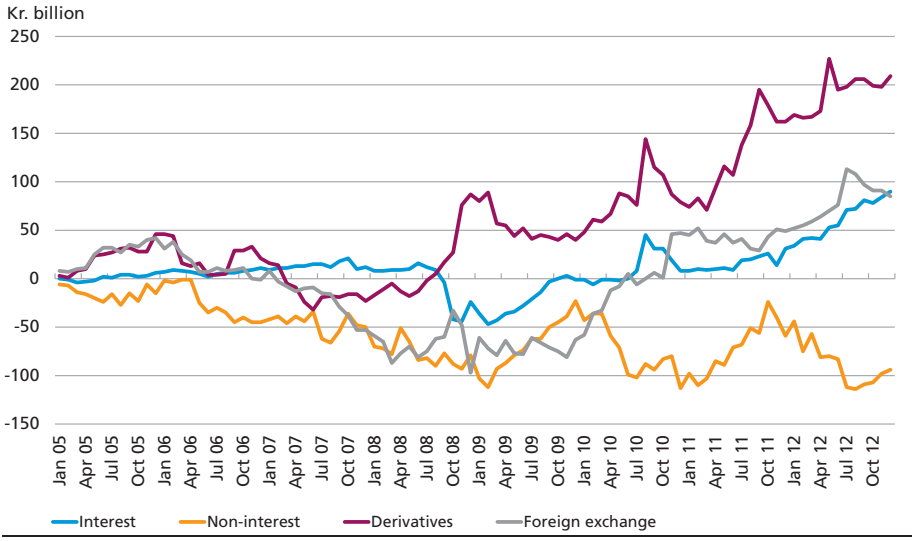
Interest-rate sensitivity

By exclusively focusing on interest-bearing instruments and interest flows, key factors are left out. Firstly, interest rates are merely one type of capital gain, and a change in interest rates typically coincides with changes in other types of return such as dividend. Secondly, interest rates are of major significance to value adjustments, which are not included in investment income.

In Denmark, the assets side has shown the most pronounced interest-rate sensitivity since 2005.[1] Consequently, recent years' decline in interest rates has led to considerably higher bond and derivative prices, cf. Chart 8, thus contributing to boosting Denmark's net assets. The value adjustments in connection with interest-rate increases and declines are not necessarily symmetric, and the aggregate exposure to the level of interest rates varies over time because it reflects the portfolio decisions of many individuals. Basically, a return to a higher level of interest rates should be expected to lead to negative value adjustments of Denmark's net assets. However, even with a complete reversal of the value adjustments generated since 2005 Denmark will, at first, retain a positive net IIP.

[1] In the past few years, the duration of bonds on the asset side has been longer than that of bonds on the liabilities side, overall. While foreign investors in Denmark have placed more than two-thirds in short-term Danish bonds (maturity of less than five years), Danish investors abroad have placed around half in foreign bonds with longer duration.

ACCUMULATED VALUE ADJUSTMENTS OF NET IIP, 2005-12 Chart 8



Note: The Chart shows accumulated value adjustments of Denmark's net IIP. The value adjustments are shown for a breakdown of instrument types into four main groups. The exchange-rate adjustments of all instrument types are shown separately. *Interest* contains price changes on bonds and foreign-exchange reserve while *non-interest* contains price changes of equities and equity.

Source: Danmarks Nationalbank.

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New Principles for Financial Market Infrastructures

Katrine Skjærbæk Rasmussen and Tina Skotte Sørensen, Payment Systems

INTRODUCTION AND SUMMARY

Central banks are responsible for oversight of financial infrastructures. The primary purpose is to contribute to a safe and efficient financial infrastructure and hence to financial stability. In Denmark, Danmarks Nationalbank is responsible for oversight of the payment systems Kronos and the Sumclearing and the securities settlement system VP Settlement. These systems are at the core of Denmark's financial infrastructure. Moreover, Danmarks Nationalbank participates in the cooperative oversight of several systems internationally.

The oversight is based on international standards. In April 2012, CPSS-IOSCO[1] published new international standards in the form of principles for financial market infrastructures, i.e. payment systems, securities settlement systems, central securities depositories, central counterparties (CCPs) and trade repositories. In December 2012, the new principles were supplemented by an assessment methodology as guidance to both authorities and financial infrastructures. In addition, a disclosure framework was published, concerning disclosure of information to the general public and to the authorities which are to ensure that the principles are observed. The new principles tighten the requirements regarding *inter alia* governance, integrated risk management and stress testing.

Danmarks Nationalbank is in the process of implementing the new principles into its oversight of the Danish systems. The implementation takes place in dialogue with system owners and system operators who are responsible for the systems' observance of the new principles.

FINANCIAL MARKET INFRASTRUCTURES

Financial market infrastructure, FMI, is a broad term denoting a multilateral system among participants (financial institutions, etc.) and a sys-

[1] CPSS, the Committee on Payment and Settlement Systems, is based at the Bank for International Settlements, BIS. IOSCO is the International Organization of Securities Commissions.

KEY SYSTEMS IN THE DANISH PAYMENTS INFRASTRUCTURE Box 1

- *Kronos* is Danmarks Nationalbank's real-time gross settlement (RTGS) system for primarily large or time-critical payments between banks, etc. Each payment is settled individually in real time.
- *VP Settlement* is VP Securities' multilateral net settlement system for clearing and settlement of securities transactions and periodic payments (interest, repayments and dividend). In a securities transaction, securities are exchanged via custody accounts in VP, while payment is exchanged via the participants' Kronos accounts.
- The *Sumclearing* is the Danish Bankers Association's multilateral net settlement system for settlement of retail payments. Nearly all Danish retail payments are settled via this system, e.g. Dankort transactions, Direct Debit, credit transfers, etc. This system is operated by Nets. Final transfer of money between the Sumclearing participants is effected via Kronos.
- *TARGET2* is the trans-European RTGS system for settlement of large, time-critical payments in euro.
- *CLS* is an international system for settlement primarily of foreign-exchange transactions in 17 currencies, including Danish kroner. CLS is owned by CLS Bank International, which was established in 2002 by some of the world's largest banks. The krone leg in foreign-exchange transactions in Danish kroner is settled via CLS Bank's account at Danmarks Nationalbank.
- *EMCF*, European Multilateral Clearing Facility, is a Dutch CCP undertaking clearing of equity transactions in the Danish C20 index.

tem operator. A system consists of a technical infrastructure and a common set of rules and procedures for the participants. The system handles clearing, settlement or registration of payments, securities, derivatives or other financial transactions. The FMI concept thus covers payment and securities settlement systems, central securities depositories, CCPs,[1] and trade repositories. Box 1 describes the systems of the D anish financial infrastructure.

FMIs are designed to reduce the participants' risks associated with settlement of payments and securities transactions. For example, the systems may be designed to prevent credit risk between the participants when executing payments and securities transactions. However, FMIs create interdependencies between systems and participants, so that problems in one financial institution or the FMI itself may spread to other institutions and the financial system in general. Systems that can trigger such domino effects and spread problems to the domestic or international financial system are called systemically important systems. The risk of problems spreading – in the worst case ultimately generating

[1] CCP stands for central counterparty, which acts as an intermediary between the buyer and the seller in a securities transaction. In other words, the CCP acts as buyer for the seller and seller for the buyer, thus guaranteeing the settlement of the transaction for both parties.

a systemic crisis that may threaten financial stability – is called *systemic risk*. The probability of a systemic crisis being triggered in an FMI is very low, but the consequences would be substantial. Hence, it is important to ensure the safe and efficient functioning of FMIs.

Central banks are responsible for overseeing that systemically important financial infrastructures observe international standards and are thus assessed to be safe and efficient. The FMIs themselves continuously seek to reduce and manage risks, and there have only been very few cases in practice where an FMI's difficulties have threatened financial stability.

During the financial crisis, the FMIs contributed to financial stability, since they were generally able to complete settlement, which boosted the participants' confidence in the safety of continuing their mutual transactions via the FMIs. A case in point is the collapse of Lehman Brothers, when foreign-exchange transactions concluded by Lehman Brothers were registered in the CLS system for settlement several days after the collapse. They were duly settled according to CLS's rules.

THE BACKDROP TO THE NEW PRINCIPLES

In 1974, the insolvency of Bankhaus Herstatt in Germany triggered a domino effect of financial problems among the bank's counterparties in the foreign-exchange market.[1] This event really brought into focus the need for management and containment of risks in connection with settlement of payments. Since then, BIS has undertaken the international coordination of central banks' work in this area[2]. The development of international standards for payment and settlement systems was initiated in the late 1980s, since the payment and transaction flows through the systems had reached considerable proportions by then, as a result of technological advances. In 1990, the Lamfalussy standards[3] became the first international standards for payment systems. In 1989, the Group of Thirty[4] issued nine recommendations for securities settlement systems. The international standards have since been reviewed regularly as a result of advances in payment and settlement systems, and in 2004 the first standards for central counterparties were introduced.

The most recent international standards from 2012, i.e. the principles for FMIs, have been prepared by CPSS-IOSCO, which is a working group

1 The insolvency of Bankhaus Herstatt is described in more detail in Danmarks Nationalbank (2005).
2 The Bank for International Settlement, BIS, is banker to the central banks.
3 Named after M. A. Lamfalussy, who was in charge of the standard preparation work, cf. BIS (1990).
4 Also called the Consultative Group on International Economic and Monetary Affairs, Inc.

STRENGTHENING OF THE DERIVATIVES MARKETS WITH CLEARING VIA CCPs Box 2

The collapse of Lehman Brothers and the rescue of the Bear Stearns investment bank and the AIG insurance company called attention to weaknesses in the derivatives markets, especially the market for credit derivatives – credit default swaps, CDSs – a kind of insurance against losses in the event of default. CDSs were typically non-standardised "over-the-counter", OTC, transactions that were not traded and registered on e.g. a stock exchange or trading platform.

In the period up to the financial crisis, AIG and Bear Stearns sold very large volumes of CDSs. The CDS market was booming, and it was possible to sell the same CDS numerous times, resulting in a whole web of counterparties. The subprime crisis in the USA and the collapse of Lehman Brothers in 2008 gave rise to large payments from CDS sellers. It turned out to be difficult to identify the counterparties and who was ultimately exposed, since there was no systematic registration of CDS information. On the other hand, it was clear that if a major CDS market participant became distressed, many counterparties would be affected and thus potentially encounter problems.

In Europe, these challenges are addressed in the EMIR Regulation. This regulation requires central clearing of all standardised OTC derivatives and increases the requirements for risk management of OTC derivatives. Moreover, trade repositories must be in place to eliminate any doubt about e.g. the extent of open derivatives contracts and identification of the counterparties. All OTC derivative transactions must be reported to a trade repository.

A higher degree of CCP clearing of derivatives enhances the systemic importance of CCPs and thus increases the need for oversight. Consequently, the new principles have special focus on limiting CCP risks and also comprise trade repositories. The new principles incorporate CPSS-IOSCO's previous standards for CCPs[1] as well as the 2010 guidelines for CCPs clearing OTC derivatives.[2]

[1] Cf. CPSS-IOSCO (2004).
[2] Cf. CPSS-IOSCO (2010).

under G20[1]. These principles combine and merge three sets of international standards for payment systems, securities settlement systems and CCPs, respectively.[2] The purpose of introducing one set of principles is to ensure more consistent oversight across various types of FMIs. Moreover, the principles reflect the experience from the financial crisis, so the new principles entail stricter requirements for e.g. risk management and governance in FMIs. In addition, the financial crisis revealed a need for clearing and settlement of more financial products, e.g. derivatives, through CCPs. Consequently, the principles attach special importance to risk management in CCPs, see Box 2.

[1] G20 is a group of finance ministers and central bank governors from 20 major countries.
[2] Cf. BIS (2001), CPSS-IOSCO (2001), and CPSS-IOSCO (2004), respectively.

PRINCIPLES FOR FINANCIAL MARKET INFRASTRUCTURES

There are 24 principles within nine fields. Some principles are only relevant for certain types of FMIs; for example, several are only relevant for CCPs. The new principles attach importance to general, integrated risk management with suitable governance and use of stress tests. All relevant types of risk should be identified and managed, and there is *inter alia* increased focus on risk related to interdependencies, operational risk and business risk, i.e. risks associated with the FMI's business operations. Box 3 describes the potential risks associated with clearing and settlement of financial transactions. In addition, the new principles increase transparency by requiring disclosure of more information than previously. The principles are described below with focus on enhanced requirements compared with the previous international standards.

RISKS ASSOCIATED WITH CLEARING AND SETTLEMENT OF FINANCIAL TRANSACTIONS — Box 3

- *Legal risk* is the risk of suffering a loss as a result of contracts and agreements that are invalid or unenforceable, e.g. in the event of uncertainty regarding the legal basis or inability to enforce the contract or agreement as expected.
- *Credit risk* is the risk of loss as a consequence of a counterparty's inability to meet its obligations at the time of settlement or later. Special types of credit risk are *principal risk*, where the whole transaction amount is exposed, and *replacement risk,* i.e. the cost of replacing an asset, e.g. if a security is not received as expected.
- *Liquidity risk* is the risk of incurring a loss because a payment is not received at the expected time. The loss can occur if the liquidity has already been deployed and liquidity therefore has to be raised at short notice. To raise new liquidity at short notice is often associated with extraordinary costs, such as higher interest rates.
- *Operational risk* is defined as the risk of losses resulting from system breakdown, human errors, failed observance of internal procedures or external events, e.g. natural disasters, terrorism, etc. Operational risks entail loss of tangible (hardware) and intangible (software) assets, or unexpected credit and liquidity exposures.
- *Business risk* is the risk of losses that may rise in connection with business operations. Examples are unfavourable market conditions, poor implementation of a business strategy, legal or operational risks entailing that costs would exceed revenue and thus reduce the capital. Hence, business risk is not related to the actual clearing and settlement.
- *Custody risk* is the risk of loss of assets held in safe custody at a CSD or a custodian bank. It can be triggered by insufficient registration, poor administration or fraud at the CSD or the custodian bank. Custody risk may also arise if the CSD or particularly the custodian bank fails or is subject to resolution and there is insufficient registration of ownership of the assets, e.g. securities.
- *Investment risk* is the risk of losses on the FMI's investment of own or the participants' assets.

General organisation

Principles 1-3 cover the general organisation of an FMI. According to Principle 1, an FMI should have a well-founded legal basis enforceable in all relevant jurisdictions. Principle 2 states that an FMI should have governance arrangements that are clear and transparent and specify the roles and responsibilities of management at different levels. Moreover, financial stability should be an explicit objective for the FMI. Principle 3 tightens the requirements for a comprehensive framework for management of potential risks to the FMI, including risks which the FMI may pose to other entities. It is emphasised that there should be focus on risks resulting from interdependencies between the FMI and other entities.

