Danmarks Nationalbank

Monetary Review 3rd Quarter 2010

DANMARKS NATIONAL BANK 2010

MONETARY REVIEW 3rd QUARTER 2010

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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FINANCIAL CONDITIONS

Recent Economic and Monetary Trends

This review covers the period from mid-June to early September 2010

SUMMARY

The world economy continued to recover in the 2nd quarter, but the sustainability of the upswing remains uncertain. Following the strong focus on sovereign debt problems in Europe in the spring, market attention increasingly turned to the US economy, where a number of weak data releases over the summer led to concerns about a new downturn. Most observers expect output in the advanced economies to continue to rise, but at a more measured pace in the 2nd half of 2010. With the prospect of a relatively weak and tentative upswing, OECD unemployment can be expected to remain high. As a result, leading central banks are expected to maintain their highly accommodative monetary policies for some time yet, while most OECD countries are setting out on a path of fiscal consolidation in order to curb the rise in government debt over the coming years.

The Danish economy is slowly emerging from the slump. The gross domestic product, GDP, rose by 1.0 per cent from the 1st to the 2nd quarters. Growth was mainly buoyed up by contributions from inventory investments and public consumption. In contrast, private consumption contracted slightly.

Exports are rising, but not as fast as in many other countries. One underlying reason could be that Danish wage competitiveness has been undermined for a long period. The rate of wage increase in the private labour market has declined over the last years, but that has also been the case in competitor countries. Productivity has improved in recent quarters.

In the most recent slump, activation has been more extensive than in previous downturns. The considerable activation effort means that gross unemployment, calculated as the sum of registered unemployment and the number of people in activation schemes, gives a more accurate picture of unemployment than the traditional measure, i.e. registered unemployment. Gross unemployment is currently around 171,000, while registered unemployment is approximately 113,000.

In the housing market, average price levels have stabilised at the current low level of interest rates, but with substantial regional differences in price developments.

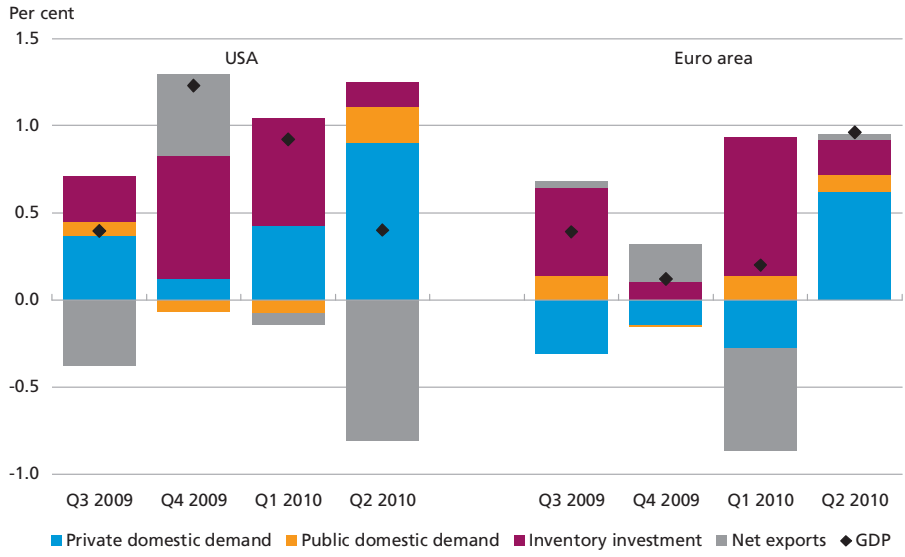
The political agreement for the Danish economy concluded in May 2010 entails a consolidation requirement of kr. 24 billion. Fiscal consolidation is necessary in order to ensure compliance with the EU's fiscal ground rules and to ensure confidence in Denmark's ability to pursue disciplined economic policy. The Fiscal Consolidation Agreement assumes that growth in public consumption will be dampened considerably, but preliminary national accounts data indicate that growth in public consumption in 2010 will be much higher than envisaged. Previous years have also seen pronounced budget overruns, not least in 2009. Repeated overruns accentuate the long-term government financing problem and eliminates the scope for expansionary fiscal policy in the event of a new economic downturn.

Denmark's GDP is expected to increase by just over 1½ per cent in 2010 and 2011 and by around 2 per cent in 2012. This forecast incorporates public consumption in excess of the limits. If the repeated overruns are not countered by savings of the same magnitude in the coming years, taxes will inevitably have to be raised in the long run. Since there is limited scope for increasing the tax burden without causing severe economic distortion, this is a strong argument for keeping growth in public consumption below the forecast assumptions. Calculations in this chapter show that there is room to moderate public consumption somewhat in the next few years without choking the economic upswing. Reducing public consumption would require policy instruments which could ensure that targets are met to a higher degree than seen so far.

THE INTERNATIONAL ECONOMY

The world economy continued to recover in the 2nd quarter. Global growth is reflected in e.g. increasing world trade and industrial production. The upswing is still primarily driven by the East Asian economies. Strong growth meant that China took over Japan's position as the world's second largest economy in the 2nd quarter. Several OECD countries have also shown sound growth rates, especially Germany, Sweden and the UK. In the USA, on the other hand, growth declined notably relative to the 1st quarter, cf. Chart 1, and is now below the level deemed to be necessary if the high level of unemployment is to be reduced. The US housing market is still characterised by low turnover and a high rate of foreclosures. Growth is also very weak in parts of Europe,

CONTRIBUTIONS TO GROWTH IN THE USA AND THE EURO AREA Chart 1



Note: Contributions in percentage points to quarterly GDP growth. Domestic demand is the sum of investments and consumption.
Source: Reuters EcoWin and Eurostat.

and in crisis-stricken euro area member states such as Greece and Ireland output is actually falling.

Against this background, there are concerns as to whether the upswing in the world economy will come to a halt when the extensive fiscal stimulus packages are phased out. Several factors point to declining global growth in the 2nd half of 2010. In the USA the weak housing and labour markets and weak private wealth are dampening private consumption. In many OECD countries the positive growth contribution from restocking is fading out. Moreover, there are indications that growth is moderating is several emerging economies, cf. Table 1. This also applies to China, where domestic demand is expected to weaken as the authorities tighten credit conditions in the financial sector, partly in an attempt to stem the strong tide of increase in asset prices.[1] Lower growth in the USA and Asia can be expected to rub off on Germany and the other euro area member states by way of reduced exports. However, capacity utilisation in the manufacturing sector has increased in many countries, and this may stimulate investment and employment.

Furthermore, labour market developments have exceeded expectations – given the serious crisis.[2] Unemployment has stabilised in many

1 The reserve requirements for Chinese banks have been raised on three occasions in 2010.
2 For an in-depth discussion, see the article by Niels Peter Hahnemann and Thomas Munk Gade, Labour Market Development in the Industrialised Countries during the Crisis, p. 59.

FORECASTS OF GDP GROWTH IN SELECTED AREAS AND COUNTRIES Table 1

Per cent	2010			2011		
	EU	OECD	IMF	EU	OECD	IMF
USA	2.8	3.2	3.3	2.5	3.2	2.9
Euro area	0.9	1.2	1.0	1.5	1.8	1.3
Germany	1.2	1.9	1.4	1.6	2.1	1.6
UK	1.2	1.3	1.2	2.1	2.5	2.1
Japan	2.1	3.0	2.4	1.5	2.0	1.8
China	10.3	11.1	10.5	9.4	9.7	9.6
India	8.1	8.3	9.4	8.0	8.5	8.4
World	4.0	n.a.	4.6	4.0	n.a.	4.3

Sources: IMF, *World Economic Outlook*, update, July 2010, European Commission's spring forecast, May 2010, OECD, *Economic Outlook,* No. 87, May 2010.

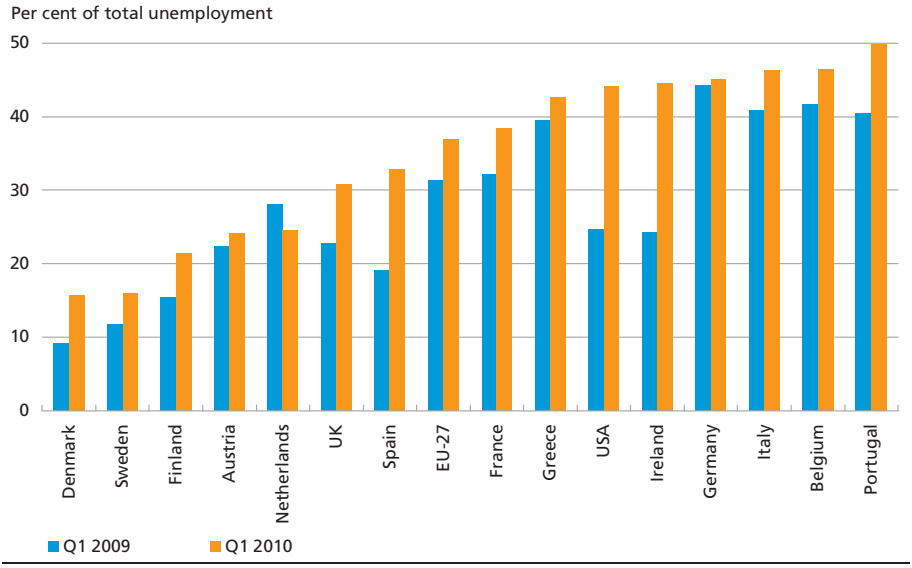
countries, but at a high level. There are considerable variations within the euro area. On the one hand, unemployment is falling in Germany and Finland, both of which are enjoying high growth. On the other hand, unemployment is rising rapidly in some of the most severely affected countries such as Greece, Ireland, Spain and Portugal, where average unemployment has almost doubled since the beginning of 2008, standing at 14 per cent in May 2010. In the USA, overall employment has fallen as temporary public-sector jobs linked to the 10-year census have expired. Private-sector employment has risen only moderately and has not been able to offset the decline in the public sector. Nevertheless, unemployment has decreased slightly since May as a result of a cyclical reduction in the labour force.

The soaring unemployment rates since the onset of the crisis are beginning to be reflected in rising long-term unemployment, especially in Ireland, Spain and the USA, cf. Chart 2. In the USA, long-term unemployment (i.e. people who have been unemployed for more than six months) has now reached an all-time high since the statistics were first compiled in 1948. In its most recent report on the US economy, the International Monetary Fund, IMF, points out that a reduction in long-term unemployment is hampered by a growing imbalance between the skills of the unemployed and the qualifications demanded by employers. Another impediment is the sluggish housing market, which makes it more difficult for people to sell their homes and move to areas with better employment opportunities. In a situation where lack of qualifications and limited mobility are stumbling blocks for many jobseekers, there is a risk that unemployment will become firmly rooted at a higher average level than previously.

After having shrunk during the downturn in 2008-09, global imbalances are once again beginning to grow. China's trade surplus has in-

DEVELOPMENT IN LONG-TERM UNEMPLOYMENT IN SELECTED OECD COUNTRIES

Chart 2



Note: In the EU member states, long-term unemployment comprises people who have been unemployed for one year or more. In the USA, it is 27 weeks or more. Calculated as percentages of total unemployment. Internationally comparable measures of unemployment have been applied; these measures differ from the Danish concepts of registered unemployment and gross unemployment.

Source: Eurostat and Reuters EcoWin.

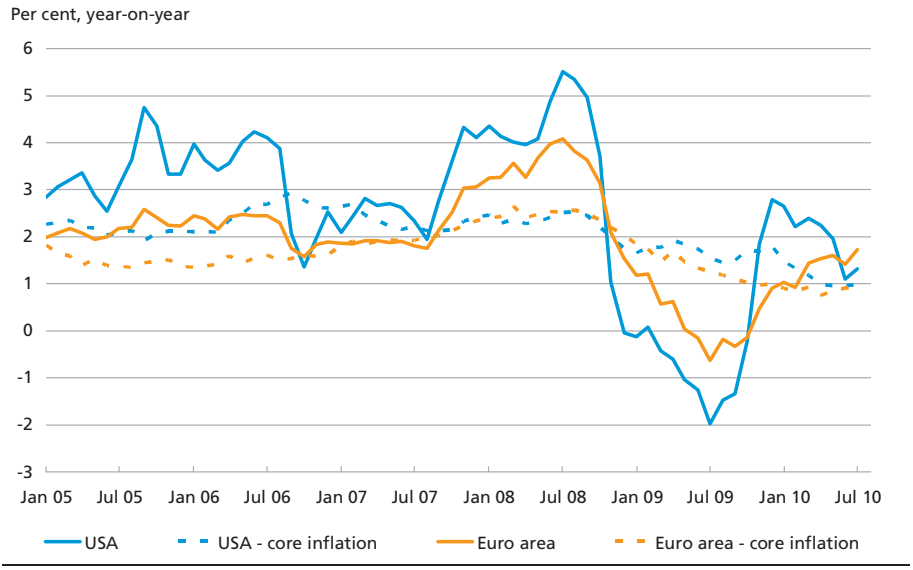
creased over the past six months as a result of high export growth. At the same time, the US current-account deficit has grown, reflecting a surge in imports. According to a number of international organisations, reducing the global imbalances is a precondition for more stable global growth.[1] Many observers have criticised China's exchange-rate policy for contributing to the global imbalances. Prior to the G20 meeting in Toronto in June 2010, China announced a change to its exchange-rate policy. China thus gave up pegging the renminbi to the dollar in favour of a fixed-exchange-rate policy vis-à-vis a basket of currencies, corresponding to the regime applying in 2005-08. Since then the renminbi has appreciated by a modest 0.6 per cent against the dollar.

Price developments

Consumer price inflation remains low in the OECD countries. In the euro area and the USA consumer prices rose by 1.7 and 1.3 per cent, respectively, in July compared with July 2009, cf. Chart 3. Exclusive of the volatile energy and food prices, inflation was around 1.0 per cent in both

[1] For a detailed discussion of these issues, see the article by Niels Blomquist and Susanne Hougaard Thamsborg, Global Imbalances – a Threat to the Upswing?, p. 45.