Credit and liquidity risk management

Principle 4 on credit risk and Principle 7 on liquidity risk play a key role, as both the FMI itself and its participants may be exposed to credit and liquidity risks. An FMI should thus measure and manage these risks. The new principles tighten the approach to risk management by way of requirements for regular stress testing, *inter alia*. The FMI should have rules for managing any liquidity shortfalls and credit losses if the value of the collateral pledged proves to be insufficient.

Principle 5 on collateral is new and tightens requirements of collateral systems and use of collateral. FMIs using collateral for credit-risk management purposes should only accept collateral with low credit, liquidity and market risks.

Principle 6 describes margin requirements of CCPs, i.e. requirements for the participants to collateralise their positions. This supplements Principle 4 on credit risk specifically as regards CCPs, since they have special credit-related challenges.

Settlement finality in central bank money

Principles 8-10 aim to ensure settlement finality. An FMI should provide clear and certain final settlement, as a minimum by the end of the value date. Where practical and available, money settlement should be in central bank money in order to eliminate credit risk. Risks associated with physical deliveries, e.g. securities, should be monitored and managed.

Central securities depositories and settlement systems

Principles 11-12 relate to central securities depositories and exchange-of-value settlement systems for e.g. exchange of securities and currency transactions. A central securities depository, CSD, should have appropriate rules and procedures to help ensure the integrity of securities issues

and minimise and manage the risks associated with the safekeeping and transfer of securities. CSDs are subject to stricter reconciliation requirements, and Principle 11 recommends daily reconciliation. According to Principle 12, the principal risk should be eliminated by simultaneous exchange of two linked obligations, e.g. by using delivery versus payment, DvP, in the settlement of securities transactions and payment versus payment, PvP, for foreign-exchange transactions.

Management of a participant's financial or operational default

According to Principle 13, an FMI should have effective rules and procedures to manage a participant default. The new aspect is that this also applies to a participant's operational default.

Principle 14 concerns only CCPs. This principle aims to protect indirect participants and customers in the event of default/insolvency of a direct participant. This is ensured through requirements for segregation of customers' and indirect participants' positions and collateral from those of the direct participant.

General business and operational risk management

As a new feature, Principle 15 introduces requirements for management of business risk. An FMI should identify scenarios, e.g. falling turnover or loss of customers, which may potentially prevent the FMI from continuing as a going concern. The FMI should hold sufficient liquidity to cover operational expenses for at least six months and sufficient capital to continue as a going concern if it incurs business losses. Moreover, an FMI should maintain a recovery or orderly wind-down plan. The rationale behind the new requirements is that FMIs often have monopoly-like status, so they are not quickly replaceable.

Principle 16 concerns custody and investment risks. As previously, safe custody of and prompt access to assets should be ensured, and an FMI's investments should be in instruments with minimal risks.

Principle 17 enhances the requirements of operational risk management through, *inter alia*, anchoring risk management with the board of directors. It should be ensured that critical IT systems can resume operations within two hours – previously four – following a disruptive event. There is increased focus on external risks posed by e.g. service providers and outsourcing. An FMI may impose operational requirements on critical participants, and authorities may impose requirements concerning the FMI's agreements with critical service providers[1]. An FMI which has

[1] This is discussed in more detail in CPSS-IOSCO (2012a), Annex F. The requirements are consistent with the Danish Executive Order on Outsourcing.

outsourced parts of its operations to a service provider should ensure that the operations meet the same requirements as they would need to meet if they were provided internally. This means that the new principles may also be relevant for service providers.

Access for a wide range of participants

Principles 18-20 relate to general access to FMIs. According to Principle 18, MFIs should provide fair and open access for a wide range of participants.

Principle 19, which is new, concerns risks arising from tiered participation in the systems. Consequently, FMIs should as a minimum gather information about indirect participants. Principle 20 concerns links between CSDs and management of associated risks.

Efficiency and effectiveness

Principles 21 and 22 cover efficiency and effectiveness in business operations. In Principle 21, there is increased focus on an FMI's efficiency and effectiveness in meeting the requirements of its participants and the markets it serves. The FMI should also consider the practicalities and costs not only for the system participants, but also for the participants' customers and other relevant parties. Authorities are now explicitly responsible for assessing the costs of FMIs with market dominance. According to Principle 22, an FMI should use, or as a minimum accommodate, internationally accepted communication procedures and standards.

Transparency by enhanced disclosure

The purpose of Principle 23 is to enhance transparency e.g. through requirements that an FMI should publicly disclose rules and procedures as well as quantitative data on the full range of activities and operation. A new requirement is that the FMI should perform and publicly disclose its own assessment of observance of the new principles. In addition to the principles, CPSS-IOSCO has prepared a disclosure framework for FMIs[1] and is currently preparing a report on regular disclosure of quantitative data. Principle 24 is new and covers trade repositories, TRs, for OTC derivatives. The TRs should collect market data for authorities and the public, among others.

[1] Cf. BIS (2012b).

RESPONSIBILITIES OF AUTHORITIES

In addition to the 24 principles for FMIs, CPSS-IOSCO has also prepared five responsibilities of authorities regarding regulation, supervision and oversight of FMIs and implementation of the principles. While the principles are targeted at FMIs, the five responsibilities are targeted at the relevant authorities, including central banks and supervisory authorities. The five responsibilities are described in Box 4.

Central banks' oversight responsibilities have not been changed materially[1]. However, a new requirement is that an overseer, cf. Responsibility A, should publicly disclose criteria identifying the FMIs subject to oversight. Moreover, responsibility D specifies that the authorities should, as a *minimum*, ensure that the new principles are applied to all systemically important FMIs. This allows for oversight of other infrastructures as well, as appropriate, according to the new principles. Responsibility E provides for cooperation between authorities to a higher degree than previously. It is specified that at least one authority should accept responsibility for establishing efficient cooperation and exchange of information so as to avoid duplication of tasks in the authorities' oversight of all relevant areas.

Assessment methodology

The oversight should include regular assessment of the relevant FMIs' observance of the principles. As a supplement to the principles, CPSS-IOSCO has prepared an assessment methodology[2] for the authorities

FIVE RESPONSIBILITIES OF AUTHORITIES — Box 4

A. *Regulation, supervision and oversight*: FMIs should be subject to appropriate and effective regulation, supervision, and oversight by a central bank, market regulator, or other relevant authority.
B. *Powers and resources:* Central banks, market regulators, and other relevant authorities should have the powers and resources to carry out effectively their responsibilities in regulating, supervising, and overseeing FMIs.
C. *Disclosure of policies*: Central banks, market regulators, and other relevant authorities should clearly define and disclose their regulatory, supervisory, and oversight policies with respect to FMIs.
D. *Application of the principles*: Central banks, market regulators, and other relevant authorities should adopt the CPSS-IOSCO Principles for financial market infrastructures and apply them consistently.
E. *Cooperation with other authorities:* Central banks, market regulators, and other relevant authorities should cooperate with each other, both domestically and internationally, as appropriate, in promoting the safety and efficiency of FMIs.

that are to perform the assessment. Moreover, the methodology provides guidance for assessment of an authority's observance of the five responsibilities. The assessment methodology should contribute to consistent implementation and application of the principles, while promoting objectivity and comparability in assessments of different FMIs.

IMPLEMENTATION INTO DANMARKS NATIONALBANK'S OVERSIGHT

Danmarks Nationalbank is the primary authority responsible for oversight of FMIs in Denmark. Danmarks Nationalbank's role in relation to oversight of financial infrastructures is defined in section 1 of the Danmarks Nationalbank Act, which states that the objective of Danmarks Nationalbank is to "maintain a safe and secure currency system in Denmark, and to facilitate and regulate the traffic in money and the extension of credit". In addition, Danmarks Nationalbank's powers in relation to systemically important payment systems are defined in the Danish Securities Trading Act. As mentioned previously, Danmarks Nationalbank is responsible for oversight of Kronos, VP Settlement and the Sumclearing. Danmarks Nationalbank also participates in the cooperative oversight of the international systems TARGET2, CLS and EMCF, cf. Box 1.

Danmarks Nationalbank's oversight is planned according to international principles for the responsibilities of oversight authorities, cf. above, and assessments of the systems subject to oversight are performed according to the international principles. In dialogue with the system owners and operators, Danmarks Nationalbank is thus in the process of implementing the new principles and responsibilities for authorities into its oversight of the Danish systems. As required under responsibility C, Danmarks Nationalbank has disclosed its oversight policy "Danmarks Nationalbank's Policy for Oversight of the Financial Infrastructure in Denmark"[1], describing the oversight framework and methodology. The oversight policy will be updated, taking into account the new principles and responsibilities.

The Danish Financial Supervisory Authority also has powers as regards FMIs. The Danish Financial Supervisory Authority is responsible for supervision of VP Securities and the jointly owned data centres, including Nets, which is the operator of the Sumclearing system, and BEC, which is IT service provider to Danmarks Nationalbank. Consequently, Danmarks Nationalbank and the Danish Financial Supervisory Authority cooperate on overseeing operational risk in systemically important financial infra-

[1] Danmarks Nationalbank (2007).

structures in Denmark. As recommended in responsibility E, this cooperation is regulated by a memorandum of understanding from 2001, which will be reviewed to reflect that the new principles will, in future, be applied to the oversight of FMIs.

The Danish systems' observance of the new principles

Danmarks Nationalbank is currently discussing the contents of the principles with the Danish system owners. The objective is to obtain a common understanding of the contents of the principles and the new requirements that will apply to the Danish infrastructure. In some areas, the principles are formulated in such general terms that they are not immediately applicable to the Danish systems. In other areas, the principles are worded primarily for FMIs organised as private firms. It is up to the relevant authority to interpret and translate the principles into specific requirements for the system in question. The implementation of the new principles in Denmark will take into account the special features of the Danish infrastructure, including the organisation of the Danish FMIs.

In 2011-12, Danmarks Nationalbank assessed Kronos, the Sumclearing and VP Settlement against the previous standards for payment and securities settlement systems, respectively. The assessments showed that in the majority of the areas the systems observed the international standards in force at the time. Minor issues were identified in a few areas only. Consequently, no new complete assessments of the systems against the new principles will be performed in the first instance. Instead, oversight will focus on the areas in which the new principles differ markedly from the standards applying to the most recent assessment.

Under Principle 23, system owners are expected to prepare and disclose a detailed description of the system's observance of the principles. The description should be reviewed at least every two years and after important system changes or other material changes. Danmarks Nationalbank will determine the conditions for such publications in dialogue with the Danish system owners. Moreover, Danmarks Nationalbank will discuss the exchange of information for oversight purposes with the system owners, including publication of quantitative data, when the CPSS-IOSCO report on this subject is available, cf. above.

The implementation of the new CPSS-IOSCO principles will entail new system requirements, which the systems do not necessarily observe yet. It is important to point out that the system itself is ultimately responsible for ensuring the safety and efficiency of an FMI and ensuring that the FMI observes the principles.

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Unconventional Monetary-Policy Measures

Bjarke Roed-Frederiksen and Christian Helbo Andersen, Economics

INTRODUCTION AND SUMMARY

Most central banks reduced their monetary-policy interest rates strongly during the financial crisis, to a level of zero or very close to zero in the major advanced economies. Hence the possibilities of supporting these economies by reducing interest rates had been exhausted. To prevent a lengthy period of sluggish growth and falling prices, several central banks have instead chosen to ease monetary policy by means of "unconventional monetary-policy measures". These include liquidity support such as expansion of existing lending facilities or implementation of new facilities to improve banking system liquidity. Another measure has been asset purchases. This may entail "credit easing", i.e. targeted purchases of securities in specific markets where risk premia have been pushed up to a level assessed to be out of sync with the economic fundamentals, or purchases of long-term securities in order to reduce long-term yields in general, thereby stimulating economic activity. The latter is known as quantitative easing.

This article describes the content and purposes of the various unconventional measures launched by the European Central Bank, ECB, the Bank of England, the Bank of Japan and the US Federal Reserve, followed by a description of how these initiatives are assessed to affect the financial markets and the macroeconomy. Finally, on the basis of empirical studies, the article looks at whether these measures have had the intended effects.

Most studies indicate that both the Federal Reserve's and the Bank of England's asset purchase programmes have reduced market yields, although opinions differ as to the size of the impact. At the same time, the asset purchase programmes seem to have boosted equity prices and other asset prices. The effects on the real economy are more difficult to quantify, but again many studies point to a positive impact. The ECB's liquidity support measures are assessed to have narrowed spreads between collateralised and uncollateralised money-market loans, and the ECB's purchase programmes have also helped to strengthen the efficiency of the monetary-policy transmission mechanism.

In other words, the unconventional monetary-policy initiatives have contributed to crisis management and easing of monetary policy beyond what was achievable purely by reducing monetary-policy interest rates. However, unconventional monetary policy works through other transmission mechanisms than conventional monetary policy, which may entail special costs and risks. For example, purchases in specific markets may affect relative risk premia and in the longer term distort investor decisions. This may be reflected in inappropriately risky investments and create bubbles for certain asset classes. The expansion of the central banks' balance sheets as a result of their purchases also increases the exposure to losses on the securities purchased. The purpose of the central banks' purchases of government securities has not been to finance government budget deficits and it is important that such purchases do not lead to postponement of or failure to implement the necessary fiscal consolidation. Monetary policy should generally be tightened as the economy recovers, but in view of the risks associated with unconventional measures it is particularly important to phase out these measures as the economy normalises.

VARIOUS UNCONVENTIONAL MONETARY-POLICY MEASURES

USA

The first unconventional monetary-policy initiatives from the Federal Reserve during the financial crisis were liquidity support measures. Thus, the Fed expanded its existing lending facilities and added new facilities on a current basis in 2008 and 2009, cf. Blomquist et al. (2011).

In November 2008, the Fed announced the first round of asset purchases. This programme has subsequently been referred to as QE1[1]. Purchases started in January 2009 and continued, after an expansion of the programme in March 2009, until and including March 2010. In total, the Fed purchased for 1,425 billion dollars mortgage-backed securities and for 300 billion dollars long-term Treasury bonds under QE1, corresponding to approximately 12 per cent of the gross domestic product, GDP. The Fed characterised these purchases as credit easing because the aim was to support the functionality of the credit market. The purchases were targeted at the market for mortgage-backed securities, which was deemed not to be functioning optimally.

The second round of purchases, from November 2010 to June 2011, QE2, was referred to by the Fed as quantitative easing since the pur-

[1] Quantitative easing.

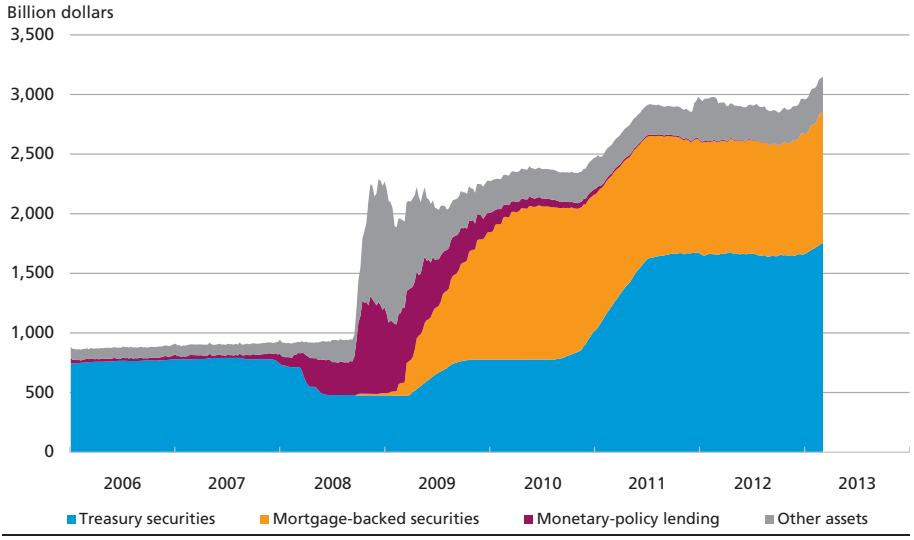
chases of long-term securities were aimed at reducing long-term yields and supporting the economy. Under QE2, the Fed purchased Treasury bonds for 600 billion dollars.

In September 2011, the Fed launched its maturity extension programme, known as Operation Twist. Until the end of 2012, the Fed purchased for 667 billion dollars Treasury bonds with maturities of 6-30 years, financed by selling bonds with maturities of less than 3 years. Once again, the purpose was to reduce long-term government yields, thereby supporting the recovery of the economy.

The most recent round of quantitative easing, QE3, was announced in September 2012 and expanded in December 2012. The Fed has announced that it will purchase mortgage-backed securities for 40 billion dollars and long-term Treasury bonds for 45 billion dollars every month. Purchases will continue until the outlook for the labour market improves substantially. The purpose is to exert downward pressure on long-term yields so as to support the economic recovery.

Due to the many unconventional monetary-policy measures, the Fed's balance sheet has increased notably, from less than 1,000 billion dollars (approximately 7 per cent of GDP) before the financial crisis to more than 3,000 billion (almost 20 per cent of GDP) today, cf. Chart 1. At the same time, its composition has changed considerably.

THE FEDERAL RESERVE'S ASSETS — Chart 1



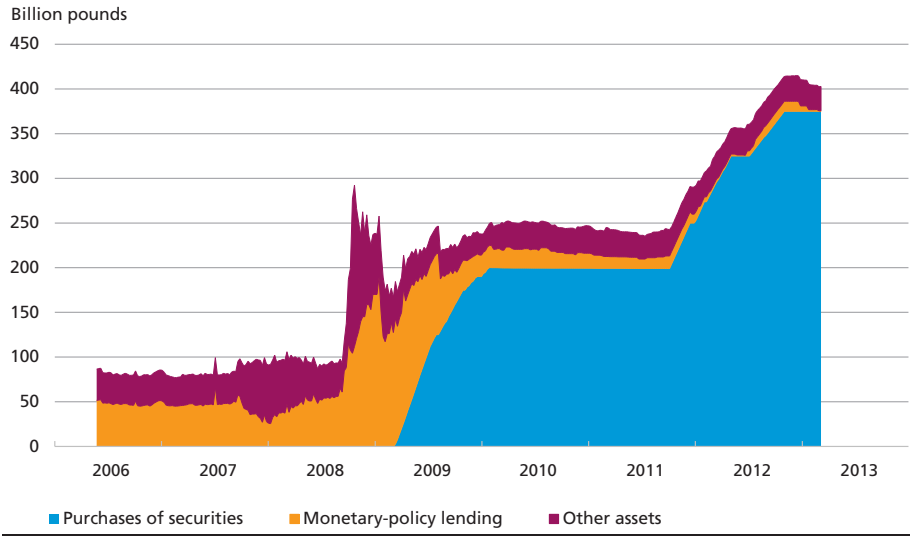
Note: Monetary-policy lending comprises repurchase transactions and lending via the various lending facilities. Other assets have been calculated residually.
Source: Federal Reserve.

UK

The Bank of England, BoE, announced its quantitative easing programme in March 2009. Before that, the BoE had expanded several of its lending facilities. Under the asset purchase programme, the BoE purchased securities (primarily government bonds) for 200 billion pounds until November 2009. The aim was to ease monetary policy more than was possible simply by reducing the monetary-policy interest rate to a level close to zero. The programme was expanded with purchases for 75 billion pounds in October 2011, 50 billion in February 2012 and another 50 billion in July 2012. So the asset purchases, which continued until end-2012, totalled 375 billion pounds, corresponding to approximately 25 per cent of GDP, cf. Chart 2.

Besides quantitative easing, the BoE has also implemented a programme called the Funding for Lending Scheme, under which it makes inexpensive funding available to banks that increase lending to households and non-financial corporations, the aim being to encourage banks to increase their credit extension. According to the BoE, one of the reasons for this initiative is that the financial crisis has led to a surge in funding costs for UK banks and reduced credit extension to households and firms. This programme was introduced in August 2012 and runs until the end of January 2014.

THE BANK OF ENGLAND'S ASSETS — Chart 2



Note: The Bank of England's purchases are made by a fund subject to accounting separation. Hence the securities purchased are not included in the BoE's assets. Instead, the BoE's loans to the fund are included on its balance sheet. In the Chart the purchases are shown as if they were included directly on the balance sheet. Monetary-policy lending comprises short-term market operations and long-term repurchase transactions. Other assets have been calculated residually.

Source: Bank of England.

Euro area

Like the Fed and the BoE, the ECB introduced a number of measures to support liquidity during the financial crisis. For example, the ECB in October 2008 increased its liquidity-providing operations and implemented full allotment at a fixed rate of interest – instead of a fixed amount at a market-determined rate.

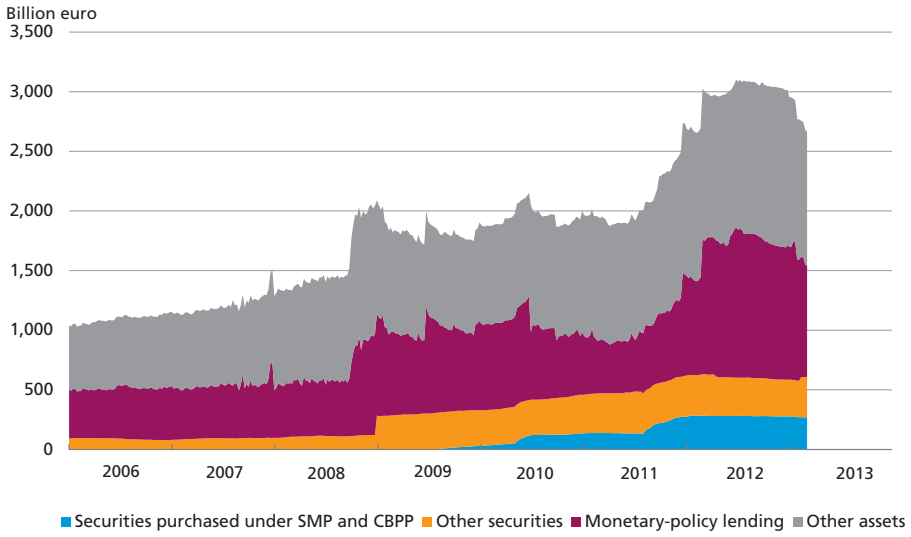
In May 2009, the ECB announced its first asset purchase programme, the Covered Bond Purchase Programme, CBPP, and purchased covered bonds for 60 billion euro until June 2010. In May 2010, these purchases were supplemented with the Securities Market Programme, SMP, which comprised the purchase of mainly government bonds. There was no upper limit on SMP purchases. Most of the purchases took place in May and June 2010 and again from August 2011 to January 2012. All in all, the ECB purchased for 220 billion euro under the SMP, corresponding to approximately 2.5 per cent of the euro area's GDP. Nearly half of the purchases were Italian government securities. In November 2011, the ECB introduced another Covered Bond Purchase Programme, but purchases were modest.

Purchases under these three programmes took place with a view to reducing market tensions that were impeding the monetary-policy transmission mechanism and thereby weakening the impact of monetary policy aimed at maintaining price stability in the medium term. In other words, the primary purpose was to ensure that the lower monetary-policy interest rates were reflected in market rates. Purchases have been limited in scope compared with both the Fed's and the BoE's purchases and the size of the markets in which purchases were made. The ECB's total purchases amount to some 3 per cent of GDP, while the Fed's purchases until 1 January 2013 constitute about 17 per cent and the BoE's around 25 per cent.

The background to the ECB's limited purchases is that the ECB to a greater extent than the two other large central banks has focused on liquidity support rather than quantitative easing, cf. Chart 3. Hence, in December 2011 and February 2012, the ECB conducted its first 3-year longer-term refinancing operations, in which the banks raised loans totalling more than 1,000 billion euro from the ECB, corresponding to more than 10 per cent of GDP.

In connection with the ECB's focus on liquidity support it should be noted that European firms to a larger extent than their US counterparts base their funding on bank loans rather than e.g. corporate bonds. At end-2007, total bank lending to the private sector amounted to 145 per cent of GDP in the euro area, but only 63 per cent of GDP in the USA, cf. Bini Smaghi (2009).

THE ECB'S ASSETS Chart 3

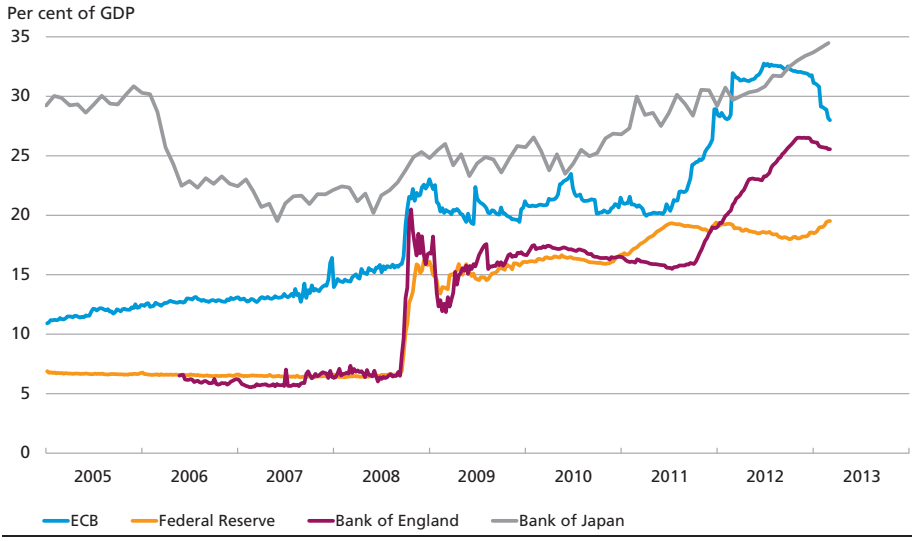


Note: The Chart shows the Eurosystem's assets. The Eurosystem comprises the ECB and the national central banks of the euro area. At the end of 2008, a reclassification for accounting purposes took place, which increased the portfolio of other securities. Monetary-policy lending comprises main refinancing operations, MRO, and longer-term refinancing operations, LTRO. Other assets have been calculated residually.
Source: ECB.

Furthermore, the EU's institutional framework plays a role. Thus, the EU Treaty bans monetary financing in the form of e.g. credit extension to European or national authorities. And unlike the Fed and the BoE, the ECB is the central bank of several countries, so asset purchases must be distributed on several countries. This raises the special issues of distribution of the purchases and potential unequal treatment of member states, cf. Bini Smaghi (2009).

In September 2012, the ECB announced a new asset purchase programme called Outright Monetary Transactions, OMT. At the same time, the SMP was formally closed. The OMT programme enables the ECB to make purchases in the secondary market of government securities with maturities of 1-3 years issued by crisis-ridden euro area member states which have entered into programmes with the euro area's stability facilities and meet the programme conditionalities. So far the ECB has not made any purchases under the OMT programme. Like the SMP, the OMT programme is aimed at supporting the monetary-policy transmission mechanism in all euro area member states. Furthermore, the ECB wishes to ensure financial stability and prevent member states from leaving the euro. In other words, the intention is to address imbalances in the government bond market which are attributable to unfounded investor concerns about the collapse of the euro.

CENTRAL-BANK BALANCE SHEETS Chart 4



Source: ECB, Federal Reserve, Bank of England, Bank of Japan and Reuters EcoWin.

Japan

The Bank of Japan was the first central bank to introduce quantitative easing in recent years, as it began to purchase various securities, primarily long-term government bonds, as far back as in March 2001. Initially, the purpose was not directly to reduce long-term yields, but rather to boost the liquidity of commercial banks, thereby allowing them to increase lending. These purchases ceased in 2006, but were resumed in early 2009 and especially after the announcement of a new purchase programme in October 2010.

Japan's early implementation of quantitative easing is reflected in the Bank of Japan's balance sheet, which already amounted to more than 20 per cent of GDP in 2002. The balance sheets of the three other central banks did not increase significantly until the autumn of 2008. In the 1st half of 2012, the ECB's balance sheet as a percentage of GDP exceeded that of the Bank of Japan, cf. Chart 4.

TRANSMISSION CHANNELS FOR UNCONVENTIONAL MONETARY POLICY

Unconventional monetary policy affects financial markets through various transmission channels, the three most important being the portfolio balance channel, credit easing and the signalling effect, cf. e.g. Joyce et al. (2011b) and Joyce et al. (2012).

The mechanism behind the portfolio balance channel is that the central bank's purchases reduce the remaining supply of long-term gov-

ernment bonds, thereby pushing prices up and yields down. At the same time, the lower yield and smaller supply make private investors turn to other asset classes, which reduces the yields on e.g. mortgage and corporate bonds and increases equity prices. If investors also increasingly opt for foreign assets, the exchange rate weakens. However, the exchange-rate impact may be eliminated if other countries ease their monetary policies correspondingly. The Fed's above-mentioned QE2 and QE3 are examples of measures mainly intended to work through the portfolio balance channel.

Credit easing is aimed at reducing liquidity or risk premia through targeted purchases of assets in specific markets where low liquidity has pushed up risk premia to a level which is out of sync with the central bank's assessment of the economic fundamentals. The Fed's purchases of mortgage-backed assets under QE1 were intended as credit easing.

The third channel is the signalling effect. Besides the direct effect of purchases, the announcement of a purchase programme may send a new signal or increase the credibility of previous announcements that monetary-policy interest rates will be kept at a low level for quite a while. This may dampen expectations of and uncertainty about future monetary-policy interest rates and increase inflation expectations. The signalling may also be more explicit, a case in point being the Fed's recent announcement that the policy rate will be kept low as long as unemployment is above 6.5 per cent and inflation is below 2.5 per cent.

Just as unconventional measures affect the financial markets through various transmission channels, market effects also spill over into the real economy in several ways. For instance, lower interest rates usually have a positive impact on private consumption and investment since households and firms can obtain cheaper financing. Lower interest rates also entail redistribution from lenders to borrowers.