CONSUMER PRICE INFLATION Chart 3



Note: Core inflation is consumer price inflation excluding energy and food prices. The most recent observations are from July 2010.
Source: Reuters EcoWin.

the euro area and the USA. The low rate of inflation reflects the continued low capacity utilisation and moderate inflation expectations.

In its most recent Monthly Bulletin, the European Central Bank, ECB, expects inflation in the euro area to hover at around the current level in the near term. The fact that the Russian wheat harvest has been affected by violent draught and fires poses a risk. On 5 August this led the Russian government to introduce a ban on grain exports. International wheat prices have risen by 63 per cent since late June, and there are indications of a pass-through from these price increases to bread and other food, e.g. meat. Higher food price inflation could have a particularly severe impact on developing countries and emerging economies where food accounts for a relatively large share of household budgets. The emerging economies are already struggling with substantial inflationary pressures on account of their strong economic growth and high capacity utilisation.

On the other hand, more dampened global growth may exert downward pressure on inflation. Oil prices have fallen by 10 per cent since concerns about the sustainability of the global upswing mounted in early August. Low core inflation, high unemployment and prospects of weak growth have led to some concerns as to whether the USA is heading for a "Japanese scenario" with deflation. Interview-based surveys point to long-term inflation expectations having stayed at a relatively

stable, positive level, however. In addition, the Federal Reserve has indicated that it is ready to resort to unconventional monetary-policy measures once again if this is deemed to be necessary to prevent deflation.

Financial markets

In August, nervousness in the financial markets about the European sovereign debt problems was overshadowed by concerns about the sustainability of the US upswing. This caused risk premiums to rise again as investors took flight to safety.

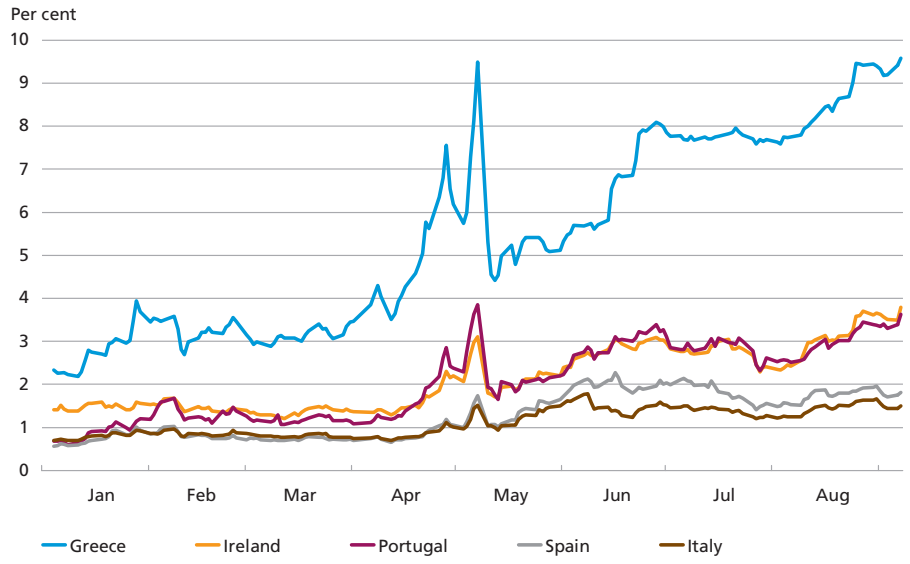
Since early May the EU has taken a number of steps to stabilise the economy. On 9 May, the European Council announced an ambitious support package for distressed euro area member states. The package established a European Financial Stabilisation Mechanism with a total lending and credit volume of up to 60 billion euro. The Council also agreed on a European Financial Stability Facility with a capacity to offer further loans of up to 440 billion euro on the basis of government guarantees from the euro area member states, should the need arise. The Stability Facility was established in Luxembourg on 7 June, but has not yet been credit rated and has not issued any bonds. On 9 May, the ECB announced that it would make purchases in the European sovereign debt markets, where volatility was so great that it hindered the monetary-policy transmission mechanism. Since then, the ECB has purchased government bonds for 61 billion euro. In order to strengthen fiscal sustainability, several European countries announced new fiscal tightening measures and launched structural policy reforms to boost the growth potential of their economies.

In early May, the euro area member states and the IMF approved a joint programme to deliver 110 billion euro in assistance to Greece. After the first review, the staffs of the IMF, the ECB and the European Commission in August concluded that Greece complied with the economic policy requirements in the first phase of the programme, thanks to tight fiscal policy and considerable progress in key areas of reform. On 10 September, the Executive Board of the IMF therefore approved disbursement of the second tranche of the loan, 2.6 billion euro.

The initial financial market response to the measures announced in early May was positive, and the yield spreads of the crisis-stricken euro area member states vis-à-vis Germany narrowed, cf. Chart 4. Since then they have widened again, at an accelerating pace since early August as concerns about declining global growth have mounted.

The turmoil in the European sovereign debt markets also affected the European banking sector due to uncertainty about the exposure of the banks to the crisis-stricken euro area member states. To enhance trans-

YIELD SPREADS TO GERMANY FOR 10-YEAR GOVERNMENT BONDS, 2010 Chart 4



Note: The most recent observations are from 7 September 2010.
Source: Reuters EcoWin.

parency in the sector and strengthen market confidence in the banks, the heads of state or government of the EU member states on 17 June decided to conduct and publish the results of a stress test of the European banking sector.[1] A total of 91 European banks from 20 member states participated, and the individual results were announced on 23 July. It turned out that only seven banks were unable to observe the threshold for Tier 1 capital of 6 per cent of risk-weighted assets, even if the economy deteriorated substantially. The publication of the stress-test results initially reduced the market's risk assessment of the banks, but later this has increased again, reflecting concerns about lower growth, among other factors.

The most recent European lending survey – from the 2nd quarter – points to tightening of credit policies in the banking sector in the wake of the financial turmoil. In contrast, US banks continued to ease their lending policies. Tighter conditions for bank credit in Europe may make it more difficult for European firms to obtain financing as the market for corporate debt is limited in comparison with the US market. In the USA, Congress in mid-July adopted an extensive financial regulation reform, cf. Box 1 on p. 9. The relevant authorities are now detailing the rules, some of which are expected to take about two years to prepare.

[1] For details, see the article International stress tests, p. 149.

NEW FINANCIAL REGULATION IN THE USA Box 1

New financial regulation has been adopted in the USA. On 21 July 2010, President Obama signed the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010. The new act aims to secure a more stable financial system with better consumer protection and to avoid that tax payers end up footing the bill for irresponsible banks. Key elements of the new legislation include the following:

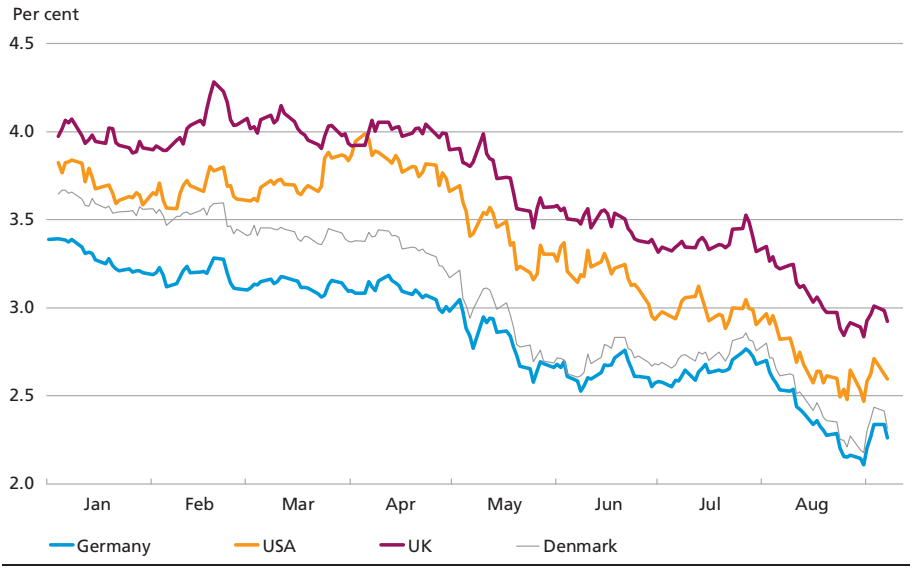
- Establishment of a Financial Stability Oversight Council with the participation of the Secretary of the Treasury and the Chairman of the Federal Reserve, among others. The Council is to identify and address systemic risks, including identifying systemically important institutions. The supervisory role of the Federal Reserve will be expanded to include the institutions constituting a systemic risk. Following a vote in the Council, the Federal Reserve may split up such institutions. This provision covers not only banks, but all financial institutions.
- Introduction of further regulatory requirements for systemically important institutions, e.g. higher capital requirements. In addition, large, complex financial institutions must prepare plans for their own resolution (living wills).
- Establishment of a liquidation arrangement, whereby the Federal Deposit Insurance Corporation, FDIC, can liquidate an ailing systemic financial institution if financial stability is jeopardised. This expands the existing framework, under which the FDIC can also take action in relation to institutions comprised by the deposit insurance.
- Introduction of the "Volcker Rule", which limits bank activities. As a general rule, banks and financial institutions that include a bank may not get involved in speculative investments for their own account (proprietary trading) or invest in hedge funds and private equity funds.
- Introduction of a threshold for the consolidated liabilities of a financial institution after a merger with another institution. The threshold is 10 per cent of the aggregate consolidated liabilities of the financial sector. Exemptions may apply when an ailing bank is acquired.
- A requirement for issuers of mortgage-backed securities to hold at least 5 per cent of the credit risk themselves, so that investors will not be the only ones to lose money if the value of the securities declines. Certain exemptions will apply to particularly secure loans, e.g. government-guaranteed loans.
- Regulation of derivatives markets. As far as possible, derivatives trading should take place via central counterparties and via exchanges.
- Introduction of a requirement for managers of hedge funds and private equity funds to be registered with the Securities and Exchange Commission.
- Establishment of a Consumer Financial Protection Bureau to ensure that US consumers receive clear and correct information about financial products. The Bureau will be organised under the auspices of the Federal Reserve, but will be an independent body.

There is still a lot of work to be done in respect of detailing the new legislation. In some areas the new rules will take effect immediately, but in other areas it may take up to two years before the new regulation comes into force.

Some of the areas are also being reviewed by international forums, e.g. the Basel Committee on Banking Supervision, BCBS, the Financial Stability Board, FSB, and the EU.[1]

[1] See also Borka Babic and Anne-Sofie Reng Rasmussen, Regulatory Initiatives in the Financial Sector, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2010.

10-YEAR GOVERNMENT YIELDS, 2010 Chart 5



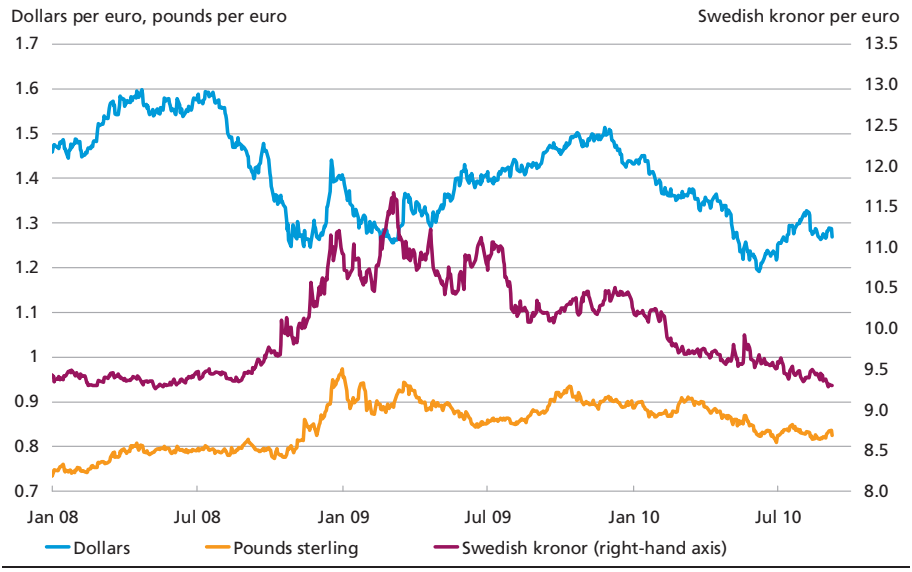
Note: The most recent observations are from 7 September 2010.
Source: Reuters EcoWin.

The turmoil in the financial markets in the wake of the European sovereign debt crisis in May triggered an investor flight to safe government bonds. This led to considerable falls in the yield on US, UK and German government bonds, cf. Chart 5. Following some stabilisation in July, yields declined again in early August in the context of rising concerns about the economy and the announcement on 10 August by the Federal Reserve that it would reinvest principal payments from agency debt and agency mortgage-backed securities in longer-term Treasury securities. The yield on a German 10-year government bond was 2.1 per cent on 31 August, the lowest level for many decades.

Like the markets for other risky assets, stock markets were hit by the financial turmoil in early May. Prices rose a little in July in response to strong corporate financial statements for the 2nd quarter, but fell back in August owing to renewed concerns about the sustainability of the global upswing. In early September, stock prices recovered somewhat, partly on account of slightly more positive economic indicators for the USA.

Over the summer, rising confidence in the euro area economy led to a weakening of the dollar vis-à-vis the euro, cf. Chart 6. Subsequently the dollar strengthened a little. This reflected falling risk appetite following downward adjustment of market expectations of global growth. Since the beginning of the year, the Swedish krona has appreciated by almost 9 per cent vis-à-vis the euro in response to the strong development in the Swedish economy.

EXCHANGE RATES, 2008-10 Chart 6



Note: A lower value implies strengthening of the currencies vis-à-vis the euro. The most recent observations are from 7 September 2010.
Source: Reuters EcoWin.

Monetary policy

The central banks of the largest OECD countries have maintained their highly accommodative monetary policies. Monetary-policy interest rates remain at a very low level, and in view of the nervousness in the financial markets, the ECB and the Federal Reserve have postponed the phasing-out of certain extraordinary monetary-policy measures. The ECB conducted two 3-month liquidity allotments in May and June, respectively, and one 6-month allotment in May. In September the ECB decided to conduct further 3-month liquidity allotments in October, November and December. In the USA, the Federal Reserve has decided to reinvest principal payments from agency debt and agency mortgage-backed securities in longer-term Treasury securities, cf. above.