The unconventional measures work through other transmission channels than conventional monetary policy. Consequently, the associated costs and risks are not necessarily the same as those linked to conventional monetary policy, cf. e.g. ECB (2011) and Joyce et al. (2012). The central banks' exposures to losses increase with the size of their purchase programmes, and under the liquidity support programmes the central banks accept securities of lower quality than they would otherwise accept.

The central banks' purchases of government securities have been aimed at reducing the general level of interest rates and ensuring the monetary-policy transmission mechanism – not at funding government budget deficits. It is important that such purchases do not lead to postponement of or failure to implement the necessary fiscal consolidation.

If consolidation does not take place, there is a risk that private investors lose confidence in long-term fiscal sustainability, which will increase government financing costs via higher government yields – thereby aggravating the debt situation further. Ultimately, the result could be that monetary policy is used to finance the government's obligations, i.e. fiscal dominance over monetary policy.

Another aspect of the unconventional measures is that the central banks' purchases in specific markets may affect relative risk premia and distort investor decisions. This may be reflected in inappropriately risky investments, which can create bubbles for certain asset classes.

Monetary policy should generally be tightened as the economy recovers, but due to the above risks associated with unconventional monetary policy it is particularly important to phase out the unconventional measures as the economy normalises.

EVALUATION OF THE PROGRAMMES

Most studies in the literature indicate that the purchase programmes have led to the intended reduction of market yields, although opinions differ as to the size of the impact. At the same time, the programmes seem to have boosted equity prices and other asset prices. The effects on the real economy are more difficult to quantify, e.g. because the programmes work through several transmission channels, cf. above, and there is a certain time lag.

In the literature, various methods are used to analyse the impact of the purchase programmes on financial and macroeconomic variables, cf. Box 1.

One of the few pre-crisis analyses estimates the effect of purchases in the USA and Japan, cf. Bernanke et al. (2004). Empirical evidence for the USA includes the situation in the 1990s when the US Bureau of the Public Debt announced and conducted buy-backs as a result of large budget surpluses. For Japan it is estimated that the central bank's announcements only to a limited extent affected the market expectations embedded in the yield curve. However, the estimation results also indicate that the purchases helped to reduce long-term government yields.

USA

The Fed's liquidity support measures are not discussed as much in the literature as its purchase programmes. In one of the studies analysing the effect of these measures, it is assessed on the basis of model simulations in a DSGE model that they have contributed to preventing an even stronger economic recession than the one seen during the crisis, cf. Del Negro et al. (2011).

METHODS FOR EVALUATING PURCHASE PROGRAMMES Box 1

The effect of the purchase programmes on yields and other financial variables are most frequently examined by means of event studies. In addition, time series analyses and interest-rate models are used to estimate links between purchases and risk premia in the government and mortgage bond markets.

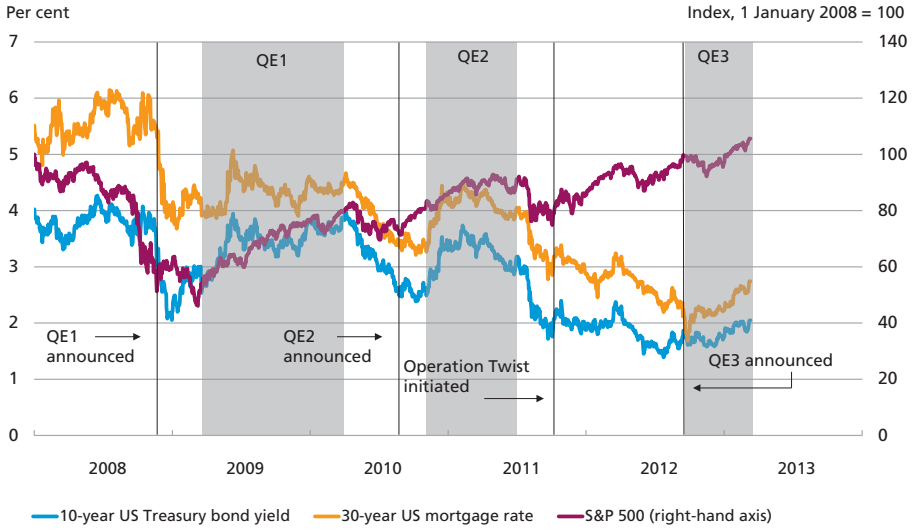
Event studies are detailed studies of specific events in the financial markets. The studies analyse developments in financial variables over selected time intervals of short duration. During the financial crisis, there were many other events than asset purchases. This makes it difficult to identify the isolated effect of purchases. For example, the Fed announced that it would initiate a round of asset purchases and at the same time that it would keep the fed funds rate low for an even longer period. Therefore, the event studies seek to analyse carefully selected and sufficiently narrow time intervals so as to minimise the probability that market events reflect fluctuations driven by other events than the central banks' announcements.

In the event studies it is assumed that the effect of the asset purchase programme is embedded in asset prices over a short period of no more than a couple of days after the announcement. The analysis of particularly the later purchase rounds are complicated by the need to adjust for the information already embedded in the market expectations. If the market already expects an announcement of purchases for a given amount, only the part of the announcement which comes as a surprise to the market will be embedded in the asset prices at the actual time of announcement.

Some analysts calculate the real economic effects of unconventional monetary policy by assuming relations in an empirical macroeconomic model. Another approach to evaluating the effects is to perform analyses within a dynamic stochastic general equilibrium, DSGE, model. When DSGE models are expanded to include financial imperfections, it is possible to remedy these imperfections via special monetary-policy measures. When the effect of unconventional monetary policy is to be assessed in a DSGE model, this is done by considering several scenarios. The first one is a baseline scenario based on the actual monetary policy implemented and with falls in output and inflation that match the data observations. The next scenario considered is a simulated one in which the unconventional monetary-policy measures are assumed to be absent (a "counterfactual" scenario). The partial real economic effects of the purchases are calculated as the difference between the development in GDP and inflation in the baseline and counterfactual scenarios.

Following the announcement of QE1, the 10-year Treasury bond yield and 30-year mortgage yield dropped sharply, cf. Chart 5. In line with this, most studies find that the Fed's purchases helped to eliminate a considerable part of the extraordinarily high risk premium on mortgage-backed securities and reduce the yield on long-term Treasury bonds, cf. Table 1. In the studies, the purchases under QE1 are estimated to have reduced the 10-year Treasury bond yield by around 50 basis points, cf. Chung et al. (2012). Furthermore, there was a spillover effect on related markets, cf. e.g. Gagnon (2011). The Fed's purchases contributed to re-

FINANCIAL VARIABLES AND THE FED'S ASSET PURCHASE PROGRAMMES Chart 5



Source: Bloomberg.

storing a well-functioning secondary market for mortgage-backed securities, cf. e.g. Hancock and Passmore (2011). If this market had not been well-functioning, mortgage rates would have been some 30 basis points higher.

EMPIRICAL ESTIMATES FOR THE USA OF THE EFFECT OF PURCHASES ON LONG-TERM BONDS Table 1

Authors	Empirical evidence	Method	Estimated effect of purchases for 600 billion dollars (± 2 standard deviations)[1]
Bernanke et al. (2004)	Pre-financial crisis	Event study	40 bp (±60 bp)
Hancock and Passmore (2011)	QE1, mortgage credit only	Time series analysis	30 bp
Gagnon et al. (2011)	QE1	Event study Time series analysis	30 bp (±15 bp) 18 bp (±7 bp)
Hamilton and Wu (2011)	QE2	Interest-rate model	17 bp
Swanson (2011)	Pre-financial crisis QE2	Event study	15 bp (±10 bp)

Note: In the Table, the estimates in the literature have been scaled so as to indicate the effect of purchases for 600 billion dollars (corresponding to QE2). The statistical uncertainty has been stated in brackets after the estimate for the studies for which the standard deviation is reported.
Source: Williams (2011).

Chung et al. (2012) also calculate how much the Fed would have had to reduce the fed funds rate to achieve the same effect on long-term Treasury bond yields as it achieved with QE1. The conclusion is that the effect of QE1 on long-term Treasury bond yields corresponded to reducing the fed funds rate by 2 percentage points. However, this calculation is simplified and based purely on the historical correlation between the long-term Treasury bond yield and the fed funds rate.

The literature generally agrees that QE1 had notable real economic effects, cf. e.g. Gertler and Karadi (2013), who use simulations to demonstrate that QE1 lifted GDP by more than 2 percentage points. One of the reasons for the relatively strong impact on the real economy is that in the model the falling value of the banks' portfolios of e.g. mortgage-backed securities undermines their capitalisation, which in turn restricts their lending. The central bank's purchases push up the prices of these securities, thereby improving the banks' capitalisation and lending opportunities. So in the model, purchases have a large positive impact on the real economy. The analysis comprises the Fed's purchases only, not the other crisis management initiatives such as the Troubled Asset Relief Program, TARP, whereby the US Department of the Treasury made direct capital injections into banks.

As regards QE2, most event studies find that the purchases helped to reduce the yields on long-term Treasury bonds by 15-20 basis points, cf. e.g. Swanson (2011) and Hamilton and Wu (2011). Swanson (2011) also finds that the yield on government-guaranteed securities (e.g. mortgage-backed securities issued by Fannie Mae and Freddie Mac) declined by 13 basis points, i.e. almost as much as the yield on Treasury bonds. There was also a small spillover effect of 2-4 basis points on corporate bond yields. The effect of the QE2 purchases was less pronounced than the QE1 effect; according to Swanson (2011) this is presumably because market functionality was not as severely impeded and liquidity not quite as low as under QE1.

In most studies of QE2 based on macroeconomic relations, the estimated effects on GDP and inflation are considerable. Using the Fed's empirical macroeconomic model for the USA, it has been calculated that QE2 lifted GDP by 0.6 percentage point and inflation by 0.1 percentage point, cf. Chung et al. (2012). But there are also DSGE studies which show considerably smaller estimated real economic effects of QE2, cf. Chen et al. (2012), in which the effect is 0.13 percentage point on GDP and 0.03 percentage point on inflation. One of the characteristics of the DSGE model is that risk premia in the financial markets decline only little when the supply of long-term Treasury bonds is reduced. This influences the results.

UK

It has been estimated that the first round of the BoE's purchase programme reduced the yields on medium- and long-term UK government bonds by approximately 1 percentage point, cf. Joyce et al. (2011a). The effects on other market yields are more uncertain.

The same analysis compares the expected and actual size of the announced purchases. The conclusion is that government yields fall by 0.62 basis point for each extra billion pounds' worth of expected purchases. So the unexpected purchases for 200 billion pounds caused long-term government yields to decline by 125 basis points, broken down by 45 basis points from the signalling effect and 80 basis points via the portfolio balance channel.

Applying various methods, it has been estimated that the first round of the UK purchase programme lifted GDP by 1.5-2 percentage points and inflation by 0.75-1.5 percentage points, cf. Joyce et al. (2011b).

Euro area

In the euro area, the expansion of the lending facilities has helped to ensure that the monetary-policy transmission mechanism has functioned during the crisis. This has been achieved by stabilising the money market, cf. ECB (2011). Similarly, SMP purchases have, according to the ECB, contributed to the efficiency of the monetary-policy transmission mechanism, e.g. by reducing the negative contagion effects from the crisis-ridden euro area member states during the sovereign debt crisis.

Even though the ECB's non-standard measures have not directly been aimed at strengthening demand in the economy, they have had considerable real economic effects, cf. e.g. Lenza et al. (2010) and Peersman (2011). Lenza et al. (2010) conclude that the non-standard measures supported credit extension to the private sector and that without them the unemployment rate would have been 0.5 percentage point higher.

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Working Papers Issued

Press Releases

10 DECEMBER 2012: FISHING VESSEL AS THE MOTIF ON A NEW SHIP COIN

On 11 December 2012, Danmarks Nationalbank issues a new 20-krone coin featuring a fishing vessel. This is the twelfth and final coin in the series with ships selected to cover as many aspects as possible of Danish maritime history.

For decades, the fishing vessel has been of great significance to the Danish fisheries sector. The blue-and-white wooden vessels were built and maintained by small boat builders in Danish coastal towns. They were originally built without the use of diagrams, purely on the basis of experience passed on from master builder to apprentice. Boat building in Denmark has roots back to the Viking Age, and although the fishing vessels were constructed according to the same basic prin-ciples, there were regional variations.

The motif on the coin was designed by the sculptor Margrete Sørensen, who has created a very beautiful and easily recognizable relief of the traditional Danish fishing vessel.

The coin is of the same size and alloy as the ordinary circulating 20-krone coin. The obverse side of the coin carries the portrait of Danish Queen Margrethe II.

The new ship coin is put in circulation on 11 December. It can be purchased in most banks, at Danmarks Nationalbank and on the Royal Danish Mint's website, www.royalmint.dk.

24. JANUARY 2013: INTEREST RATE INCREASE

Effective from 25 January 2013, Danmarks Nationalbank's interest rate on certificates of deposit and the lending rate are increased by 0.10 percentage point. The discount rate and the current account rate are unchanged.

The interest rate increase follows Danmarks Nationalbank's sale of foreign exchange in the market.

Effective from the above date, Danmarks Nationalbank's interest rates are:

Lending rate: 0.30 per cent
Certificates of deposit: -0.10 per cent
Current account: 0.0 per cent
Discount rate: 0.0 per cent

14 MARCH 2013: STATEMENT BY GOVERNOR LARS ROHDE ON THE PUBLICATION OF A REPORT FROM THE COMMITTEE ON SYSTEMICALLY IMPORTANT FINANCIAL INSTITUTIONS IN DENMARK

"The topic of the Committee's report is central to the future structure of the financial system in Denmark. In my opinion, this is a carefully considered proposal.

Denmark has an efficient and credible resolution scheme for distressed banks, which means that the taxpayers will not end up footing the bill.

There is though barely an alternative to a government rescue plan if one of the largest financial institutions becomes distressed. The Committee's report is addressing this issue.

The Committee has emphasised the need to ensure the defences around systemically important financial institutions to prevent them from becoming distressed. The proposal comprises additional requirements for capital adequacy, liquidity and supervision as well as requirements for the preparation of recovery and resolution plans. This is in line with the EU rules and the rules in countries which have already launched initiatives, e.g. Sweden."

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.

The Tables section of this publication is closed on 13 March 2013.

Danmarks Nationalbank is the source for Tables 1-15, 17-19 and 24-25, while the Nasdaq OMX Copenhagen is the source for series of bond yields and the share-price index in Table 1. Statistics Denmark is the source for Tables 16 and 20-23. The calculations in Tables 21 and 25 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: Lending	Certificates of deposit	Current-account deposits	Discount rate	The ECB's interest rate: Main refinancing operations, fixed rate[1]	Average	Interbank interest rate, 3-months CIBOR	Bond yields: 10-year central-government bond	Bond yields: 30-year mortgage-credit bond	Share-price index OMXC20 (prev.KFX), end of period
	Per cent per annum						Per cent per annum			3.7.89 =100
2008	3.75	3.75	3.50	3.50	2.50	2008	5.28	4.28	6.08	247.72
2009	1.20	0.95	0.85	1.00	1.00	2009	2.48	3.59	5.53	336.69
2010	1.05	0.70	0.60	0.75	1.00	2010	1.25	2.93	4.68	457.58
2011	0.70	0.30	0.25	0.75	1.00	2011	1.38	2.73	4.72	389.95
2012	0.20	-0.20	0.00	0.00	0.75	2012	0.62	1.40	3.74	496.16
2011 8 Jul	1.55	1.20	1.10	1.25	1.50	Feb 12	1.00	1.84	4.01	453.77
26 Aug	1.55	1.10	1.00	1.25	1.50	Mar 12	0.99	1.89	3.97	444.71
16 Sep	1.55	1.00	0.90	1.25	1.50	Apr 12	0.97	1.71	4.01	458.75
4 Nov	1.20	0.65	0.55	1.00	1.25	May 12	0.90	1.37	3.94	432.26
9 Dec	0.80	0.40	0.30	0.75	1.00	Jun 12	0.62	1.26	3.61	446.04
16 Dec	0.70	0.30	0.25	0.75	1.00	Jul 12	0.41	1.10	3.58	484.14
2012 25 May	0.60	0.20	0.15	0.75	1.00	Aug 12	0.31	1.15	3.55	490.06
1 Jun	0.45	0.05	0.00	0.25	1.00	Sep 12	0.32	1.31	3.60	493.22
6 Jul	0.20	-0.20	0.00	0.00	0.75	Oct 12	0.33	1.29	3.59	485.28
2013 25 Jan	0.30	-0.10	0.00	0.00	0.75	Nov 12	0.30	1.11	3.52	490.93
	|	|	|	|	|	Dec 12	0.28	1.07	3.45	496.16
13 Mar	0.30	-0.10	0.00	0.00	0.75	Jan 13	0.31	1.61	3.50	535.73
						Feb 13	0.33	1.73	3.34	546.55

[1] Until 7 October 2008 minimum bid rate.

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 banks' net position with Danmarks Nationalbank			
				Certificates of deposit	Deposits (current account)	Loans	Total net position
	Kr. billion						
2008	211.7	61.3	262.8	118.5	9.7	240.9	-112.7
2009	394.5	60.8	212.4	166.2	22.1	104.2	84.1
2010	428.7	62.5	179.4	132.5	14.5	9.3	137.8
2011	491.9	62.4	225.8	150.0	23.2	24.0	149.1
2012	501.6	65.8	163.7	184.1	102.6	66.4	220.3
Feb 12	498.7	60.1	274.4	100.6	10.4	0.4	110.7
Mar 12	483.0	60.7	214.3	165.9	17.2	23.2	159.9
Apr 12	482.0	61.7	208.5	166.2	16.2	20.0	162.4
May 12	502.4	63.3	217.7	180.1	13.8	20.0	173.9
Jun 12	511.6	63.4	215.1	188.1	18.8	22.2	184.7
Jul 12	514.4	63.8	194.3	157.7	66.9	19.1	205.5
Aug 12	514.4	63.2	213.8	151.1	55.2	19.5	186.7
Sep 12	513.5	63.2	205.2	181.5	65.2	53.2	193.5
Oct 12	513.4	62.8	209.7	141.6	98.7	53.6	186.6
Nov 12	512.1	63.8	205.5	143.4	99.4	53.6	189.2
Dec 12	504.0	65.8	162.0	184.1	102.6	66.4	220.3
Jan 13	495.6	62.7	171.4	161.7	94.3	53.2	202.8
Feb 13	483.2	62.0	205.9	128.2	80.0	53.4	154.8

FACTORS AFFECTING THE BANKS' AND THE MORTGAGE BANKS' 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 banks' 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									
2008	-11.9	99.6	-111.5	-19.9	0.1	-19.8	0.6	24.9	-105.8	-112.7
2009	178.6	123.8	54.8	153.6	17.1	170.7	6.5	-35.3	196.8	84.1
2010	169.6	160.7	8.8	45.7	4.3	50.0	-0.4	-4.7	53.7	137.8
2011	93.9	143.8	-49.9	53.3	2.5	55.8	0.9	2.7	11.4	149.1
2012	146.7	105.4	41.3	31.7	2.4	34.1	0.7	-4.4	71.1	220.3
Feb 12	-32.6	19.3	-51.9	0.0	3.3	3.3	0.2	2.3	-46.1	110.7
Mar 12	34.1	-11.6	45.8	0.0	-1.2	-1.2	0.1	4.5	49.2	159.9
Apr 12	24.4	19.2	5.3	0.0	-0.4	-0.4	-0.1	-2.1	2.6	162.4
May 12	4.4	22.1	-17.7	29.6	-0.5	29.1	0.5	-0.4	11.5	173.9
Jun 12	11.5	5.5	6.0	7.3	-0.1	7.2	-0.6	-0.5	10.8	184.7
Jul 12	39.3	17.7	21.6	0.0	2.1	2.1	0.6	-3.6	20.8	205.5
Aug 12	-10.4	9.0	-19.5	0.0	0.0	0.0	0.3	0.4	-18.8	186.7
Sep 12	8.3	0.8	7.5	-0.6	0.8	0.2	-0.1	-0.9	6.8	193.5
Oct 12	12.3	16.2	-3.8	-0.5	-0.1	-0.6	0.1	-2.5	-6.9	186.6
Nov 12	15.2	11.8	3.4	-1.5	0.2	-1.3	0.2	0.2	2.6	189.2
Dec 12	25.6	-15.3	40.9	-2.6	-2.8	-5.4	-0.3	-4.2	31.1	220.3
Jan 13	4.8	11.8	-7.0	-11.9	3.5	-8.4	-0,3	-1,8	-17.5	202.8
Feb 13	-39.6	15.5	-55.1	0.0	8.2	8.2	0.5	-1.7	-48.0	154.8

SELECTED ITEMS FROM THE CONSOLIDATED BALANCE SHEET OF THE MFI SECTOR

Table 4

End of period	Total balance	Assets				Liabilities		Foreign assets, net [1]
		Domestic lending		Domestic securities				
		Public sector	Private sector	Bonds, etc.	Shares, etc.	Domestic deposits	Bonds, etc. issued	
	Kr. billion							
2008	6,286.4	129.1	3,724.3	40.6	56.7	1,487.5	1,508.4	-407.9
2009	5,968.5	135.9	3,647.9	78.2	65.5	1,442.8	1,650.9	-417.6
2010	6,159.1	146.6	3,696.6	41.8	87.9	1,410.1	1,660.4	-397.6
2011	6,310.3	148.8	3,640.2	45.1	82.4	1,430.5	1,740.0	-330.9
2012	6,139.1	157.4	3,637.5	42.6	98.8	1,419.0	1,796.6	-375.1
Jan 12	6,353.8	148.4	3,672.5	41.9	85.8	1,449.1	1,798.2	-281.7
Feb 12	6,435.0	146.0	3,668.0	74.7	87.0	1,488.7	1,812.4	-242.8
Mar 12	6,380.8	147.5	3,688.0	57.8	85.9	1,414.4	1,818.7	-282.2
Apr 12	6,374.7	148.5	3,704.5	55.5	86.3	1,449.7	1,818.9	-263.6
May 12	6,705.5	149.5	3,695.3	58.4	86.1	1,465.5	1,829.7	-268.1
Jun 12	6,585.3	151.7	3,712.7	40.2	94.4	1,465.9	1,815.4	-243.5
Jul 12	6,581.6	152.4	3,690.7	42.1	96.7	1,458.9	1,819.7	-337.8
Aug 12	6,618.6	146.9	3,685.5	47.7	96.9	1,480.9	1,836.5	-308.7
Sep 12	6,532.3	148.3	3,689.6	33.4	98.4	1,461.9	1,836.4	-320.8
Oct 12	6,442.5	149.2	3,666.5	36.6	99.2	1,474.7	1,814.8	-294.5
Nov 12	6,507.5	154.5	3,650.4	44.8	97.9	1,459.4	1,829.4	-333.8
Dec 12	6,139.1	157.4	3,637.5	42.6	98.8	1,419.0	1,796.6	-375.1
Jan 13	6,139.0	153.2	3,619.4	53.1	99.7	1,451.5	1,810.5	-279.9
	Change compared with previous year, per cent							
2008	…	9.8	11.0	-6.1	-10.7	21.5	0.2	…
2009	…	5.3	-2.1	92.4	15.5	-3.0	9.4	…
2010	…	7.9	1.3	-46.6	34.3	-2.3	0.6	…
2011	…	1.5	-1.5	7.9	-6.3	1.4	4.8	…
2012	…	5.8	-0.1	-5.5	19.9	-0.8	3.3	…
Jan 12	…	2.9	0.2	-2.2	-4.6	3.5	6.0	…
Feb 12	…	2.1	0.5	63.0	-8.5	2.5	8.2	…
Mar 12	…	1.1	0.4	25.2	-8.3	-2.3	8.4	…
Apr 12	…	2.1	1.2	11.2	-6.3	-0.9	8.0	…
May 12	…	4.1	1.6	-0.3	-2.3	0.0	6.9	…
Jun 12	…	2.9	1.7	-33.0	8.0	0.5	5.9	…
Jul 12	…	2.6	1.6	-27.1	10.9	-0.3	5.2	…
Aug 12	…	3.0	1.5	-29.0	15.9	-0.4	5.8	…
Sep 12	…	3.5	0.9	-51.8	23.3	-3.3	5.8	…
Oct 12	…	3.2	0.5	-49.8	21.9	-2.3	5.1	…
Nov 12	…	6.5	0.5	-13.0	18.3	0.0	4.1	…
Dec 12	…	5.8	-0.1	-5.5	19.9	-0.8	3.3	…
Jan 13	…	3.3	-1.4	26.6	16.2	0.2	0.7	…

Note: The MFI sector includes Danish monetary financial institutions, i.e. banks and mortgage banks, 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	Repu-rchase agree-ments	Bonds, etc. issued with original maturity =< 2 years	M3
	Kr. billion								
2008	50.4	702.8	753.2	286.4	18.4	1,058.0	4.0	57.0	1,119.1
2009	48.5	744.6	793.1	203.0	19.6	1,015.7	10.9	143.0	1,169.7
2010	52.6	747.8	800.4	143.9	18.0	962.3	58.2	241.0	1,261.8
2011	52.5	727.2	779.7	134.1	17.2	931.0	59.1	196.5	1,186.9
2012	54.6	796.8	851.4	115.7	19.1	986.2	43.2	181.6	1,211.1
Jan 12	51.4	731.2	782.6	145.0	18.3	945.9	64.4	287.5	1,297.9
Feb 12	51.5	726.8	778.3	143.8	19.5	941.5	54.2	297.0	1,292.9
Mar 12	52.3	722.3	774.5	133.1	19.3	926.9	57.3	345.3	1,329.7
Apr 12	53.5	752.7	806.3	133.3	20.0	959.6	64.0	302.2	1,326.0
May 12	54.0	760.1	814.1	135.7	20.0	969.8	63.2	283.7	1,316.9
Jun 12	53.7	765.7	819.4	132.8	20.1	972.4	62.8	288.3	1,323.6
Jul 12	53.4	781.9	835.4	129.7	20.4	985.4	61.9	275.8	1,323.4
Aug 12	53.5	787.9	841.4	128.8	19.9	990.1	59.7	279.9	1,329.9
Sep 12	53.5	785.6	839.1	121.0	19.8	979.9	60.2	275.3	1,315.6
Oct 12	53.5	797.8	851.3	126.3	18.6	996.2	52.9	220.3	1,269.6
Nov 12	54.1	797.6	851.7	119.8	18.7	990.2	48.7	181.4	1,220.5
Dec 12	54.6	796.8	851.4	115.7	19.1	986.2	43.2	181.6	1,211.1
Jan 13	53.6	809.4	863.0	132.1	19.3	1,014.3	37.9	118.5	1,170.8
	Change compared with previous year, per cent								
2008	…	…	-0.2	…	…	8.2	…	…	7.0
2009	…	…	5.3	…	…	-4.0	…	…	4.5
2010	…	…	0.9	…	…	-5.3	…	…	7.9
2011	…	…	-2.6	…	…	-3.3	…	…	-5.9
2012	…	…	9.2	…	…	5.9	…	…	2.0
Jan 12	…	…	-1.5	…	…	-0.7	…	…	14.9
Feb 12	…	…	-2.1	…	…	-1.4	…	…	14.4
Mar 12	…	…	-0.7	…	…	-1.4	…	…	15.8
Apr 12	…	…	0.0	…	…	-0.2	…	…	19.7
May 12	…	…	0.7	…	…	0.3	…	…	17.4
Jun 12	…	…	4.1	…	…	2.8	…	…	18.6
Jul 12	…	…	4.2	…	…	2.1	…	…	14.3
Aug 12	…	…	7.0	…	…	4.9	…	…	16.4
Sep 12	…	…	7.3	…	…	4.4	…	…	11.3
Oct 12	…	…	8.5	…	…	6.2	…	…	10.9
Nov 12	…	…	9.3	…	…	6.2	…	…	4.2
Dec 12	…	…	9.2	…	…	5.9	…	…	2.0
Jan 13	…	…	10.3	…	…	7.2	…	…	-9.8

[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							
2008	4,568.5	974.6	1,546.3	586.8	603.3	1,092.1	1,444.2	1,424.2
2009	4,147.6	876.1	1,359.1	575.7	529.7	1,203.5	1,168.8	1,427.4
2010	4,197.4	902.7	1,334.6	570.2	494.7	1,157.1	1,118.3	1,489.7
2011	4,234.7	841.3	1,230.0	562.0	434.1	1,151.6	1,052.5	1,483.6
2012	4,168.6	835.1	1,169.8	538.4	390.0	1,233.7	1,139.7	1,496.1
Jan 12	4,237.3	762.8	1,258.4	553.8	431.2	1,169.4	1,051.2	1,491.8
Feb 12	4,241.5	801.9	1,244.0	550.7	431.8	1,144.2	1,091.2	1,437.5
Mar 12	4,288.8	843.4	1,262.6	558.4	437.8	1,192.9	1,192.8	1,436.5
Apr 12	4,246.7	800.8	1,277.3	547.6	445.5	1,138.9	1,096.9	1,451.3
May 12	4,534.0	808.2	1,263.0	542.6	435.6	1,155.2	1,148.7	1,452.6
Jun 12	4,448.2	881.6	1,272.9	552.6	442.2	1,161.7	1,237.1	1,500.4
Jul 12	4,491.4	875.1	1,247.4	544.0	426.9	1,151.6	1,161.1	1,504.9
Aug 12	4,517.3	878.8	1,231.7	540.1	417.5	1,169.0	1,175.0	1,512.1
Sep 12	4,533.5	848.4	1,233.0	545.7	414.2	1,204.3	1,201.4	1,506.3
Oct 12	4,412.5	833.6	1,206.4	536.4	404.3	1,175.1	1,142.7	1,499.6
Nov 12	4,460.7	880.2	1,187.1	532.4	403.9	1,174.8	1,204.9	1,471.6
Dec 12	4,168.6	835.1	1,169.8	538.4	390.0	1,233.7	1,139.7	1,496.1
Jan 13	4,097.1	776.2	1,150.8	527.8	382.2	1,226.8	1,083.0	1,496.0
	Change compared with previous year, per cent							
2008	…	5.4	15.9	5.3	9.3	2.5	0.7	5.2
2009	…	-10.1	-12.1	-1.9	-12.2	10.2	-19.1	0.2
2010	…	3.0	-1.8	-1.0	-6.6	-3.9	-4.3	4.4
2011	…	-6.8	-7.8	-1.4	-12.3	-0.5	-5.9	-0.4
2012	…	-0.7	-4.9	-4.2	-10.2	7.1	8.3	0.8
Jan 12	…	-8.5	-3.2	-1.3	-11.8	0.8	0.1	1.1
Feb 12	…	-3.6	-2.8	-1.4	-11.0	0.8	8.8	-1.9
Mar 12	…	5.9	-2.9	-1.2	-9.3	5.3	19.7	-0.4
Apr 12	…	10.0	-0.7	-2.2	-6.9	1.0	21.5	0.5
May 12	…	9.2	0.4	-2.4	-5.7	3.8	38.1	-2.9
Jun 12	…	20.6	0.0	-2.1	-4.6	2.7	30.3	2.7
Jul 12	…	21.0	-0.5	-2.9	-5.0	0.4	23.8	0.8
Aug 12	…	19.9	-0.5	-3.5	-6.5	2.6	23.2	2.4
Sep 12	…	11.8	-2.5	-3.7	-8.7	7.5	21.5	1.3
Oct 12	…	13.5	-3.7	-4.5	-9.7	4.7	16.8	3.2
Nov 12	…	17.8	-3.4	-4.4	-9.6	5.0	23.3	0.6
Dec 12	…	-0.7	-4.9	-4.2	-10.2	7.1	8.3	0.8
Jan 13	…	1.7	-8.5	-4.7	-11.4	4.9	3.0	0.3

Note: Excluding Danish banks' units abroad.