In contrast to the large central banks, Sveriges Riksbank raised its monetary-policy interest rate in July and September against the backdrop of improved growth prospects for the Swedish economy.

Fiscal policy

Since 2008, public finances in the OECD countries have deteriorated strongly. The underlying factors are substantial automatic budget deterioration as a result of the economic downturn and considerable easing of fiscal policy. Many countries are therefore faced with a need for extensive fiscal consolidation. In the EU member states whose government

deficits exceed the limit of 3 per cent of GDP, consolidation must take place within the framework of the Stability and Growth Pact. As a minimum, these member states must reduce their structural (cyclically adjusted) budget deficits by 0.5 per cent of GDP annually. All EU member states except Estonia, Luxembourg and Sweden are now subject to the excessive deficit procedure. Most recently, the Council of Ministers of Economic and Financial Affairs of the EU member states, the Ecofin Council, in July issued recommendations to Bulgaria, Denmark, Cyprus and Finland, cf. Box 2.

The increased focus on fiscal sustainability in the wake of the Greek debt crisis in May led several EU member states to bring forward consolidation of their public finances. Immediately after the adoption of the European stabilisation package on 9 May, Greece, Spain and Portugal announced new tightening measures for 2010-11, cf. Table 2. Over the summer Italy, Germany and France also announced further tightening. In its July Economic Outlook, the IMF assesses that the measures adopted will reduce economic growth in the euro area by around ¼ per cent compared with previous estimates.

On 22 June, the new British government presented an extensive 5-year plan for fiscal consolidation. The plan envisages continuous government savings over the 5-year period, while government revenue is mainly to be increased in the first years of the consolidation period. The structural budget deficit is expected to be reduced from 7.4 per cent this year to 0.8 per cent in 2014/15. Savings are planned on a wide range of welfare benefits, and government salaries will be frozen for 2 years from April 2011. Revenue will mainly be increased by raising the general rate of VAT from 17.5 per cent to 20 per cent from January 2011. On the other hand, corporate income tax will be lowered from 28 per cent to 24 per cent over the first four years, and the national insurance contribution from employers will also be reduced.

In the USA, where the impact of previous fiscal stimulus measures is fading away, Congress adopted new (modest) measures to ease fiscal policy by way of a 26 billion dollar package to help cash-strapped states that are struggling with large deficits in the wake of the economic crisis. The package is aimed at supporting the educational sector and helping the states to pay for health insurance for the weakest citizens. Furthermore, in July Congress extended the maximum unemployment benefit period to 99 weeks. This is expected to increase the budget deficit by 34 billion dollars.

In order to reduce the growth-dampening impact of the fiscal tightening measures, many of the consolidation measures in Europe are focused on combining "growth-friendly" tightening with structural reforms.

FISCAL PLANS OF THE EU MEMBER STATES Box 2

In recent years, the EU member states have seen a strong increase in public spending and declining tax revenue. The increase has been driven by automatic budget deterioration as a result of falling economic activity, as well as active fiscal policy measures to counter the crisis. Overall, this has exerted considerable pressure on government budgets. In 2010 most EU member states thus expect to exceed the Stability and Growth Pact's criterion for government deficit, cf. Table 2. The Ecofin Council has recommended that these member states reduce their government deficits. Most recently, the Council issued recommendations to Bulgaria, Denmark, Cyprus and Finland in July.

RECOMMENDATIONS TO EU MEMBER STATES SUBJECT TO THE STABILITY AND GROWTH PACT'S EXCESSIVE DEFICIT PROCEDURE Table 2

	Budget balance (per cent of GDP)		Start of consolidation process	Deadline for compliance	Minimum average annual adjustment of structural balance (per cent of GDP)
	2009[1]	2010[1]			
Belgium	-6.0	-5.0	2010	2012	¾
Bulgaria	-3.9	-2.8	2010	2011	¾
Cyprus	-6.1	-7.1	2011	2012	1½
Denmark	-2.7	-5.5	2011	2013	½
Finland	-2.2	-3.8	2011	2011	½
France	-7.5	-8.0	2010	2013	1
Greece	-13.6	-9.3	2010	2014	>2
Netherlands	-5.3	-6.3	2011	2013	¾
Ireland	-14.3	-11.7	2010	2014	2
Italy	-5.3	-5.3	2010	2012	½
Latvia	-9.0	-8.6	2009	2012	2¾
Lithuania	-8.9	-8.4	2010	2012	2¼
Malta	-3.8	-4.3	2010	2011	¾
Poland	-7.1	-7.3	2010	2012	1¼
Portugal	-9.4	-8.5	2010	2013	1¼
Romania	-8.3	-8.0	2010	2011	1¾
Slovakia	-6.8	-6.0	2010	2013	1
Slovenia	-5.5	-6.1	2010	2013	¾
Spain	-11.2	-9.8	2010	2013	1½
UK[2]	-11.5	-12.0	2010/11	2014/15	1¾
Czech Republic	-5.9	-5.7	2010	2013	1
Germany	-3.3	-5.0	2011	2013	½
Hungary	-4.0	-4.1	2009	2011	¼
Austria	-3.4	-4.7	2011	2013	¾

Source: European Commission's spring forecast 2010 and recommendations from the Ecofin Council to the relevant member states.

[1] Estimates from the European Commission's spring forecast 2010. Estonia, Luxembourg and Sweden have not been included as they are not subject to the excessive deficit procedure.

[2] The UK fiscal year runs from April to March.

Fiscal policy is primarily being tightened on the expenditure side by reducing subsidies, transfer benefits and, in some cases, government payroll costs, while expenditure for education and health is generally exempted from cuts. A small degree of consolidation is achieved by raising

ANNOUNCEMENT OF FISCAL POLICY MEASURES AND STRUCTURAL REFORMS IN EU MEMBER STATES, SUMMER 2010 Table 3

Member states	New fiscal tightening measures (per cent of member state's GDP) 2010	2011	2012	Structural reforms
Spain	0.5	1.0	0	Labour market
Portugal	1.2	1.0	0	
Greece	2.5	0	0	Pension system, labour market, transport sector
Italy	0	0.75	1.5	Public sector
Germany	0	0.5	0.25	Public sector, labour market
France	0	0.2	0	Pension system
UK[1]	0.5	1.0	1.5	Financial sector, tax system

Source: Member states' treasuries/ministries of finance.
[1] The UK fiscal year runs from April to March.

taxes. Structural reforms include extensive pension reforms (Greece and France), labour-market measures (UK and Spain) and streamlining of the public sector (Germany and France), cf. Table 3.

Economic developments prior to and during the most recent recession highlighted a number of shortcomings in the EU's economic surveillance and cooperation. In March, the EU heads of state or government therefore set up a task force comprising the EU ministers of finance and representatives of the European Commission and the ECB to present proposals for strengthening these areas. The task force, chaired by the President of the European Council, Herman Van Rompuy, is due to present its final proposals to the European Council in October 2010. Box 3 presents the deliberations of the Van Rompuy group until now.

MONETARY AND EXCHANGE-RATE CONDITIONS

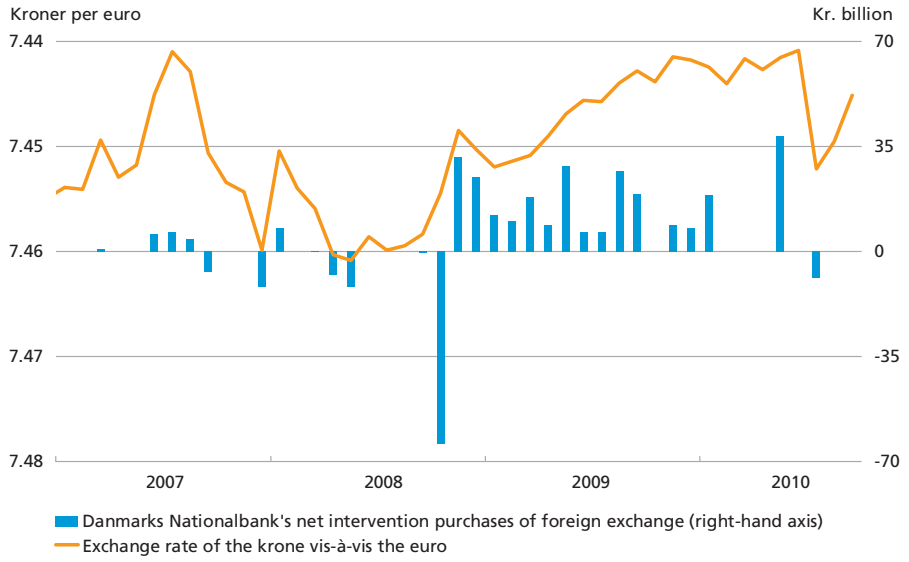
In recent months, the Danish krone has been stable vis-à-vis the euro at a level slightly stronger than its central rate.

From mid-June and one month onwards, the krone weakened slightly, so in July Danmarks Nationalbank intervened and sold foreign exchange for kr. 8.7 billion. This was the first time since October 2008 that Danmarks Nationalbank sold foreign exchange for kroner, cf. Chart 7. At end-August, the foreign-exchange reserve was kr. 429.2 billion.

Spreads between money-market interest rates in kroner and euro have narrowed considerably since the peak of the financial turmoil in the autumn of 2008. For collateralised lending, the interest-rate spread between Denmark and the euro area had been reduced to almost zero by early September, while the spread for uncollateralised lending was higher, cf. Chart 8.

EXCHANGE RATE OF THE EURO AND DANMARKS NATIONALBANK'S INTERVENTIONS IN THE FOREIGN-EXCHANGE MARKET

Chart 7

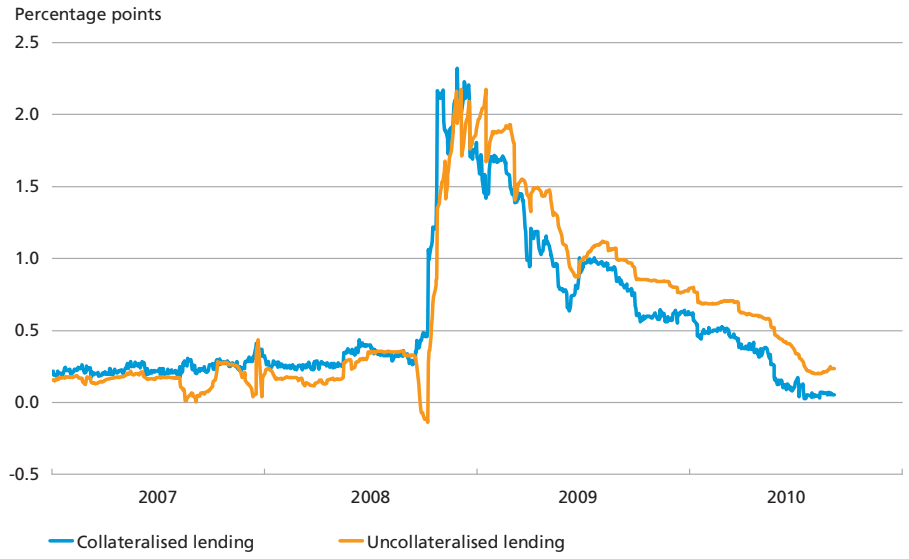


Note: The exchange rate of the euro is a monthly average shown on a reverse scale. For September 2010, it is the average for the period 1-8 September. The central rate of the krone in ERM II is kr. 7.46038 per euro. Danmarks Nationalbank's intervention has been stated as net purchases of foreign exchange per month; the most recent observation is from August 2010.

Source: Danmarks Nationalbank.

SELECTED INTEREST-RATE SPREADS BETWEEN DENMARK AND THE EURO AREA

Chart 8



Note: The interest-rate spread for collateralised lending is based on a 1-month interest-rate swap at the overnight rate. The interest-rate spread for uncollateralised lending is the difference between the 1-month Cibor and Euribor. The most recent observations are from 6 September 2010.

Source: Reuters EcoWin.

ENHANCED ECONOMIC SURVEILLANCE AND COOPERATION IN THE EU Box 3

In March, the EU heads of state or government set up a task force to submit proposals for enhancing economic cooperation and surveillance within the EU. The task force comprises the EU ministers of finance and representatives of the European Commission and the ECB and is chaired by the President of the European Council, Herman Van Rompuy. On the basis of the task force's headline targets[1] and the proposals published by the Commission[2] for the task force, the following future initiatives are currently on the drawing board:

- Broader macroeconomic surveillance: the Commission proposes that a warning mechanism be developed with a number of indicators of internal and external economic imbalances. As a minimum, it should be possible for the Ecofin Council to issue recommendations to member states in the event of excessive imbalances.
- Enhanced and more effective surveillance in the Stability and Growth Pact: the Commission proposes increased focus on government debt developments in connection with the EU's excessive deficit procedure. In addition, the Commission proposes better sanctions in the event of violation of the Treaty and the Stability and Growth Pact.
- National fiscal frameworks: the Commission proposes that member states incorporate fiscal frameworks into their national legislation so as to ensure compliance with the Stability and Growth Pact, including observance of the member states' medium-term fiscal targets.
- Increased economic policy coordination: the Commission envisages a "European semester", which will facilitate some degree of economic policy coordination within the EU prior to adoption by the national parliaments. The Commission's proposal does not entail that the EU must actually approve national budgets etc. before they are presented in the national parliaments.
- A financial crisis resolution mechanism: it is being discussed whether the temporary financial stabilisation mechanisms of 60 billion euro and 440 billion euro, respectively, adopted by the Ecofin Council and the Eurogroup in May 2010 might be replaced by a permanent mechanism.

The task force is due to submit its final report to the European Council in October. The Commission will then prepare draft statutory instruments to implement the proposals.

[1] Conclusions of the European Council 25-26 March 2010 and 17 June 2010. Press releases PCE 101/10, 21 May 2010, PCE 118/10, 7 June 2010 and PCE 129/10, 17 June 2010.
[2] Commission communications: COM (2010) 250, 12 May 2010, and COM (2010) 367/2, 30 June 2010.