SELECTED ITEMS FROM THE BALANCE SHEET OF THE MORTGAGE BANKS

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:				
				Households, etc.	Non-financial companies			
	Kr. billion							
2008	3,322.7	428.5	2,164.6	1,629.6	466.7	633.5	474.4	2,582.3
2009	3,827.1	512.2	2,278.8	1,712.2	501.0	927.6	539.3	3,048.3
2010	4,009.6	572.6	2,347.1	1,749.2	532.0	976.9	632.1	3,139.3
2011	3,996.4	602.9	2,396.2	1,775.5	558.1	869.9	660.9	3,135.3
2012	4,175.0	673.6	2,454.0	1,811.9	577.9	902.2	657.8	3,301.7
Jan 12	3,377.5	543.8	2,398.1	1,777.8	558.4	321.6	569.3	2,635.9
Feb 12	3,471.1	573.0	2,402.8	1,781.5	559.5	374.2	591.6	2,697.5
Mar 12	3,733.1	674.0	2,407.9	1,782.3	561.8	535.0	644.9	2,890.4
Apr 12	3,397.1	553.6	2,408.6	1,783.2	562.3	321.7	578.2	2,641.0
May 12	3,440.9	548.4	2,414.3	1,787.5	564.0	354.6	580.0	2,685.8
Jun 12	3,611.3	630.3	2,424.0	1,794.2	565.8	434.6	628.5	2,772.2
Jul 12	3,557.0	616.2	2,427.0	1,797.1	566.5	382.4	630.6	2,735.3
Aug 12	3,734.3	669.0	2,432.6	1,800.8	567.4	489.4	680.7	2,855.4
Sep 12	3,843.8	713.8	2,437.1	1,802.5	570.2	561.1	693.2	2,939.0
Oct 12	3,552.9	626.4	2,441.4	1,805.2	571.9	350.0	615.9	2,734.3
Nov 12	3,830.2	637.8	2,448.0	1,808.3	575.7	599.0	662.6	2,969.7
Dec 12	4,175.0	673.6	2,454.0	1,811.9	577.9	902.2	657.8	3,301.7
Jan 13	3,506.9	595.2	2,450.5	1,814.5	579.2	318.4	591.3	2,710.4
	Change compared with previous year, per cent							
2008	…	18.1	7.4	5.2	15.5	-2.4	37.8	3.5
2009	…	19.5	5.3	5.1	7.4	46.4	13.7	18.0
2010	…	11.8	3.0	2.2	6.2	5.3	17.2	3.0
2011	…	5.3	2.1	1.5	4.9	-11.0	4.6	-0.1
2012	…	11.7	2.4	2.1	3.6	3.7	-0.5	5.3
Jan 12	…	19.7	2.2	1.8	4.7	4.6	7.5	6.3
Feb 12	…	25.9	2.3	1.9	4.6	19.7	12.6	8.5
Mar 12	…	32.2	2.3	1.9	4.2	15.0	14.6	9.7
Apr 12	…	22.6	2.2	1.8	4.3	8.2	14.1	6.4
May 12	…	20.9	2.2	1.9	3.9	16.0	12.6	7.3
Jun 12	…	24.0	2.5	2.3	4.0	47.0	18.9	10.5
Jul 12	…	27.9	2.5	2.3	3.9	27.1	18.8	8.7
Aug 12	…	35.6	2.4	2.2	3.5	50.4	24.5	11.5
Sep 12	…	24.3	2.6	2.4	3.9	29.3	16.0	9.1
Oct 12	…	22.7	2.6	2.4	3.6	3.9	11.2	5.6
Nov 12	…	23.2	2.6	2.3	3.9	43.4	19.4	10.4
Dec 12	…	11.7	2.4	2.1	3.6	3.7	-0.5	5.3
Jan 13	…	9.5	2.2	2.1	3.7	-1.0	3.9	2.8

LENDING TO RESIDENTS BY THE BANKS AND THE MORTGAGE BANKS

Table 8

End of period	Total lending			The banks' lending			The mortgage banks' lending		
	Total	Households, etc.	Business, etc.	Total	Households, etc.	Business, etc.	Total	Households, etc.	Business, etc.
	Kr. billion								
2008	3,787.5	2,216.4	1,456.4	1,622.9	586.8	978.3	2,164.6	1,629.6	478.1
2009	3,682.4	2,287.9	1,283.8	1,403.6	575.7	770.0	2,278.8	1,712.2	513.8
2010	3,704.3	2,319.4	1,281.8	1,357.2	570.2	738.6	2,347.1	1,749.2	543.1
2011	3,644.8	2,337.5	1,216.5	1,248.6	562.0	646.3	2,396.2	1,775.5	570.1
2012	3,630.8	2,350.3	1,187.3	1,176.8	538.4	598.1	2,454.0	1,811.9	589.2
Jan 12	3,674.1	2,331.5	1,253.3	1,276.0	553.8	682.9	2,398.1	1,777.8	570.4
Feb 12	3,664.4	2,332.2	1,246.1	1,261.6	550.7	674.2	2,402.8	1,781.5	571.9
Mar 12	3,688.1	2,340.7	1,258.6	1,280.2	558.4	683.9	2,407.9	1,782.3	574.7
Apr 12	3,693.6	2,330.8	1,274.1	1,285.0	547.6	698.7	2,408.6	1,783.2	575.4
May 12	3,685.0	2,330.1	1,264.5	1,270.8	542.6	688.0	2,414.3	1,787.5	576.5
Jun 12	3,704.7	2,346.8	1,265.3	1,280.6	552.6	686.8	2,424.0	1,794.2	578.5
Jul 12	3,684.3	2,341.1	1,250.2	1,257.2	544.0	671.0	2,427.0	1,797.1	579.3
Aug 12	3,674.1	2,340.9	1,245.5	1,241.5	540.1	665.3	2,432.6	1,800.8	580.2
Sep 12	3,679.9	2,348.2	1,242.1	1,242.8	545.7	659.6	2,437.1	1,802.5	582.5
Oct 12	3,654.8	2,341.6	1,223.1	1,213.4	536.4	639.0	2,441.4	1,805.2	584.1
Nov 12	3,642.1	2,340.7	1,210.8	1,194.2	532.4	623.2	2,448.0	1,808.3	587.6
Dec 12	3,630.8	2,350.3	1,187.3	1,176.8	538.4	598.1	2,454.0	1,811.9	589.2
Jan 13	3,608.4	2,342.3	1,176.5	1,157.9	527.8	585.8	2,450.5	1,814.5	590.7
	Change compared with previous year, per cent								
2008	11.8	5.2	24.2	18.3	5.3	28.6	7.4	5.2	15.9
2009	-2.8	3.2	-11.9	-13.5	-1.9	-21.3	5.3	5.1	7.5
2010	0.6	1.4	-0.2	-3.3	-1.0	-4.1	3.0	2.2	5.7
2011	-1.6	0.8	-5.1	-8.0	-1.4	-12.5	2.1	1.5	5.0
2012	-0.4	0.5	-2.4	-5.7	-4.2	-7.5	2.4	2.1	3.3
Jan 12	0.2	1.0	-0.5	-3.3	-1.3	-4.5	2.2	1.8	4.8
Feb 12	0.4	1.1	0.0	-2.9	-1.4	-3.7	2.3	1.9	4.7
Mar 12	0.4	1.2	-0.4	-3.0	-1.2	-4.0	2.3	1.9	4.4
Apr 12	0.9	0.8	1.5	-1.5	-2.2	-0.8	2.2	1.8	4.6
May 12	1.3	0.8	2.4	-0.4	-2.4	1.1	2.2	1.9	4.0
Jun 12	1.3	1.2	2.3	-0.8	-2.1	0.8	2.5	2.3	4.0
Jul 12	1.2	1.1	2.1	-1.2	-2.9	0.6	2.5	2.3	4.0
Aug 12	1.1	0.8	2.1	-1.2	-3.5	0.8	2.4	2.2	3.6
Sep 12	0.6	0.9	0.2	-3.1	-3.7	-2.8	2.6	2.4	3.8
Oct 12	0.1	0.7	-0.9	-4.5	-4.5	-4.7	2.6	2.4	3.6
Nov 12	0.2	0.7	-0.6	-4.3	-4.4	-4.5	2.6	2.3	3.8
Dec 12	-0.4	0.5	-2.4	-5.7	-4.2	-7.5	2.4	2.1	3.3
Jan 13	-1.8	0.5	-6.1	-9.3	-4.7	-14.2	2.2	2.1	3.6

Note: Including lending in Danish banks' units abroad. The category "Business etc." includes non-financial companies, pension and insurance companies, other financial intermediaries (except banks and mortgage banks) and unknown sector.

THE MORTGAGE BANKS' 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						
2008	72.4	915.9	1,177.1	900.3	2,165.4	155.3	626.4
2009	68.3	752.6	1,460.3	1,106.6	2,281.2	211.4	695.1
2010	63.9	656.8	1,628.3	1,190.5	2,349.0	232.3	740.6
2011	59.8	619.2	1,715.3	1,229.5	2,394.4	219.0	780.2
2012	56.3	616.3	1,783.3	1,246.9	2,455.9	195.8	805.3
Jan 12	60.1	617.2	1,722.1	1,253.8	2,399.5	212.6	781.6
Feb 12	60.3	614.8	1,729.3	1,252.1	2,404.4	211.9	784.6
Mar 12	60.5	600.9	1,747.7	1,259.0	2,409.2	210.5	786.8
Apr 12	60.7	596.6	1,752.8	1,275.0	2,410.1	208.9	789.5
May 12	60.6	598.5	1,757.4	1,275.8	2,416.5	208.2	792.8
Jun 12	58.9	599.9	1,768.3	1,276.4	2,427.0	208.1	798.3
Jul 12	58.8	601.8	1,768.5	1,273.7	2,429.1	206.8	800.1
Aug 12	58.7	605.5	1,770.5	1,274.2	2,434.7	206.6	801.5
Sep 12	58.7	605.5	1,774.4	1,266.2	2,438.5	206.0	802.5
Oct 12	58.6	606.3	1,778.0	1,247.9	2,443.0	205.0	805.0
Nov 12	58.2	610.3	1,782.5	1,248.0	2,450.9	205.2	807.9
Dec 12	56.3	616.3	1,783.3	1,246.9	2,455.9	195.8	805.3
Jan 13	56.4	614.3	1,781.2	1,204.6	2,451.9	193.6	799.9

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

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

THE BANKS' EFFECTIVE INTEREST RATES — Table 10

	Lending				Deposits			
	All sectors	Households, etc.	Non-financial companies	Financial companies	All sectors	Households, etc.	Non-financial companies	Financial companies
	Per cent, per annum							
Q1 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
Q3 08	6.6	7.8	6.5	4.9	4.0	3.6	4.1	4.5
Q4 08	7.0	8.4	7.1	5.2	4.4	3.9	4.5	5.0
Q1 09	6.0	7.4	6.3	4.0	3.3	2.8	3.2	4.1
Q2 09	5.1	6.4	5.4	2.7	2.2	2.0	2.0	2.6
Q3 09	4.6	6.0	5.0	2.1	1.7	1.7	1.5	1.9
Q4 09	4.1	5.6	4.6	1.7	1.4	1.5	1.1	1.5
Q1 10	3.9	5.5	4.4	1.5	1.2	1.4	0.9	1.3
Q2 10	3.6	5.3	4.2	1.3	1.0	1.2	0.7	1.0
Q3 10	3.5	5.1	4.1	1.2	0.9	1.1	0.6	0.8
Q4 10	3.6	5.1	4.2	1.2	0.9	1.1	0.6	0.9
Q1 11	3.8	5.2	4.2	1.3	1.0	1.1	0.7	0.9
Q2 11	4.0	5.3	4.3	1.6	1.1	1.2	0.8	1.1
Q3 11	4.2	5.6	4.6	1.7	1.2	1.3	0.9	1.3
Q4 11	4.1	5.6	4.6	1.5	1.1	1.3	0.8	1.0
Q1 12	3.8	5.6	4.5	1.0	0.9	1.2	0.6	0.6
Q2 12	3.8	5.7	4.5	1.0	0.9	1.1	0.5	0.5
Q3 12	3.5	5.5	4.2	0.6	0.7	1.1	0.4	0.2
Q4 12	3.5	5.5	4.1	0.5	0.7	1.1	0.4	0.2
Q1 13	...	...	...	...	...	...	...	...
Jan 12	3.8	5.5	4.5	1.1	0.9	1.2	0.6	0.7
Feb 12	3.8	5.6	4.6	1.0	0.9	1.2	0.6	0.7
Mar 12	3.9	5.7	4.5	1.0	0.9	1.2	0.6	0.6
Apr 12	3.8	5.8	4.6	1.1	0.9	1.2	0.5	0.5
May 12	3.8	5.7	4.5	1.0	0.9	1.2	0.5	0.6
Jun 12	3.6	5.5	4.4	0.9	0.8	1.1	0.5	0.5
Jul 12	3.5	5.5	4.3	0.7	0.8	1.1	0.4	0.3
Aug 12	3.5	5.5	4.2	0.6	0.7	1.1	0.4	0.2
Sep 12	3.5	5.5	4.1	0.5	0.7	1.1	0.4	0.2
Oct 12	3.5	5.6	4.1	0.5	0.7	1.1	0.4	0.1
Nov 12	3.6	5.6	4.2	0.5	0.7	1.1	0.4	0.2
Dec 12	3.4	5.5	4.0	0.5	0.7	1.1	0.4	0.2
Jan 13	3.5	5.5	4.1	0.5	0.7	1.1	0.3	0.2

DANMARKS NATIONALBANK'S LENDING SURVEY Table 11

	Changes in banks and mortgage banks' credit policies			
	Corporate lending		Lending to households	
	Development in current quarter	Expectations for the coming quarter	Development in current quarter	Expectations for the coming quarter
	Net balance			
Q1 10	-7.3	-0.2	-4.5	-4.8
Q2 10	0.6	0.9	0.0	4.7
Q3 10	1.1	-0.1	-0.3	4.6
Q4 10	8.4	10.1	0.0	0.1
Q1 11	-2.7	3.0	4.4	-5.7
Q2 11	-8.5	0.9	0.0	-4.4
Q3 11	-20.7	-1.9	-23.3	0.3
Q4 11	-4.2	-10.3	-6.0	-22.3
Q1 12	-5.6	-2.1	-25.0	-0.2
Q2 12	-15.3	-0.3	-16.1	-14.7
Q3 12	-11.1	-3.3	-29.0	-7.8
Q4 12	-4.1	-3.1	-9.4	-3.9

Note: A negative net balance indicates that, overall, the institutions have tightened their credit policies, thus making it more difficult to obtain loans, while a positive net balance indicates an overall easing of credit policies. The net balance indicates the institutions' assessment of quarter-on-quarter changes and not absolute changes. For a detailed presentation of the lending survey, see Carina Moselund Jensen and Tania Al-Zagheer Sass, Danmarks Nationalbank's Lending Survey – New Statistics for Changes in Banks' and Mortgage-Credit Institutes' Credit Policies, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2009.

SELECTED ITEMS FROM THE BALANCE SHEET OF INVESTMENT FUNDS Table 12

End of period	Total balance	Assets: Holdings of securities: Bonds, etc.	Assets: Holdings of securities: Shares, etc.	Liabilities: Investment fund shares/units broken down by sector: Households	Insurance companies and pension funds	Other	Abroad
	Kr. billion.						
2008	773.2	425.3	222.5	211.4	266.9	238.1	14.6
2009	865.4	487.5	301.4	252.7	357.8	184.9	22.7
2010	1,287.6	768.3	387.8	298.7	654.9	235.5	23.9
2011	1,424.5	874.5	357.3	300.0	682.5	316.5	25.6
2012	1,675.5	995.2	449.9	344.3	812.2	375.5	33.0
Jan 12	1,486.5	893.5	395.4	309.4	704.3	329.9	26.7
Feb 12	1,511.8	902.8	409.9	314.5	714.8	333.7	27.3
Mar 12	1,512.6	896.3	396.8	313.1	717.2	331.5	27.2
Apr 12	1,531.1	910.8	392.3	317.3	711.2	346.7	27.7
May 12	1,539.8	947.0	359.3	315.1	712.1	344.4	27.7
Jun 12	1,548.5	918.7	393.2	318.8	713.6	346.4	29.2
Jul 12	1,609.2	947.4	409.0	329.5	748.1	359.0	30.6
Aug 12	1,627.2	952.4	413.3	330.5	759.3	367.0	30.4
Sep 12	1,717.7	964.9	424.1	333.9	772.2	370.2	30.5
Oct 12	1,727.3	972.3	424.6	335.6	779.3	370.1	30.9
Nov 12	1,755.1	987.7	433.2	340.4	797.5	373.7	32.1
Dec 12	1,675.5	995.2	449.9	344.3	812.2	375.6	33.0
Jan 13	1,676.2	977.1	464.7	346.9	813.1	371.2	34.6

SECURITIES ISSUED BY RESIDENTS BY OWNER'S HOME COUNTRY Table 13

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							
2008	2,981.3	405.0	363.1	158.5	2,419.4	227.4	529.9	244.4
2009	3,424.2	422.4	394.2	159.8	2,812.0	242.7	641.0	347.5
2010	3,552.5	541.0	474.3	172.7	2,844.6	342.8	786.2	545.5
2011	3,539.0	647.9	513.6	263.3	2,828.7	368.6	601.6	471.9
2012	3,544.9	757.4	525.9	290.6	2,849.4	454.6	722.0	609.2
Jan 12	2,936.3	666.8	514.8	258.6	2,230.5	392.7	658.3	489.6
Feb 12	3,015.8	658.9	527.9	258.9	2,296.7	386.9	709.6	544.4
Mar 12	3,213.9	630.3	517.8	238.1	2,515.8	378.6	695.3	535.4
Apr 12	2,975.3	629.4	530.8	244.4	2,264.7	371.9	697.4	548.6
May 12	3,049.5	658.4	557.1	273.9	2,314.7	371.5	651.9	528.1
Jun 12	3,091.7	699.6	516.9	289.7	2,398.1	396.9	655.9	541.2
Jul 12	3,053.9	710.2	528.2	312.1	2,353.4	386.9	697.3	589.1
Aug 12	3,161.3	726.1	529.7	315.2	2,459.6	399.8	700.5	595.5
Sep 12	3,244.5	738.7	519.3	318.1	2,555.7	409.6	714.0	600.4
Oct 12	3,080.9	770.6	529.7	320.6	2,383.0	437.6	709.3	597.4
Nov 12	3,336.6	758.7	536.8	293.0	2,631.7	452.5	715.9	601.2
Dec 12	3,544.9	757.4	525.9	290.6	2,849.4	454.6	722.0	609.2
Jan 13	2,899.6	788.6	530.6	276.8	2,206.9	500.5	760.3	661.5

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

HOUSEHOLDS' FINANCIAL ASSETS AND LIABILITIES — Table 14

	Assets					Liabilities		
End of period	Currency and bank deposits, etc.	Bonds, etc.	Shares and certificates issued by investment funds, etc.	Life-insurance and pension-scheme savings, etc.	Total	Loans, etc.	Net financial assets	Total
	Kr. billion							
2007	902	188	1,453	1,722	4,264	2,273	1,991	4,264
2008	905	173	794	1,786	3,659	2,418	1,241	3,659
2009	934	165	1,001	1,924	4,023	2,518	1,506	4,024
2010	964	148	1,218	2,128	4,458	2,632	1,826	4,458
2011	950	136	1,045	2,379	4,510	2,698	1,812	4,510
Q3 11	928	140	1,029	2,328	4,427	2,655	1,772	4,427
Q4 11	950	136	1,045	2,379	4,510	2,698	1,812	4,510
Q1 12	942	137	1,142	2,430	4,652	2,724	1,927	4,651
Q2 12	974	123	1,090	2,493	4,681	2,744	1,937	4,681
Q3 12	969	115	1,136	2,556	4,776	2,748	2,028	4,776

COMPANIES' FINANCIAL ASSETS AND LIABILITIES — Table 15

End of period	Assets				Liabilities				
					Debt				
	Currency, bank deposits and granted credits, etc.	Bonds, etc.	Shares and certificates issued by investment funds, etc.	Total	Loans, etc.	Bonds, etc. issued	Shares, etc. issued	Net financial assets	Total
	Kr. billion								
2007	914	134	2,923	3,971	1,764	118	4,284	-2,195	3,971
2008	1,052	110	1,788	2,950	1,970	108	2,518	-1,645	2,951
2009	1,017	108	2,260	3,385	1,921	136	3,065	-1,737	3,386
2010	1,047	124	2,912	4,083	1,888	143	3,983	-1,931	4,083
2011	1,139	110	2,469	3,718	1,855	159	3,266	-1,562	3,718
Q3 11	1,048	119	2,484	3,650	1,838	155	3,279	-1,622	3,650
Q4 11	1,139	110	2,469	3,718	1,855	159	3,266	-1,562	3,718
Q1 12	1,114	128	2,734	3,977	1,855	175	3,637	-1,690	3,977
Q2 12	1,112	115	2,606	3,832	1,875	166	3,441	-1,650	3,832
Q3 12	1,114	122	2,670	3,906	1,830	185	3,532	-1,641	3,906

Note: Companies are defined as non-financial companies.

CURRENT ACCOUNT OF THE BALANCE OF PAYMENTS (NET REVENUES) Table 16

	Goods (fob)	Services	Goods and services	Wages and property income	Current transfers	Total current account
	Kr. billion					
2008	4.2	52.1	56.3	23.0	-28.7	50.5
2009	47.4	20.8	68.1	17.3	-28.9	56.5
2010	53.4	48.9	102.3	33.0	-31.7	103.6
2011	55.3	40.9	96.2	36.6	-31.6	101.2
2012	39.8	42.4	82.2	47.6	-34.4	95.4
Feb 11 - Jan 12	52.1	39.9	92.0	36.6	-31.9	96.7
Feb 12 - Jan 13	40.8	42.4	83.1	48.8	-34.5	97.5
Jan 12	1.6	1.9	3.5	3.2	-4.1	2.7
Feb 12	3.4	2.1	5.4	3.1	-4.0	4.6
Mar 12	3.6	0.9	4.5	-1.8	-3.7	-1.0
Apr 12	2.7	3.6	6.3	2.9	-2.4	6.8
May 12	4.0	3.0	7.0	5.5	-2.4	10.2
Jun 12	5.1	4.7	9.8	5.9	-2.4	13.3
Jul 12	5.8	2.9	8.7	4.5	-2.4	10.8
Aug 12	3.4	6.5	9.9	3.5	-2.6	10.8
Sep 12	3.2	5.0	8.3	5.0	-2.5	10.7
Oct 12	3.5	4.5	8.0	5.2	-2.8	10.4
Nov 12	5.4	3.0	8.4	4.8	-2.7	10.5
Dec 12	-1.9	4.3	2.4	5.9	-2.5	5.8
Jan 13	2.5	1.9	4.5	4.4	-4.2	4.7

FINANCIAL ACCOUNT OF THE BALANCE OF PAYMENTS
(NET PAYMENTS FROM ABROAD) Table 17

	Current account and capital account, etc., total[1]	Capital import				Other[3]	Danmarks Nationalbank's transactions with abroad[4]
		Direct investments		Portfolio investments[2]	Other capital import		
		Danish abroad	Foreign in Denmark				
	Kr. billion						
2008	50.9	-67.6	9.3	52.7	-49.5	-67.1	-71.4
2009	56.3	-33.9	21.1	69.7	193.3	-18.5	288.0
2010	104.1	0.6	-64.9	-11.9	102.5	-103.8	26.5
2011	105.9	-71.5	68.1	21.3	-49.4	-18.3	56.1
2012	96.7	-30.3	6.1	-90.2	23.4	5.4	11.1
Feb 11 - Jan 12	101.4	-71.5	76.3	-24.4	30.2	-57.5	54.9
Feb 12 - Jan 13	98.8	-46.2	10.1	-22.9	-70.1	36.1	5.8
Jan 12	2.8	-4.0	-4.3	-30.5	40.5	-4.4	0.0
Feb 12	4.7	-14.0	-3.3	36.1	-41.7	25.3	7.2
Mar 12	-0.9	0.6	-5.1	-33.2	24.5	0.5	-13.6
Apr 12	6.9	1.6	-4.1	-10.0	-50.1	54.3	-1.5
May 12	10.3	-18.2	3.3	-38.3	75.1	-11.9	20.2
Jun 12	13.4	13.9	6.4	-24.5	17.6	-19.4	7.4
Jul 12	10.9	-6.3	9.3	2.9	-11.7	-6.7	-1.6
Aug 12	10.9	-0.4	-6.3	2.6	5.1	-12.3	-0.4
Sep 12	10.8	1.4	-1.4	9.1	-23.2	3.0	-0.2
Oct 12	10.5	-5.0	3.8	22.7	-35.2	4.9	1.8
Nov 12	10.6	-10.6	0.4	-32.8	7.4	24.8	-0.3
Dec 12	5.9	10.7	7.4	5.8	15.0	-52.8	-8.0
Jan 13	4.8	-19.9	-0.3	36.7	-52.9	26.4	-5.2

[1] Including total current account and capital transfers, etc.
[2] This item may differ from the total of Table 18, as portfolio investments are published 1-2 weeks earlier than the rest of the balance of payments.
[3] Including errors and omissions.
[4] Including transactions on *all* Danmarks Nationalbank's accounts with abroad and not only transactions on accounts included by compilation of the foreign-exchange reserve. The latter is 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 18

	Danish securities			Foreign securities		
	Krone-denominated bonds, etc.	Foreign currency denominated bonds, etc.	Shares	Bonds, etc.	Shares	Total [1]
	Kr. billion					
2008	-59.8	142.1	11.3	-91.0	50.1	52.7
2009	-4.3	162.3	38.0	-82.5	-43.8	69.7
2010	66.5	-35.5	48.9	-65.9	-26.0	-11.9
2011	83.0	-70.5	-11.7	31.0	-10.6	21.3
2012	92.1	-52.8	27.4	-89.1	-67.8	-90.2
Jan 12	4.6	7.4	0.5	-33.9	-9.0	-30.5
Feb 12	-1.3	0.6	7.8	25.9	3.1	36.1
Mar 12	-15.5	0.1	5.8	-10.8	-12.8	-33.2
Apr 12	-8.9	5.9	-6.8	1.9	-2.2	-10.0
May 12	25.4	-45.0	3.5	-15.8	-6.4	-38.3
Jun 12	43.0	-55.3	-1.4	-11.7	0.9	-24.5
Jul 12	10.6	3.1	2.6	-10.8	-2.6	2.9
Aug 12	14.9	6.1	-0.1	-12.4	-5.8	2.6
Sep 12	21.4	0.1	1.0	-6.0	-7.4	9.1
Oct 12	32.8	3.8	1.1	-4.0	-11.1	22.7
Nov 12	-25.9	22.5	7.4	-34.3	-2.5	-32.8
Dec 12	-8.9	-2.1	6.0	22.9	-12.1	5.8
Jan 13	28.6	20.1	1.1	6.2	-19.3	36.7

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 Table 17, as the rest of the balance of payments is published 1-2 weeks later.