The narrowing of the spread between money-market interest rates in kroner and euro reflected factors such as Danmarks Nationalbank's lowering of its monetary-policy interest rates on several occasions, most recently in May 2010.

The subsequent narrowing shows that the ECB has begun to normalise the liquidity situation, which is leading to higher money-market interest rates in the euro area. At end-June 2010, the ECB's largest liquidity allotment so far expired, a 1-year allotment of 442 billion euro. It was replaced by a number of liquidity allotments with shorter maturities.

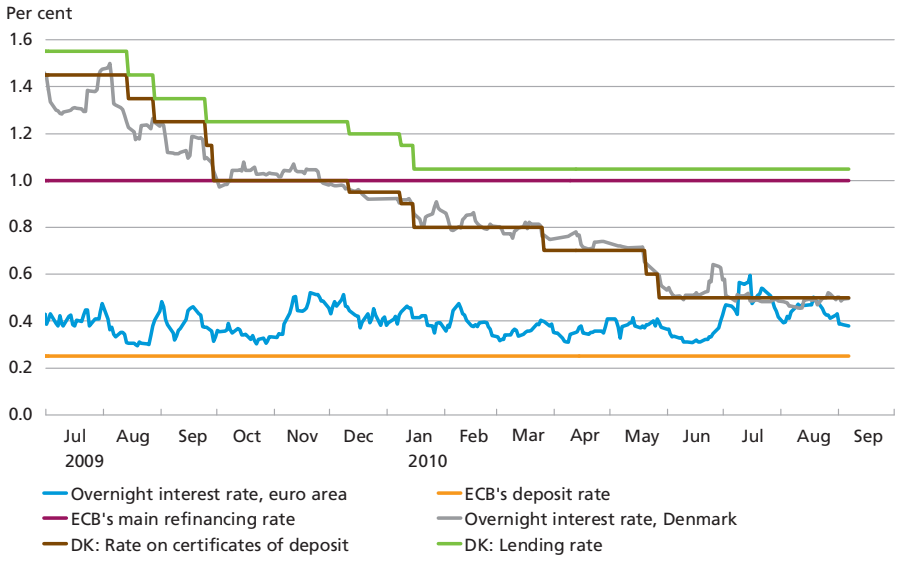
Since the end of June, the ECB has absorbed more than 285 billion euro in liquidity from the European money market, but nevertheless liquidity in the euro area remains ample. According to the ECB's calculations, allotments in the ECB's weekly main refinancing operations are still far higher than the volume of liquidity required by the monetary-policy counterparties to smoothly meet their reserve requirements.

The rising money-market interest rates in the euro area mean that the spread to the ECB's key official interest rate has narrowed, cf. Chart 9. As the liquidity situation in the euro area normalises, the spread is expected to narrow further.

In Denmark, the monetary-policy counterparties currently have a positive net position vis-à-vis Danmarks Nationalbank and consequently the rate of interest on certificates of deposit is the indicator for Danish money-market interest rates.

On 2 September 2010, the ECB announced that it would continue to conduct its weekly main refinancing operations as fixed-rate tender procedures with full allotment at least until 18 January 2011. Furthermore, the ECB will conduct one 3-month liquidity allotment in each of the months of October, November and December, in which the rates will be fixed at the average rate of the main refinancing operations over the life

MONETARY-POLICY INTEREST RATES AND SHORT-TERM MONEY-MARKET INTEREST RATES IN DENMARK AND THE EURO AREA — Chart 9



Note: Money-market interest rates are 5-day moving averages. The overnight interest rate is Eonia for the euro area and the Tomorrow/Next interest rate for Denmark. Since mid-October 2008, the ECB's main refinancing operations have been fixed-rate tenders. The ECB's deposit rate is the rate of interest on the ECB's deposit facility. The most recent observations are from 6 September 2010.

Source: Reuters EcoWin and Danmarks Nationalbank.

of the operations in question. No new liquidity allotments with maturities exceeding 3 months have thus been planned.

Danmarks Nationalbank continuously follows developments in the money market and conducted a survey of turnover in April 2010. Like the international money markets, the Danish market has been affected by the financial crisis. Turnover in the money market has declined relative to the period before the onset of the crisis in the summer of 2007, and collateralised products account for a larger share of turnover than previously.[1]

Developments in the credit and capital markets

The unusually low yield on long-term fixed-rate bonds has halted the flow of mortgage credit into adjustable-rate loans. Nevertheless, this remains the dominant loan type, accounting for nearly 70 per cent of the total outstanding volume. Three quarters of the adjustable-rate loans are with adjustment within one year. These developments should be seen in light of a large spread between short-term and long-term yields. There is a close link between adjustable-rate loans as a percentage of new mortgage loans and the spread between short-term and long-term mortgage yields, cf. Chart 10.

The yields on both short-term and long-term mortgage bonds are very low. The yield on 1-year non-callable fixed-rate bullet bonds ("fixed bullets") used for financing adjustable-rate loans rose from early June until mid-July, but since then it has been stable in the interval of 1.15-1.3 per cent, cf. Chart 11.

The average long-term yield, as calculated by the Association of Danish Mortgage Banks, has fallen a little over the summer. In this period, the current long-term bond has been the 30-year 4-per-cent bond, which has risen to a price close to par over the last few months.

In October 2008, the Danish government provided a guarantee to all depositors and other unsecured creditors in banks in the Kingdom of Denmark for their claims until and including 30 September 2010, provided that the bank in question contributed to the scheme via membership of the Danish Contingency Association. This guarantee was a consequence of the international financial and economic crisis. Shortly after the failure of Lehman Brothers in September 2008, a need arose for government assistance in the form of capital injections into or safety nets under banks in many countries, including Denmark.

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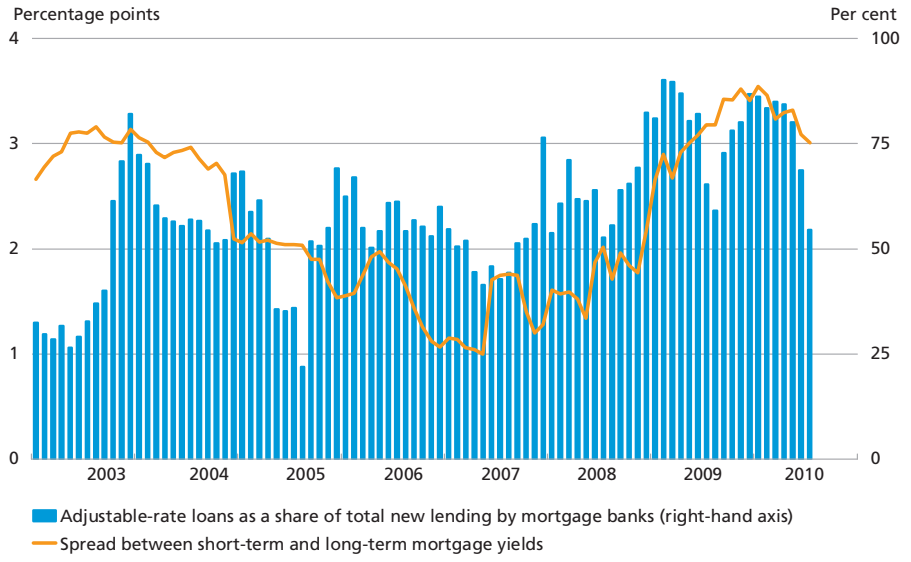
[1] Danmarks Nationalbank's money-market survey is discussed in the article by Anders Jørgensen and Lars Risbjerg, Current Trends in the Money Market for Danish Kroner, p. 117.

ADJUSTABLE-RATE LOANS AS A SHARE OF THE MORTGAGE BANKS' TOTAL NEW LENDING, AND THE SPREAD BETWEEN SHORT-TERM AND LONG-TERM YIELDS

Chart 10

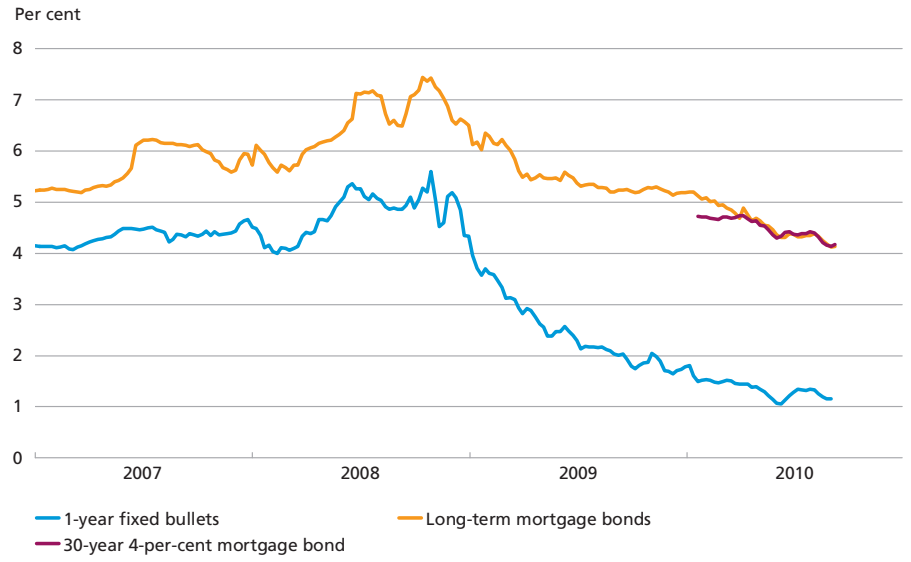


Note: The spread between short-term and long-term yields is calculated as the difference between the average effective yield based on 30-year callable mortgage bonds, calculated on a weekly basis, and the monthly averages for the 1-year yield on fixed bullets, calculated on a daily basis. The most recent observations are from end-July 2010.

Source: Nordea Analytics, Association of Danish Mortgage Banks and Danmarks Nationalbank.

MORTGAGE YIELDS

Chart 11



Note: The yield on 1-year fixed bullets is a weekly average; the most recent observation is from 6 September 2010. The yield on long-term mortgage bonds is an average effective yield on 30-year callable mortgage bonds, calculated on a weekly basis; the most recent observation is from calendar week 36. The 30-year 4-per-cent mortgage bond is shown from 1 February, as this is the long-term mortgage bond currently traded. The most recent observation is from 6 September 2010.

Source: Nordea Analytics and Association of Danish Mortgage Banks.

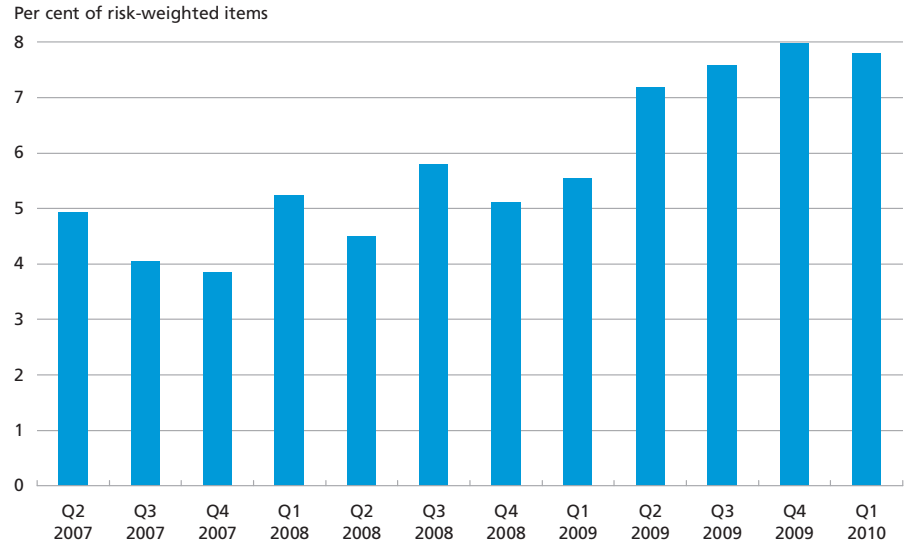
This unlimited government guarantee will soon expire. In future, depositors will be covered by the new ceiling on the deposit guarantee scheme of 100,000 euro net, which means that the deposits of most households will still be covered. People with deposits exceeding 100,000 euro will have to consider whether they have confidence in their bank's ability to meet its obligations.

While the general government guarantee expires on 30 September, the Danish scheme for issuance of individual government guarantees has been extended until 31 December 2010 following approval by the European Commission. The government-guaranteed loans issued under this scheme cannot run for longer than three years and will thus expire at end-2013 at the latest. At 30 June 2010, the Financial Stability Company had issued guarantees totalling kr. 198 billion, including credit and framework guarantees issued. 50 banks and mortgage banks have received government guarantees, thereby strengthening their liquidity.

There are no indications that the expiry of the unlimited government guarantee for unsecured creditors will cause general problems in the financial sector. However, it is important that customers exercise sound judgement in their choice of bank.

The excess capital adequacy of the Danish banks has risen substantially since end-2008, cf. Chart 12, a major underlying factor being govern-

EXCESS CAPITAL RELATIVE TO INDIVIDUAL CAPITAL NEED Chart 12



Note: The Danish Financial Supervisory Authority's groups 1-3 (excluding banks taken over by the Financial Stability Company).
Source: Danish Financial Supervisory Authority.

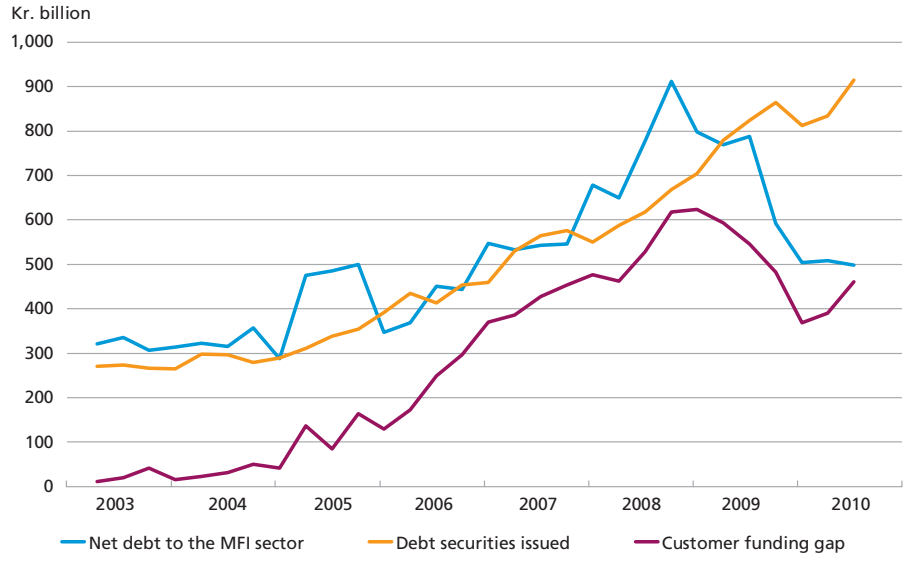
ment injections of hybrid core capital under the Credit Package (Bank Rescue Package 2).

In general, the Danish banking sector is thus well-capitalised. It is essential for the banks to signal strength by way of substantial excess cover to boost their assessment in the financial markets. Furthermore, future regulation of the financial sector will presumably entail a need for more capital of a better quality than is currently the case.

The banks' customer funding gap increased in the 1st half of 2010 following a large reduction in 2009, cf. Chart 13. The customer funding gap is considerable so the banks are still highly dependent on market-based financing. Compared with previously, the gap is to a lesser extent covered by borrowing from foreign credit institutions and to a larger extent by debt securities. This development has been supported by the option for banks to purchase individual government guarantees for their own issues of fixed-duration bonds.

In relation to their capital need, the ability of the banks overall to grant credit is not limited by shortage of capital, cf. Chart 12, and total seasonally adjusted lending by banks and mortgage banks has indeed risen marginally in recent months, both for the corporate sector and for the households. This trend reflects a small increase in lending by mort-

THE BANKS' CUSTOMER FUNDING GAP, NET DEBT TO THE MFI SECTOR AND DEBT SECURITIES ISSUED — Chart 13

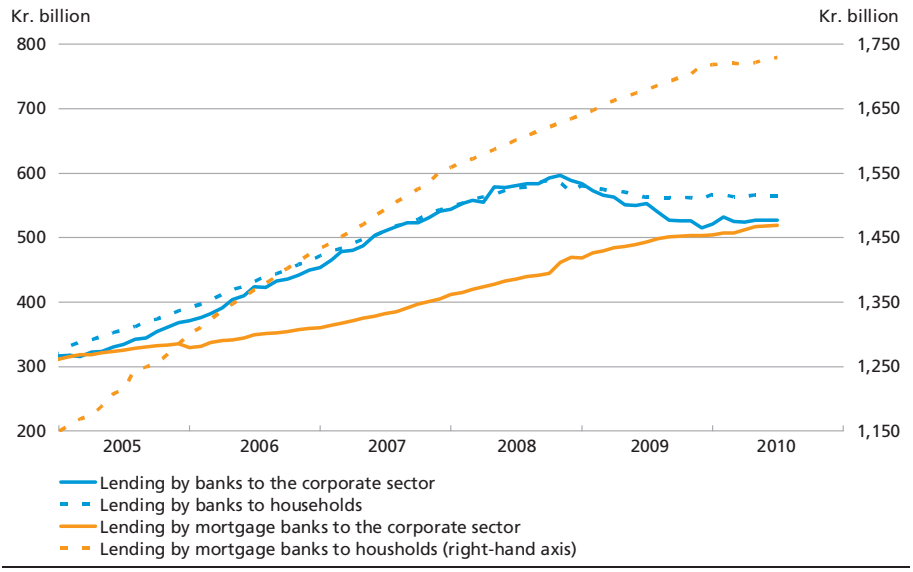


Note: Calculated for the banks in the Danish Financial Supervisory Authority's groups 1-3. Net debt to the MFI sector includes foreign MFIs. The customer funding gap is calculated as total deposits less total lending to non-MFIs (including pension and insurance companies and other financial intermediaries). The most recent observations are from the 2nd quarter of 2010.

Source: Danmarks Nationalbank.

LENDING BY BANKS AND MORTGAGE BANKS TO HOUSEHOLDS AND THE CORPORATE SECTOR

Chart 14



Note: Seasonally adjusted data. Outstanding lending by banks and mortgage banks in Denmark. "Households" also includes sole proprietorships, including farms. The corporate sector consists of non-financial corporations. The most recent observations are from July 2010.

Source: Danmarks Nationalbank.

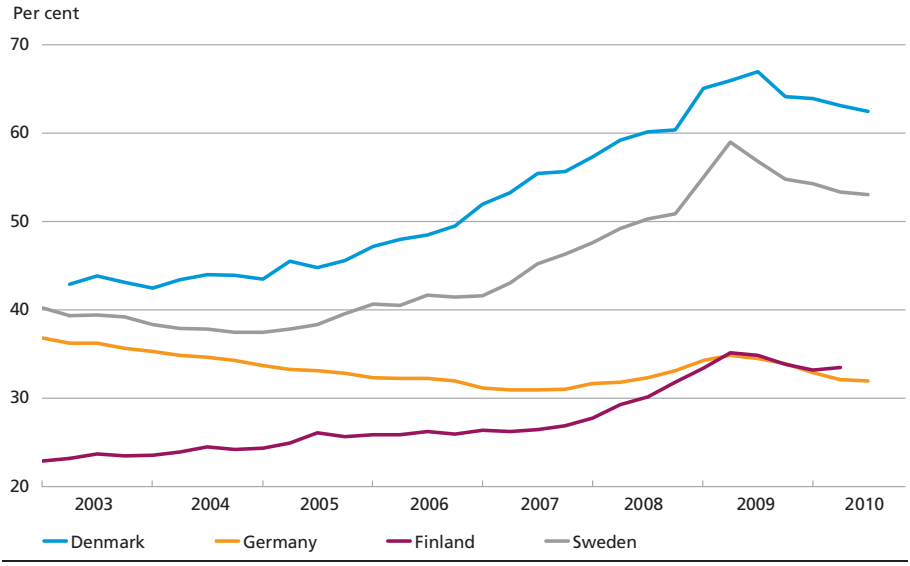
gage banks, while lending by banks has remained virtually unchanged since the turn of the year, cf. Chart 14.

Since the autumn of 2008, the mortgage banks have increased their lending to both households and the corporate sector, while the banks have reduced theirs, but to a lesser degree. Especially bank lending to the corporate sector has declined. The reason for this shift could be that banks have encouraged customers to raise mortgage loans rather than bank loans, in step with the general trend for individual banks increasingly to require collateral for loans. This also reduces the bank's risk-weighted assets and thus strengthens its solvency ratio, as well as reducing its customer funding gap. Another reason could be that the mortgage banks often have easier access to long-term financing for lending purposes than the banks do. The changing financing pattern underscores the need to consider the financial sector as a whole when assessing developments in lending.

Chart 15 shows developments in the financial sector's lending to the corporate sector relative to GDP in Denmark and a number of other countries. Lending to the corporate sector in Denmark is at the high end among the countries reviewed. The deflection in recent quarters mainly reflects growth in GDP. Lending growth is traditionally low in the early stages of an upswing, when many firms have spare production capacity

LENDING TO THE CORPORATE SECTOR RELATIVE TO GDP IN SELECTED COUNTRIES

Chart 15



Note: Stock of lending by MFIs to domestic non-financial corporations relative to annual seasonally adjusted GDP. For Finland, the counterparty area is the euro area, where other member states than Finland account for only a very small share of total lending. Quarterly data. The most recent observations are from the 2nd quarter of 2010 (1st quarter for Finland).

Source: ECB's Statistical Data Warehouse, Deutsche Bundesbank and Reuters EcoWin.

and therefore do not need to invest in capital stock. Moreover, experience shows that many firms are able to financial their investments via retained profits at the beginning of an upswing.

Danmarks Nationalbank's lending surveys show that the credit policy of the financial sector vis-à-vis the corporate sector and the households has remained more or less unchanged over the past year, following substantial tightening in the 4th quarter of 2008 and the 1st quarter of 2009 in the wake of the financial crisis. The tightening should be viewed against the backdrop of previous years' accommodative credit policies and the increased risk of loan losses due to the economic crisis. Taken at face value, the survey responses show that lending conditions are more or less the same today as in the spring of 2009.

Similar surveys have been conducted in the USA since the 1970s. According to these surveys, lending policies have been tightened much more frequently than they have been eased. Fluctuations in the survey are also more pronounced in periods of tightening than in periods of easing. Since there is no reason to believe that lending policies in e.g. 2007 were much tighter than when the surveys began, the response "unchanged" must at times mask actual easing of lending policies. It is

yet too early to say whether similar asymmetry applies to the responses in the Danish lending surveys.

The most recent Danish lending survey shows a small increase in households' demand for loans from the 1st to the 2nd quarters of 2010. There is, however, some variation within the group. Especially the large banks experience rising demand from both existing and new customers. The large banks also expect demand from households to rise in the 3rd quarter, while the medium-sized banks generally expect demand to fall slightly.

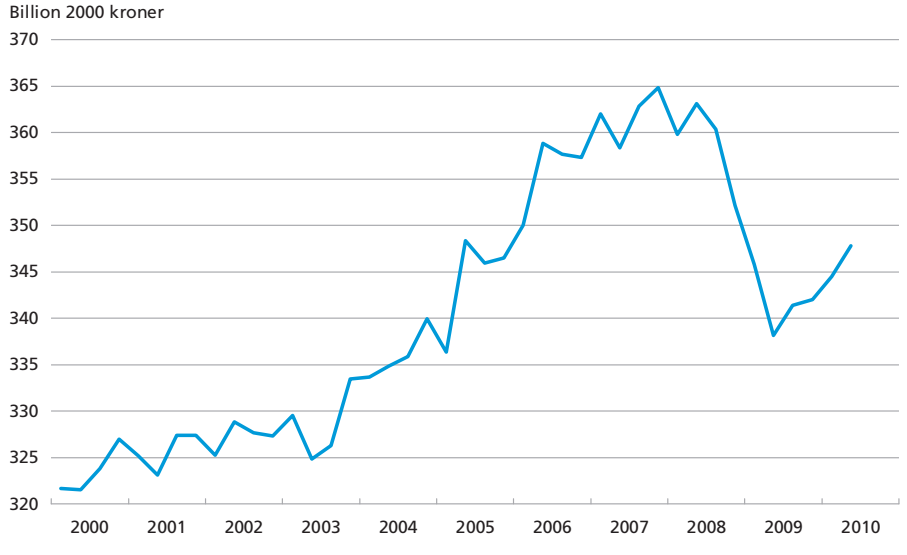
THE DANISH ECONOMY

Economic activity

The Danish economy is slowly recovering from its deepest post-war slump. In the 1st half of 2010, GDP growth was stronger than in the 2nd half of 2009, cf. Chart 16.

In the 2nd quarter, GDP thus increased by 1.0 per cent on the preceding quarter. Much of this increase was, however, attributable to a contribution from inventory investments, which must be regarded as temporary. Private consumption fell slightly. This should be seen against the backdrop of a very strong 1st quarter, but the data emphasises that growth in private consumption remains tentative.

GDP IN VOLUMES — Chart 16



Note: Quarterly GDP in 2000 kroner, chained values.
Source: Statistics Denmark.

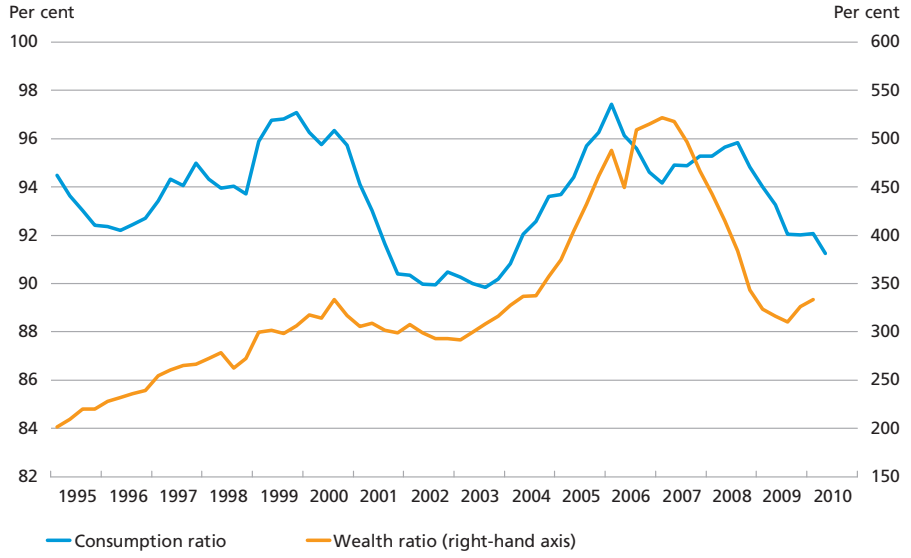
Fixed business investments made a positive contribution to growth in the 2nd quarter, while residential investments continued to fall. Exports picked up nicely, but imports grew even more. The high rate of growth in business investments and imports in the 2nd quarter reflects, among other things, the purchase of an oil rig abroad. Public consumption increased by 0.8 per cent in the 2nd quarter, up from 0.5 per cent in the 1st quarter. Higher public investment also contributed to growth.

Private consumption declined in the 2nd quarter in spite of positive development in disposable incomes, flattening of the unemployment curve and marginally increasing wealth. The consumption ratio has decreased strongly since the onset of the crisis, cf. Chart 17. This means that the households are consolidating themselves.

The high propensity to save is also reflected in retail turnover, which has shown a weak trend over the spring and summer and was almost flat from April to August, at a lower level than earlier in the year.

Consumer confidence has risen sharply over the past year and is now above the average for the last 25 years. Especially confidence in the Danish economy has risen. Historically, there has been considerable covariation between consumer confidence and overall private consumption according to the national accounts, cf. Chart 18.