DENMARK'S EXTERNAL ASSETS AND LIABILITIES — Table 19

End of period	Direct investments: Equity	Direct investments: Inter-company debt, etc.	Portfolio investments: Shares, etc.	Portfolio investments: Bonds, etc.	Financial derivatives, net	Other investments: Trade credits	Other investments: Loans and deposits	Other investments: Other	Danmarks Nationalbank	Total
	Kr. billion									
Assets										
2007	650	288	794	733	0	47	1,035	32	176	3,755
2008	650	380	449	784	83	45	1,101	37	226	3,754
2009	730	376	612	926	21	38	927	32	400	4,061
2010	822	407	762	1,057	37	47	997	33	432	4,594
2011	842	474	733	1,041	120	50	938	35	492	4,724
Q3 11	827	463	688	979	132	49	968	33	497	4,636
Q4 11	842	474	733	1,041	120	50	938	35	492	4,724
Q1 12	892	462	794	1,061	121	52	999	34	487	4,903
Q2 12	924	455	792	1,087	134	56	1,050	35	519	5,052
Q3 12	957	445	845	1,139	127	55	995	36	522	5,120
Liabilities										
2007	543	277	422	1,123	•	36	1,409	38	5	3,853
2008	511	292	241	1,198	•	41	1,398	40	121	3,843
2009	497	303	348	1,362	•	34	1,402	38	5	3,988
2010	492	293	521	1,436	•	41	1,539	40	5	4,367
2011	504	302	451	1,467	•	43	1,422	44	5	4,238
Q3 11	504	304	401	1,510	•	40	1,389	43	3	4,195
Q4 11	504	302	451	1,467	•	43	1,422	44	5	4,238
Q1 12	508	298	531	1,458	•	42	1,515	45	2	4,399
Q2 12	529	303	538	1,455	•	40	1,604	46	4	4,518
Q3 12	541	298	593	1,514	•	40	1,494	48	2	4,531
Net assets										
2007	108	11	372	-390	0	11	-375	-6	171	-98
2008	139	87	208	-415	83	4	-297	-3	105	-89
2009	233	73	264	-436	21	3	-475	-6	395	73
2010	330	113	241	-379	37	6	-542	-7	428	227
2011	338	172	282	-426	120	7	-484	-9	487	486
Q3 11	323	159	287	-531	132	10	-421	-11	494	441
Q4 11	338	172	282	-426	120	7	-484	-9	487	486
Q1 12	383	165	263	-397	121	10	-517	-11	485	503
Q2 12	395	153	253	-368	134	16	-554	-11	515	534
Q3 12	416	146	251	-375	127	14	-499	-12	520	589

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

GDP BY TYPE OF EXPENDITURE Table 20

	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							
2008	1,753.2	840.0	465.4	371.7	20.4	1,697.5	959.6	904.0
2009	1,664.8	822.1	495.9	303.5	-21.7	1,599.8	793.1	728.2
2010	1,761.1	857.6	509.8	300.1	-4.7	1,662.8	887.0	788.7
2011	1,791.5	874.5	508.1	311.7	3.6	1,698.0	956.8	863.3
2012	1,816.7	899.8	521.6	320.3	-5.6	1,736.0	993.5	912.8
Q4 11	457.8	228.3	128.8	83.8	-5.6	435.4	243.3	220.9
Q1 12	442.0	221.4	126.4	77.0	4.3	429.0	238.4	225.3
Q2 12	455.2	225.1	129.5	80.0	-2.1	432.5	251.9	229.1
Q3 12	456.1	219.7	130.7	78.5	0.7	429.6	255.3	228.8
Q4 12	463.3	233.7	135.0	84.7	-8.4	445.0	247.9	229.6
	Real growth compared with previous year, per cent							
2008	-0.8	-0.3	1.9	-4.1	...	-0.9	3.3	3.3
2009	-5.7	-3.6	2.1	-15.9	...	-7.0	-9.5	-12.3
2010	1.6	1.7	0.4	-2.4	...	1.6	3.0	3.2
2011	1.1	-0.5	-1.5	2.8	...	0.3	6.5	5.6
2012	-0.6	0.5	0.5	1.2	...	0.1	1.1	2.7
Q4 11	0.3	-0.4	-1.8	4.0	...	-0.4	4.4	3.5
Q1 12	0.1	0.8	-0.9	6.5	...	1.7	0.5	3.9
Q2 12	-1.3	0.5	-0.9	-0.4	...	-1.3	3.2	3.7
Q3 12	0.0	0.8	1.5	-0.1	...	0.1	1.6	2.0
Q4 12	-1.0	0.0	2.0	-0.5	...	-0.1	-0.8	1.1
	Real growth compared with previous quarter (seasonally adjusted), per cent							
Q4 11	0.0	1.4	-0.3	0.3	...	0.3	0.7	-0.1
Q1 12	0.1	0.0	0.3	1.5	...	0.7	-0.2	1.8
Q2 12	-1.0	0.0	0.5	-2.8	...	-1.4	2.0	0.5
Q3 12	0.8	-0.2	1.0	0.8	...	0.7	-0.8	-0.1
Q4 12	-0.9	-0.1	0.3	0.3	...	-0.1	-1.6	-0.9

EU-HARMONIZED INDEX OF CONSUMER PRICES (HICP) AND UNDERLYING INFLATION (IMI) Table 21

	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	10.3	18.4	71.3	8.5	4.1	58.7	53.4	16.2	37.2
	Year-on-year growth, per cent									
2008	3.6	7.7	6.7	2.1	2.8	3.5	1.9	2.1	4.0	1.1
2009	1.1	-4.0	0.5	2.0	3.1	4.8	1.7	1.9	-4.3	5.1
2010	2.2	9.2	2.1	1.2	2.8	3.9	0.8	0.9	1.7	0.5
2011	2.7	8.9	4.0	1.4	3.0	2.4	1.1	0.9	4.8	-0.9
2012	2.4	2.9	5.1	1.6	2.6	2.3	1.4	1.2	1.1	1.2
Q1 10	1.9	8.9	0.0	1.4	2.9	3.7	1.0	1.2	-1.3	2.3
Q2 10	2.0	10.1	0.8	1.1	2.8	3.9	0.7	0.7	1.0	0.6
Q3 10	2.3	8.8	3.2	1.1	2.5	4.0	0.8	0.9	3.2	-0.2
Q4 10	2.5	9.1	4.5	1.1	2.9	4.0	0.7	0.8	3.8	-0.6
Q1 11	2.6	9.3	3.4	1.4	2.9	3.7	1.0	0.8	5.4	-1.3
Q2 11	2.9	9.0	4.9	1.5	2.8	2.0	1.3	1.3	6.0	-0.9
Q3 11	2.6	9.3	3.3	1.4	3.2	1.9	1.1	0.9	4.2	-0.7
Q4 11	2.5	8.2	4.4	1.2	3.0	2.1	0.9	0.6	3.5	-0.7
Q1 12	2.8	5.3	5.5	1.7	2.8	1.9	1.5	1.4	1.9	1.2
Q2 12	2.2	1.6	5.1	1.6	2.7	2.5	1.4	1.0	0.5	1.2
Q3 12	2.4	3.0	5.4	1.6	2.2	2.5	1.4	1.1	0.9	1.2
Q4 12	2.1	1.6	4.4	1.6	2.6	2.4	1.5	1.2	1.1	1.2

Note: The weights reflect the weighting basis as of January 2013.

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 58.7 per cent of HICP's weight basis and 53.4 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 22

	Unemployment Per cent of labour force		Quantity index		Forced sales of real property	New passenger car registrations	Consumer confidence indicator	Composite cyclical Indicator for		
			Manufacturing industry[2]	Retail trade				Manufacturing industry	Building and construction	Service
	Gross[1]	Net	2005=100	2005=100	Number		Balance per cent			
2008	2.7	1.9	106.7	103.3	2,840	150,666	-7.7	-7	-16	3
2009	4.8	3.6	88.2	99.4	4,140	112,251	-5.0	-14	-44	-13
2010	6.1	4.3	90.6	97.9	5,222	153,615	1.8	3	-35	4
2011	6.0	4.1	94.9	95.6	5,025	169,795	-1.9	4	-20	4
2012	6.1	4.5	95.7	93.3	5,130	168,857	-2.4	2	-18	-5
					Seasonally adjusted					
Feb 12	6.0	4.2	95.3	93.7	481	17,481	-4.1	8	-21	-3
Mar 12	6.0	4.2	94.7	94.2	490	12,278	1.7	2	-13	-7
Apr 12	6.0	4.3	94.7	93.3	398	12,715	-2.2	3	-17	-6
May 12	6.1	4.4	93.9	93.6	414	13,555	-2.6	0	-22	-6
Jun 12	6.2	4.5	95.3	93.1	445	12,089	-2.5	0	-21	-9
Jul 12	6.2	4.6	99.2	92.9	437	17,249	-1.8	5	-24	-6
Aug 12	6.1	4.6	99.0	92.6	437	13,721	-1.6	1	-19	-6
Sep 12	6.1	4.6	94.6	93.2	407	14,194	-2.4	0	-18	-7
Oct 12	6.2	4.7	95.5	92.5	417	14,321	-3.5	-6	-14	-6
Nov 12	6.1	4.7	96.0	93.0	446	15,206	-1.3	2	-14	-4
Dec 12	6.1	4.7	92.6	92.8	362	12,384	-1.2	-1	-16	-3
Jan 13	6.0	4.7	99.3	92.1	414	14,379	-2.3	5	-20	-3
Feb 13	...	...	...	...	361	13,677	-1.3	2	-23	-7

[1] Including persons in activation programmes.
[2] Excluding shipbuilding.

SELECTED QUARTERLY ECONOMIC INDICATORS — Table 23

	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			
2008	2,952	2,114	158.1	158.5	142.5	100.1
2009	2,883	2,024	162.9	163.2	144.6	88.1
2010	2,817	1,948	166.6	167.4	148.8	90.5
2011	2,806	1,949	169.6	171.3	152.5	88.0
2012	2,793	1,946	172.3	174.4	156.4	...
	Seasonally adjusted					
Q4 11	2,800	1,950	170.8	173.0	153.8	84.8
Q1 12	2,796	1,948	171.6	173.5	154.9	84.5
Q2 12	2,792	1,946	171.8	174.2	156.2	85.2
Q3 12	2,790	1,944	172.5	174.8	156.9	85.1
Q4 12	2,793	1,945	173.2	176.0	157.5	...
	Change compared with previous year, per cent					
2008	1.7	2.6	4.4	4.2	3.3	-4.5
2009	-2.3	-4.2	3.0	2.9	1.5	-12.0
2010	-2.3	-3.7	2.3	2.6	2.9	2.8
2011	-0.4	0.1	1.8	2.3	2.4	-2.8
2012	-0.5	-0.2	1.6	1.8	2.6	...
Q4 11	-0.4	0.1	1.9	2.5	2.5	-6.7
Q1 12	-0.3	0.3	1.8	2.0	2.5	-5.5
Q2 12	-0.6	-0.3	1.6	2.0	2.7	-5.8
Q3 12	-0.7	-0.6	1.5	1.6	2.6	-2.7
Q4 12	-0.3	-0.3	1.4	1.7	2.4	...

EXCHANGE RATES — Table 24

	EUR	USD	GBP	SEK	NOK	CHF	JPY
	Kroner per 100 units						
	Average						
2008	745.60	509.86	939.73	77.73	91.02	469.90	4.9494
2009	744.63	535.51	836.26	70.18	85.39	493.17	5.7296
2010	744.74	562.57	869.02	78.15	93.02	540.60	6.4299
2011	745.05	536.22	859.05	82.52	95.61	605.74	6.7378
2012	744.38	579.72	918.37	85.62	99.62	617.57	7.2793
Feb 12	743.41	562.22	888.28	84.29	98.44	615.89	7.1696
Mar 12	743.54	563.27	891.03	83.66	98.74	616.49	6.8302
Apr 12	743.93	565.01	905.33	83.89	98.28	618.75	6.9535
May 12	743.37	580.21	924.26	82.79	98.26	618.86	7.2792
Jun 12	743.26	593.16	922.65	83.81	98.61	618.83	7.4813
Jul 12	743.84	605.39	943.74	87.06	99.74	619.32	7.6655
Aug 12	744.54	600.49	943.87	89.92	101.66	619.88	7.6309
Sep 12	745.39	579.91	933.86	87.77	100.81	616.61	7.4185
Oct 12	745.82	574.87	924.61	86.58	100.69	616.50	7.2791
Nov 12	745.87	581.48	927.85	86.65	101.66	618.89	7.1791
Dec 12	746.03	569.13	918.95	86.19	101.51	616.89	6.8249
Jan 13	746.14	561.59	896.36	86.55	101.08	607.31	6.3089
Feb 13	745.98	558.49	864.95	87.68	100.50	606.61	5.9982

EFFECTIVE KRONE RATE — Table 25

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
2008	105.8	259.0	246.9	111.1	117.1	107.8
2009	107.8	262.4	247.4	114.8	121.5	108.1
2010	104.0	268.4	251.6	111.6	117.0	109.8
2011	103.6	275.8	258.4	111.1	116.3	112.8
2012	100.6	282.5	263.7	109.0	112.9	115.7
Feb 12	101.7	281.5	262.0	110.4	...	114.1
Mar 12	101.9	282.8	263.4	110.5	114.3	115.5
Apr 12	101.7	282.8	264.0	110.0	...	116.0
May 12	101.1	282.8	263.9	109.7	...	115.9
Jun 12	100.5	282.4	263.4	109.2	113.3	115.8
Jul 12	99.3	282.4	263.3	107.9	...	115.1
Aug 12	98.9	283.3	264.1	107.3	...	115.6
Sep 12	99.9	283.9	264.9	108.3	111.2	116.4
Oct 12	100.3	283.7	265.3	108.4	...	116.7
Nov 12	100.0	283.5	264.9	108.3	...	116.5
Dec 12	100.7	282.6	265.3	108.4	112.6	116.9
Jan 13	101.5	281.5	264.7	109.1	...	115.7
Feb 13	102.1	...	...	...	...	...
	Change compared with previous year, per cent					
2008	2.5	3.4	3.4	2.6	3.5	3.3
2009	1.9	1.3	0.2	3.4	3.7	0.3
2010	-3.6	2.3	1.7	-2.8	-3.7	1.6
2011	-0.3	2.8	2.7	-0.4	-0.6	2.7
2012	-2.9	2.4	2.1	-1.9	-2.9	2.5
Feb 12	-1.1	2.8	2.5	-0.3	...	2.7
Mar 12	-1.8	2.7	2.4	-0.8	-1.2	2.7
Apr 12	-2.9	2.3	2.2	-1.9	...	2.6
May 12	-3.0	2.1	2.0	-1.9	...	2.4
Jun 12	-3.8	2.2	1.9	-2.4	-3.0	2.4
Jul 12	-4.6	2.3	1.9	-3.2	...	2.4
Aug 12	-5.1	2.6	2.0	-3.6	...	2.6
Sep 12	-3.4	2.5	2.0	-2.5	-4.5	2.6
Oct 12	-3.1	2.3	2.1	-2.5	...	2.5
Nov 12	-3.2	2.3	1.8	-2.4	...	2.2
Dec 12	-1.7	2.0	1.8	-1.5	-3.1	2.2
Jan 13	0.1	1.3	1.6	-0.3	...	2.0
Feb 13	0.3	...	...	...	...	...

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.
As from April 2010 the weights are based on trade in manufactured goods in 2009 and earlier 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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