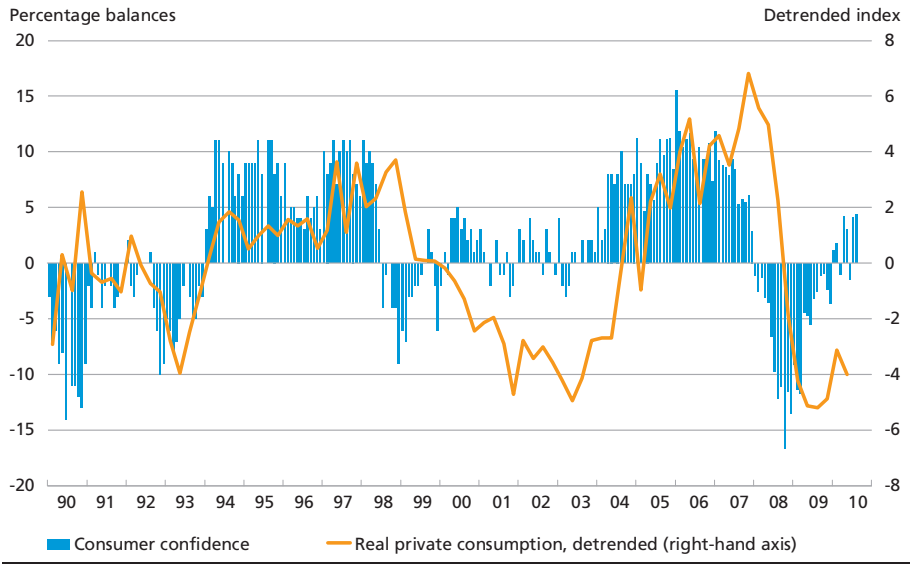
HOUSEHOLDS' CONSUMPTION AND WEALTH RATIOS — Chart 17



Note: The consumption ratio for households is an indicator of consumption relative to disposable income plus net payments to pension funds. The wealth ratio shows the households' wealth including pension wealth after tax relative to disposable income plus net payments to pension funds. The consumption ratio is a 4-quarter moving average. Partial estimate for the 2nd quarter of 2010.

Source: Statistics Denmark and own calculations.

PRIVATE CONSUMPTION AND CONSUMER CONFIDENCE Chart 18



Note: Detrended by 1995 = 100.
Source: Statistics Denmark and own calculations.

The number of enforced sales fell by 13 per cent in August, and the households' arrears ratio vis-à-vis mortgage banks fell in the 1st quarter after having risen for some time. This supports the impression that the households have become more well-consolidated.

While the private sector's propensity to consume has fallen in the wake of the financial crisis, public consumption has shown strong growth throughout the crisis. This is discussed in more detail in Box 4.

As regards the corporate sector, industrial production has been increasing over the last year, but the upswing has come later and been more tentative than in many other countries. In July industrial production was still trailing 15 per cent behind the pre-crisis level. This development is partly attributable to weaker Danish competitiveness.

Recent months have, however, seen sound growth in industrial order books, especially from export markets. The industrial confidence indicator has been flat over the summer, at a level just over its long-term average. This same applies to the services sector, while expectations in the construction sector remain very pessimistic. Overall, the indicators point to a moderate upswing in the economy[1].

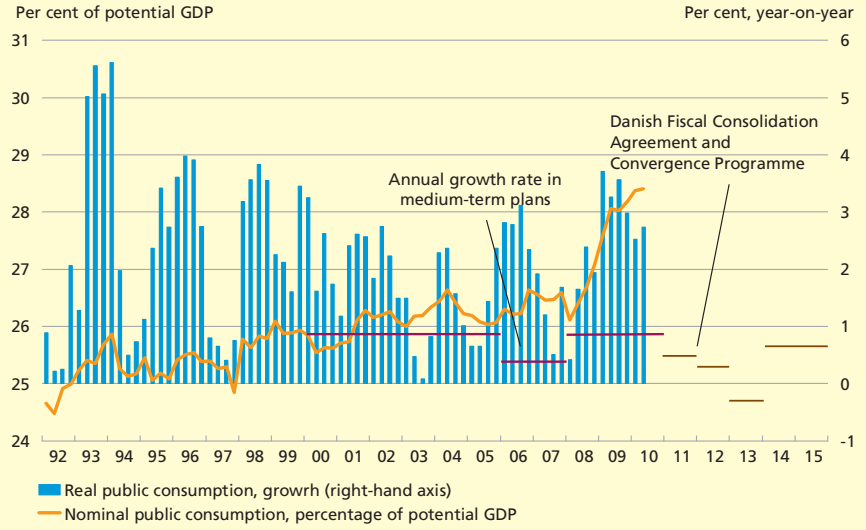
Many firms are consolidating themselves, i.e. reducing debt and increasing equity, but some are so severely affected by waning demand

[1] See the article by Jonas Sørensen, Business Surveys as Forecasting Tools, p. 73.

DEVELOPMENT IN PUBLIC CONSUMPTION Box 4

In the late 1990s, fiscal focus in Denmark turned to the medium and long term in step with growing political awareness of the fiscal challenges posed by the ageing of the population. The first medium-term plan was launched in 1997, followed by a 2010 plan and, most recently, a 2015 plan from 2009. All these plans have included targets for the actual or structural (cyclically adjusted) budget balance, as well as a ceiling on growth in public consumption. With the tax freeze from 2001, the government also undertook an obligation not to finance increasing expenses by raising taxes.

PUBLIC CONSUMPTION Chart 19



Until the most recent economic crisis, the target for the government budget balance was generally observed, but against the backdrop of a favourable economic climate and extraordinarily high income from North Sea oil and gas production and from taxation of pension yields and corporation tax. On the other hand, the limits on public consumption have been exceeded every year except in 2003, often with a considerable margin, cf. Chart 19. Public consumption as a ratio of potential GDP has increased substantially in the last couple of years. Potential GDP is the underlying cyclically adjusted GDP, which can be seen as an indicator of the output that is to finance public consumption in the longer term.

Local government accounts for just under half of total public spending, regional government for just over 20 per cent, and central government for almost 30 per cent. The repeated budget overruns are to a large extent attributable to the tendency for local authorities to exceed both their agreement with the central government and their own budgets. This was also the case in 2009, when public spending grew by 3.4 per cent in real terms, although the central government has tightened the potential sanctions in the event of budget overruns by local authorities.

Note: Potential GDP as calculated by the OECD.

that they fail. This is reflected in the continued increase, from an already high level, in the number of compulsory liquidations.

The housing market

Housing prices have stabilised at the current low level of interest rates, but there are considerable regional differences.

At the national level, the average price per square metre for single-family and terraced houses increased marginally in the 2nd quarter, to a level 1.5 per cent higher than one year earlier. This is the first positive year-on-year increase in more than two years. In the Copenhagen area, prices of single-family and terraced houses and owner-occupied flats all rose faster than the national average and are now around 10 per cent higher than one year ago. This is also the area where the steepest price drops were previously seen.

Turnover in the housing market has been rising over the past year, but fell a little in the 2nd quarter. It remains substantially below the pre-recession level. A very sluggish period has led to a backlog of houses for sale, including in new developments where construction began in the boom years. The number of houses for sale is very high in a long-term perspective. In total there are some 50,000 houses, terraced houses and flats for sale according to e-nettet/RealViewTNI – about twice as many as there were just before the crisis.

The large supply of houses for sale will exert downward pressure on prices in the short term. With the current backlog, there is presumably a narrow limit to how much prices for owner-occupied housing can rise in the short term. Normalisation of the level of interest rates will exert further downward pressure on housing prices.

Foreign trade and balance of payments

Exports of goods, including manufactured goods, have risen in the last three months, but not as much as in many other countries. Denmark's competitiveness has improved over the last six months due to weakening of the effective exchange rate of the krone and rising productivity, but this has not been sufficient to offset the pronounced loss of competitiveness seen in the preceding period.

Imports fell notably during the downturn in 2008 and early 2009, but have now begun to rise again. Imports of goods have increased by more than 7 per cent in the last three months. An upward trend is seen in imports for both households and the corporate sector. The trade surplus is virtually unchanged relative to the preceding period.

As regards the balance of payments, the surplus on trading in services has increased over the last three months. The main reason is that Den-

mark's large mercantile fleet takes home growing profits, reflecting rising transport volumes as world trade picks up, as well as better freight rates. The surplus on the "investment income" item has also increased.

The total current-account surplus has been rising over the last three years, primarily reflecting weaker demand in Denmark than abroad. In the 12-month period up to and including July 2010, the surplus was kr. 85 billion, an all-time high measured at current prices.

Labour market

From May until and including July, seasonally adjusted registered unemployment was practically unchanged at a level of around 113,000, corresponding to 4.1 per cent of the labour force. One the other hand, the number of people in activation schemes has been rising continuously over the last two years. These people are not included in registered employment, so the spread between registered employment and gross unemployment, i.e. unemployment including people in activation, has increased. A similar development is seen in the relationship between registered unemployment and the sample-based AKU unemployment[1]. This pattern differs substantially from the pattern seen during the previous recession around 2002-03, when the three measures of unemployment rose more or less in parallel, cf. Chart 20. See Box 5 for a discussion of the Danish labour market during the crisis.

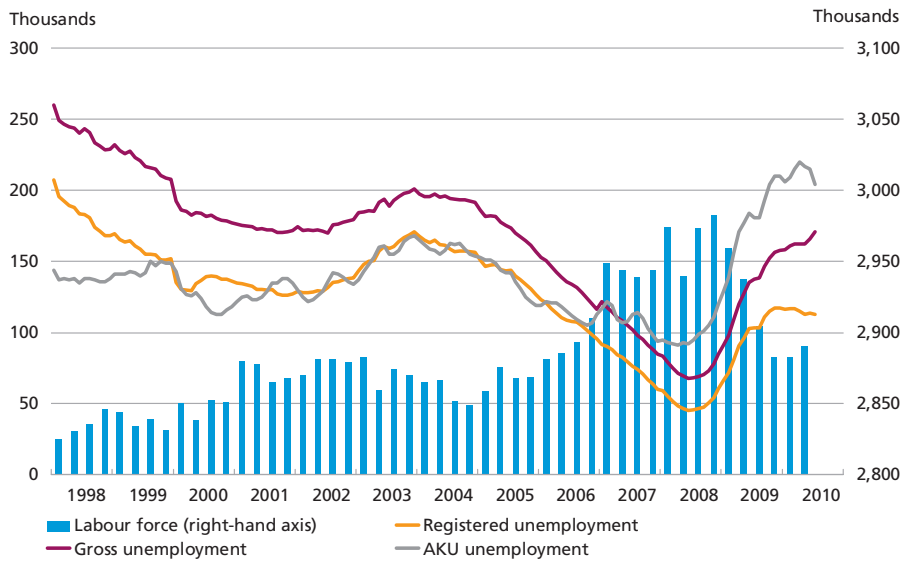
Considering how much output has dropped, the increase in registered unemployment has been surprisingly small. Since the peak in the 4th quarter of 2008, private-sector employment has fallen by 165,000 according to the national accounts, while public-sector employment has risen by 15,000. Registered unemployment has risen by only 60,000, so the labour force, calculated as the sum of employment according to the national accounts and registered unemployment, has fallen by 90,000. Measured by AKU unemployment, the fall is smaller. This shows that there is a large number of people who are not registered as unemployed, but who are ready to accept a job.

The labour force has shrunk more this time around than in previous recessions. Since only a small proportion have transferred to permanent public benefits, it will presumably be possible to increase the labour force again relatively fast once the demand for labour begins to pick up.

Since the previous recession, the deadline for when an unemployed person must accept an offer of activation has been brought forward. Moreover, the rules for the central-government's partial reimbursement

[1] AKU unemployment, as calculated in the labour-force survey *(arbejdskraftsundersøgelse)*, is a sample-based calculation of people without employment who are available for work and who are active jobseekers.

UNEMPLOYMENT AND THE LABOUR FORCE — Chart 20



Note: Labour force calculated as employment plus registered unemployment. Gross employment is registered unemployment plus the number of people in activation schemes. There is a break in the gross unemployment series. From 2007, recipients of cash benefits who are prepared to enter the labour market have been included.
Source: Statistics Denmark and OECD.

of municipal expenses for unemployment benefits and cash benefits have been amended to provide an incentive for increased activation. These factors may help to explain the large increase in activation during the most recent recession.

The extensive activation measures underline that gross unemployment gives a more true and fair picture of unemployment than registered unemployment does. The increase in gross unemployment by more than 100,000 since the summer of 2008 is indeed closer to the unemployment forecasts presented just after the financial crisis had hit the real economy.

Wages and prices

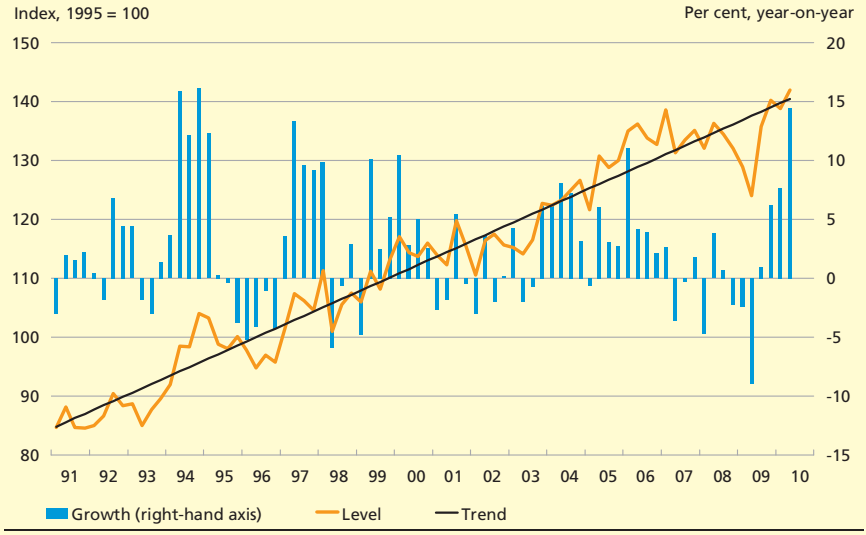
Annual private-sector wage inflation was around 2.5 per cent in the first two quarters of the year. Wage inflation has decreased notably in recent years to the lowest level for a number of years, but the falling trend in wage inflation is also seen in many other countries.

The subdued wage development reflects the still weak labour market and the ample capacity of Danish firms. As a result of decentralised wage negotiations, particularly in the industrial sector, wage increases are to a certain degree adapted to the financial situation of the individual enterprise.

THE CRISIS AND FLEXICURITY — Box 5

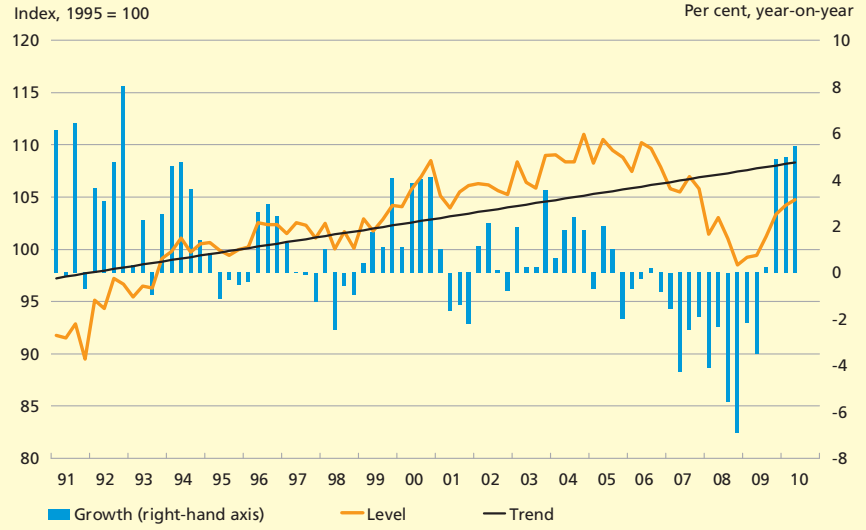
A characteristic of the Danish labour market is that it is relatively easy to adjust employment in a firm to demand for its products. This is part of the "flexicurity" model.

PRODUCTIVITY IN INDUSTRY — Chart 21



Note: Gross value added per employee in industry. The most recent observations are from the 2nd quarter of 2010. Linear trend estimated for the period 1991 to 2010.
Source: Statistics Denmark and own calculations.

PRODUCTIVITY IN PRIVATE NON-AGRICULTURAL SECTOR, EXCLUDING INDUSTRY — Chart 22



Note: Gross value added per employee. The most recent observations are from the 2nd quarter of 2010. Linear trend estimated for the period 1991 to 2010.
Source: Statistics Denmark and own calculations.

CONTINUED Box 5

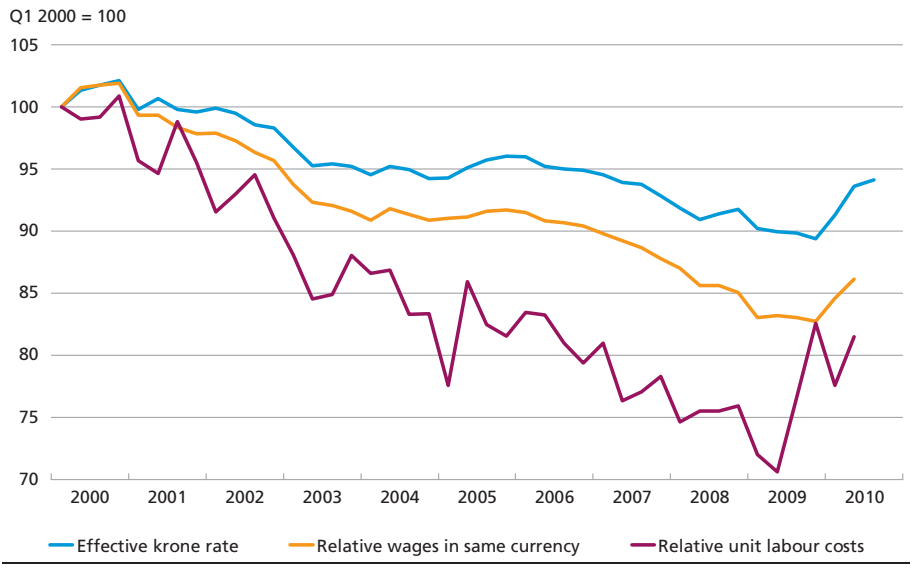
An indicator of the flexicurity model's efficiency is the fluctuation in productivity over time, i.e. in output per employee. Where the employment level is rapidly adapted to the need for labour, productivity can be expected to fluctuate less than in countries where it is more difficult to shed excess labour in downturns and where firms are also more hesitant to take on employees in upswings. Seen over a long period, the fluctuation in productivity in Denmark has indeed been smaller than in several comparable countries. During the most recent recession, however, some sectors diverged from this pattern.

Developments have differed over the last economic cycle, depending on whether we view industry in isolation or consider the broader definition, the non-agricultural sector, which also includes the services and construction sectors, cf. Charts 21 and 22. While industrial firms have rapidly adjusted their workforce to the downturn, the other two sectors have been more sluggish.

Because the labour force had not been adjusted, growth in non-agricultural productivity showed a pronounced negative trend in the period from 2007 to the 1st half of 2009. This trend has reversed in recent quarters so that productivity growth is now strongly positive. The non-industrial sectors of the Danish labour market have thus resembled those of e.g. Germany and France more than the Anglo-Saxon markets, which should actually be more like the Danish labour market in terms of degree of flexibility.[1]

[1] See the article by Thomas Munk Gade and Niels Peter Hahnemann, Labour Market Development in the Industrialised Countries during the Crisis, p. 59.

COMPETITIVENESS OF THE DANISH INDUSTRIAL SECTOR Chart 23



Note: Reciprocal series, i.e. foreign unit per Danish unit in terms of relative wages and relative unit labour costs. A falling index indicates deterioration of Denmark's competitiveness.
Source: OECD and Danmarks Nationalbank.

The competitiveness of Danish firms has improved somewhat over the past year – by around 15 per cent in terms of relative unit labour costs, cf. Chart 23. The increase has been driven by the lower effective exchange rate of the krone and by productivity growth, although there is much to catch up on after long period of relatively high wage inflation in Denmark.

Consumer prices, measured in terms of the Harmonised Index of Consumer Prices, HICP, rose by 2.3 per cent p.a. in August, compared with 1.7 per cent p.a. in the euro area in July. The higher rate of inflation in Denmark is attributable to the raising of several indirect taxes at the turn of the year, among other factors.

Core inflation, i.e. inflation excluding food and energy, is around 1 per cent p.a. Domestic market-determined inflation, IMI, shows the same pattern. Consequently, there is no substantial underlying inflationary pressure in the Danish economy at present.

Forecast for the Danish economy 2010-12

Danmarks Nationalbank's latest forecast for the Danish economy is presented in the following on the basis of the cyclical trends described above. The forecast has been produced using the macroeconometric model MONA[1] and is based on available economic statistics, including Statistics Denmark's quarterly national accounts for the 2nd quarter of 2010[2]. The underlying assumptions concerning the international economy, financial conditions and fiscal policy are described in Appendix 1. Revisions of the forecast relative to the March 2010 forecast are described in Appendix 2.

Moderate economic growth in Denmark, and in Denmark's major export markets, is expected in the coming quarters, following strong growth in the 1st half of 2010. For 2010 as a whole, GDP is estimated to be 1.6 per cent higher than in 2009, mainly due to the growth observed since mid-2009. In 2011 and 2012 GDP growth will gradually pick up, but not enough to bring back GDP to the pre-crisis level within the forecast horizon. This growth profile corresponds to the expectations for both the USA and the euro area, cf. Chart 24. The downturn in 2008 and 2009 was more pronounced in Denmark, but the projection assumes some catching up with the euro area, where the serious fiscal challenges are impeding growth in some member states.

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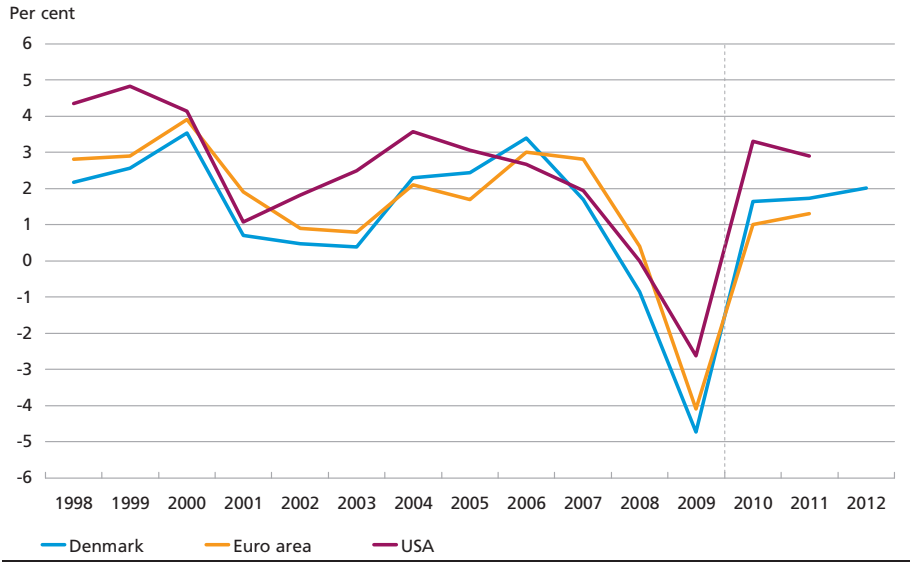
1 The model is described in Danmarks Nationalbank, *MONA – a quarterly model of the Danish economy*, 2003.

2 The calculations are based on data covering the period up to and including 10 September 2010.

GDP GROWTH IN DENMARK, THE EURO AREA AND THE USA Chart 24



Note: Estimates after the broken line.
Source: Statistics Denmark, Reuters EcoWin, IMF, *World Economic Outlook*, update July 2010, and own forecast.

Expected GDP growth is broadly distributed across demand components, cf. Table 4. A moderate increase in private consumption is predicted in the coming years. Disposable incomes in the household sector are expected to rise as a result of e.g. higher real wages and emerging growth in employment. This leaves room for continued consolidation, which is a

KEY ECONOMIC VARIABLES Table 4

Real growth on previous year, per cent	2009	2010	2011	2012
GDP	-4.7	1.6	1.7	2.0
Private consumption	-4.6	2.4	2.3	3.3
Public consumption	3.4	1.8	1.0	0.8
Residential investment	-18.1	-12.7	2.0	4.0
Public investment	12.4	16.0	-13.3	-5.1
Business investment	-14.2	-9.0	5.4	4.8
Inventory investment[1]	-2.0	0.8	0.5	0.1
Exports	-10.2	2.7	2.4	2.5
Industrial exports	-11.7	5.0	3.2	3.9
Imports	-13.2	1.9	3.9	3.9
Total employment, 1,000 persons	2,823	2,772	2,768	2,779
Registered unemployment, 1,000 persons	98	116	120	111
Balance of payments, per cent of GDP	4.1	4.6	3.8	3.2
Government balance, per cent of GDP	-2.8	-4.8	-4.6	-3.1
Cash prices, per cent year-on-year	-13.1	1.5	1.5	2.0
Consumer prices, per cent year-on year	1.1	2.1	1.7	1.6
Hourly wages, per cent year-on-year	2.9	2.6	2.6	3.0

[2] Contribution to GDP growth.

natural reaction to the preceding decline in the wealth ratio as a result of falling housing prices and the downturn in the stock markets. The very low level of interest rates has caused the housing market to stabilise. Together with a more positive outlook for the labour market, this provides for a certain increase in consumption despite the fact that the funding elements of the tax reform are being phased in and despite the tightening measures under the Fiscal Consolidation Agreement.

Consolidation is also seen in the corporate sector. According to the available indicators, business investment seems to have bottomed out, but there are no prospects of any strong increase in light of the extensive spare capacity resulting from the decline in output.

Public consumption has risen strongly in the last few quarters and is estimated to be 1.8 per cent higher in 2010 than in 2009. The assumption for 2011 and 2012 is a more moderate growth rate in public consumption, albeit higher than predicted by the government. Box 6 describes an alternative scenario in which public consumption in 2012 is as predicted in the Fiscal Consolidation Agreement and the Economic Survey from August 2010.

The growth in world trade has at last impacted on Danish goods exports, although the increase in exports is relatively modest in the projection. This should be viewed in light of the rather weak economic outlook for some of Denmark's most important trading partners and prospects of continued loss of market shares. The rate of increase is stronger for imports than for exports as demand pressures grow, gradually reducing the trade surplus in the projection.

The projection's annual growth rates of just under 2 per cent in the period 2010-12 offset a part of the very considerable output gap that arose in 2008 and 2009, but the gap will not be closed within the forecast horizon. Recent years' decrease in productivity in the private non-agricultural sector has been extensively caught up over the last few quarters, but there is still some distance to the trend. This means that employment is expected to increase only moderately from its present level despite the projected output growth. Against this backdrop, registered unemployment will show a modest increase until the beginning of 2011, when it will gradually begin to fall.

Wage increases in the private labour market have declined notably since 2008, to around 2½ per cent year-on-year as unemployment has grown. In the coming quarters, wage inflation is expected to remain close to the current moderate level, but it is not likely to decline further in view of the more positive outlook for the labour market. Given the outlook for subdued wage increases abroad, Danish wage developments are not as such expected to contribute to improving competitiveness in the near term.

CONSUMER PRICES Table 5

Per cent, year-on-year	Weight[1]	2009	2010	2011	2012	Q2 2010	Q3 2010	Q4 2010
HICP		1.1	2.1	1.7	1.6	2.0	2.1	2.4
Index of net retail prices	100	2.1	1.9	1.9	1.7	1.8	1.8	2.0
Exogenous:								
Energy	7.1	-6.3	10.8	1.5	0.3	13.8	10.4	6.3
Food	13.1	0.6	-0.2	2.4	1.6	-1.2	0.5	2.0
Adm. prices	4.2	4.8	3.8	2.8	2.8	3.9	4.0	3.7
Rent	23.6	4.5	2.6	1.8	1.8	2.5	2.3	2.5
Excl. exogenous	52.0	2.4	0.7	1.7	1.7	0.4	0.5	1.0
Imports	15.6	-3.5	0.8	2.1	2.9	-0.1	2.6	3.1
IMI	36.4	5.1	0.6	1.5	1.2	0.6	-0.5	0.1

Note: In the index of net retail prices, indirect taxes and duties have been deducted from consumer prices, while any subsidies have been added.

[1] Weight in the index of net retail prices, per cent.

A moderate inflationary pressure is expected. The outlook for the world economy shows no indication of any strong pressures on commodity prices. In Denmark, the subdued labour market and low capacity utilisa-

ALTERNATIVE SCENARIO WITH LOWER PUBLIC CONSUMPTION Box 6

A key objective of the government's Convergence Programme 2009 for the Danish economy is that public consumption must not exceed 26¾ per cent of cyclically adjusted GDP by 2015. In recent years, however, public consumption has increased strongly to the current level of approximately 28½ per cent of cyclically adjusted GDP, cf. Box 4. If this is not addressed, it will be necessary to raise the tax burden to a higher level than envisaged in the current plans for the Danish economy. This calls for considerably lower growth in public consumption than assumed in the above forecast.

The government's Economic Survey from August 2010 assumes that real growth in public consumption will be 0 per cent in 2010 and 0.6 per cent in 2011, while the recently adopted economic consolidation plan assumes growth in public consumption of ½ per cent in 2012. But the preliminary national accounts indicate far stronger growth. The preceding years have also seen budget overruns. Against this background, the above forecast assumes real growth in public consumption of 1.8 per cent in 2010, 1 per cent in 2011 and 0.8 per cent in 2012. However, it will be necessary to reduce public consumption in the coming years in order to comply with the objective of the Convergence Programme concerning public consumption as a ratio of GDP.

The macroeconomic consequences of an alternative scenario are illustrated below. In this scenario, real public consumption is reduced in 2011 and 2012, to bring the 2012 level in line with Economic Survey, August 2010, including the Fiscal Consolidation Agreement from May 2010. Furthermore, from 2011 real public investment is expected to reach the level envisaged in Economic Survey, August 2010. More specifically, the alternative scenario with lower public demand entails a decline in real public consumption of 0.4 per cent in both 2011 and 2012, whereas the decline in public investment is slightly smaller than in the baseline scenario, i.e. 6.2 per cent in 2011 and 5.5 per cent in 2012.

CONTINUED Box 6

The lower public demand reduces GDP growth to 1.5 per cent in 2011 and 1.7 per cent in 2012, cf. the second column of Table 6. Lower public consumption means that the number of public-sector employees is lower than in the baseline scenario, and private-sector employment is also reduced as a result of the more subdued activity. Overall, unemployment will rise by almost 15,000 persons by 2012. Wage inflation is slightly reduced, and the effect on prices is modest over the forecast horizon. Relative to the baseline scenario, the government budget balance will improve by approximately kr. 5 billion in 2012. In the longer term, however, the improvement will be somewhat greater.

The calculations show that despite dampened activity for a period, it is still possible to bring public consumption back on the planned track without choking the economic upswing. It will be necessary to curb public spending sooner or later in order to avoid increasing the tax burden.

BASELINE AND ALTERNATIVE SCENARIOS Table 6

	Baseline scenario	Lower public demand
2011		
GDP, per cent year-on-year	1.7	1.5
Registered unemployment, 1,000 persons	120	126
Government balance, per cent of GDP	-4.6	-4.5
HICP, per cent year-on-year	1.7	1.7
2012		
GDP, per cent year-on-year	2.0	1.7
Registered unemployment, 1,000 persons	111	125
Government balance, per cent of GDP	-3.1	-2.9
HICP, per cent year-on-year	1.6	1.5

tion are in accordance with this trend. In August 2010, HICP was 2.3 per cent higher than in August 2009. This considerable increase in inflation compared with last year can be attributed to e.g. higher indirect taxes as from the turn of the year and higher energy prices. These factors will sustain inflation throughout 2010, with consumer price inflation of 2.1 per cent on the previous year, cf. Table 5. Inflation will then decline in 2011 and 2012, when the contribution from higher indirect taxes will be more modest.

Domestic market-determined inflation, IMI, has been reduced considerably from its high level in 2009, primarily because firms only partially allow rising import prices to be reflected in consumer prices. IMI is expected to remain moderate in light of the subdued development in wages and considerable spare capacity. Recent years' decline in the profit ratio indicates rising profit margins, although profit margins are also to a certain extent expected to be restored by productivity growth.

Economic policy

2007 showed a government surplus of just under 5 per cent of GDP. A deficit of similar size is expected for 2010. The principal cause of this dramatic budget deterioration is that the economic crisis has weakened the tax base and increased public expenditure for unemployment and cash benefits, etc. However, a significant part of the budget deterioration can be attributed to the fact that Denmark is among the European countries that have eased fiscal policy the most to address the crisis.

As a result of the strong government budget deterioration, Denmark is now subject to the excessive deficit procedure under the EU's Stability and Growth Pact. Consequently, the Council of Ministers for Economic and Financial Affairs has recommended that Denmark correct the cyclically adjusted government budget balance by at least ½ per cent annually in the period 2011-13, corresponding to an overall budget improvement of approximately kr. 24 billion.

The path is laid down in the Fiscal Consolidation Agreement concluded in May 2010. The countercyclical effect of the Agreement will be more than offset by the most recent easing of the monetary conditions. The latter is driven by the lower interest rates and a weaker effective exchange rate of the krone. Fiscal consolidation is necessary in order to ensure compliance with the EU's fiscal ground rules and to ensure confidence in Denmark's ability to pursue disciplined economic policy. Confidence is the precondition for the fixed-exchange-rate policy and the low Danish interest-rate spread to abroad.

The Fiscal Consolidation Agreement assumes a substantial reduction of public consumption growth in the coming years. Moreover, the government's latest Economic Survey assumes real growth in public consumption in 2010 to be kept at zero, but preliminary national accounts statistics point to far stronger growth in consumption this year. The preceding years have also seen considerable budget overruns, not least in 2009. The repeated overruns accentuate the long-term government financing problem and eliminates the scope for expansionary fiscal policy in the event of a new economic downturn.

If the budget overruns are not countered by savings of the same magnitude in the coming years, it will be necessary to increase the tax burden to a higher level than envisaged in the current plans for the Danish economy. Since there is limited scope for increasing the tax burden without causing severe economic distortion, this is a strong argument in favour of tighter fiscal policy compared with the fiscal stance in the above forecast. Box 6 presents an alternative scenario for the Danish economy, in which the unintended increase in public consumption in 2010 is countered by an equivalent reduction in public consumption

growth over the next two years. This alternative scenario shows a decline in GDP growth of approximately 0.2 percentage point in 2011 and approximately 0.3 per cent in 2012 relative to the baseline scenario. However, the calculations also show that it is possible to bring public consumption back on the planned track without choking the economic upswing. Reducing public consumption would require policy instruments which could ensure that targets are met to a higher degree than seen so far. It is important to bear in mind that public spending must be curbed sooner or later to avoid increasing the tax burden. The longer budget overruns are accepted, the more the reins will have to be tightened afterwards.

The backdrop to the fiscal discussion is that Denmark is facing demographic headwinds for a long period, until around 2040, during which the number of people employed will decline relative to the number of pensioners, and this development will increasingly make its mark on the government budgets. Structural reforms to expand the supply of labour may, in the longer term, improve public finances and thus reduce the need for traditional savings measures and/or tax increases. The reduction of the unemployment benefit period to 2 years under the Fiscal Consolidation Agreement leaves little scope for achieving further significant budget improvements by reforming the unemployment benefit system without undermining the Danish flexicurity model for the labour market. Well-planned reforms of the student grant system and the rules for early retirement pension may contribute to increasing the supply of labour and strengthening fiscal sustainability. And as many surveys have shown, raising the retirement age offers great potential. However, the gigantic task of ensuring long-term fiscal sustainability requires more than labour-market reform alone. A tighter rein on public consumption is also required in order to keep the tax burden unchanged.

The low rate of underlying productivity growth in the Danish economy has triggered a debate on how to boost this growth rate. In the longer term, the development in productivity determines progress in the standard of living. In some cases, higher productivity growth is regarded as a solution to fiscal problems, but several analyses indicate that higher underlying productivity growth can actually lead to slight deterioration of fiscal sustainability.[1] If public-sector employees and recipients of transfer incomes are to obtain their fair shares of productivity gains, public expenditure for payroll costs and transfer payments will rise in step with the increase in real wages that is a consequence of productiv-

[1] See e.g. Erik Haller Pedersen and Johanne Dinesen Riishøj, Growth, Public Finances and Immigration, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2008 and the Economic Councils, *The Danish Economy*, Spring 2010, Chapter III.

ity growth. Conversely, on the revenue side certain elements are not completely in tune with the development in productivity. The consideration of prosperity provides a strong argument in favour of initiatives to boost productivity, but in reality, higher productivity cannot replace fiscal consolidation measures.

The banks have tightened their credit policies in the wake of the financial crisis. This has been necessary against the backdrop of the lenient credit conditions in the preceding years and the increased risk of loan losses due to the economic crisis. The turn of events has given rise to a debate on whether a credit crunch exists, i.e. a situation in which credit conditions are tighter than warranted by the cyclical position and financing cannot be obtained for a good many healthy, viable investment projects, which would require new measures to boost credit. There is no doubt that some small and medium-sized enterprises have found it increasingly difficult to obtain financing over the last few years. However, this should be viewed against the background of the accumulation of imbalances during the boom in the previous years. As a result, some sectors, e.g. construction, grew to proportions that were not viable in the long term. Moreover, the longstanding deterioration of Danish wage competitiveness is probably also a mounting threat against the survival of some firms. Under these circumstances, it will inevitably be increasingly difficult for parts of the business community to obtain financing. However, the figures for total credit do not give grounds to maintain that a general credit crunch exists. Total lending by banks and mortgage banks to both the corporate sector and households is still very high by historical and international standards, and the economic downturn has entailed only a very limited drop in total lending to the corporate sector.

The discussion of the desirability of increased credit should also be viewed in the context of the banks' customer funding gap. Although higher lending will to a certain extent lead to increased deposits, higher lending growth may entail a wider customer funding gap. Following a considerable reduction in 2009, Danish banks' customer funding gap is beginning to grow again. This applies to both domestic and foreign units of Danish banks. The financial crisis demonstrated that a large customer funding gap based on short-term financing makes a bank very vulnerable in the event of international financial turmoil. The lesson has been learnt, and since 2008 long-term loans have played a larger role in financing of the customer funding gap. It is paramount to financial stability that the individual bank ensures stable financing of a possible customer funding gap.

APPENDIX 1: ASSUMPTIONS IN THE FORECAST FOR THE DANISH ECONOMY

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

The international economy

The global economic upswing is continuing. Most major economies have posted more positive national accounts for the 1st half of 2010 than expected at the beginning of the year. This has prompted upward adjustment of Denmark's export market growth for 2010. The market for Danish exports is thus expected to grow by 6.1 per cent in 2010, although a lower growth rate is predicted for 2011 and 2012, cf. Table 7. The basis for these estimates is, among other factors, the quick return of world trade to the pre-crisis level.

Notwithstanding the solid growth rates in several economies in the 1st half of 2010, global price pressures still seem weak. Import prices for the countries to which Denmark exports and export prices for the countries from which Denmark imports are expected to fall by more than 1 per cent this year, followed by increasing growth in the subsequent years. Foreign wage growth is also expected to remain low over the projection period on account of the fragile international economy.

OVERVIEW OF FORECAST ASSUMPTIONS — Table 7

	2009	2010	2011	2012
International economy:				
Export market growth, per cent year-on-year	-12.0	6.1	4.3	5.6
Export market price[1], per cent year-on-year	-0.4	-1.4	1.2	1.8
Foreign price[2], per cent year-on-year	-0.5	-1.3	1.3	1.8
Foreign hourly wages, per cent year-on-year	1.8	2.6	1.5	1.9
Financial conditions, etc.:				
3-month money-market interest rate, per cent p.a.	1.7	0.6	0.7	0.9
Average bond yield, per cent p.a.	3.8	2.7	2.9	3.4
Effective krone rate, 1980 = 100	107.8	103.6	102.3	102.3
Dollar exchange rate, DKK per USD	5.4	5.7	5.9	5.9
Oil price, Brent, USD per barrel	62.6	77.6	80.9	84.8
Fiscal policy:				
Public consumption, per cent year-on-year	3.4	1.8	1.0	0.8
Public investment, per cent year-on-year	12.4	16.0	-13.3	-5.1
Public-sector employment, 1,000 persons	830	837	836	838

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

Interest rates, exchange rates and oil prices

In the forecast, the development in short-term and long-term interest rates is based on the expectations of future developments that can be derived from the yield curves in the financial markets. The short-term interest rate has been declining since the autumn of 2008, and in September the 3-month money-market rate was around 0.6 per cent p.a. Looking ahead, the market expects the short-term interest rate to remain below 1 per cent p.a. for the rest of the forecast period. Long-term interest rates have also declined since the autumn of 2008. At the beginning of September, the average bond yield was 2.4 per cent and the forecast assumes a rise to just under 3.5 per cent p.a. in 2012.

Compared with the March forecast, the nominal effective exchange rate of the krone has fallen by approximately 3 per cent. This trend reflects a weakening of the euro – and thus the krone – vis-à-vis a number of currencies, including the US dollar, the pound sterling, the Swedish krona and the Norwegian krone. In recent months, however, the dollar has fallen back a little. In the projection, the dollar rate and the effective exchange rate of the krone are assumed to be unchanged from the level at the end of August.

The price of oil has fluctuated around 80 dollars per barrel for the last six months. It was just under 80 dollars per barrel at the time of the forecast. In the projection, oil prices are assumed to mirror futures prices and rise a little from the current level.

Fiscal assumptions

The fiscal assumptions in the forecast reflect the fiscal-policy stance as presented in Economic Survey, August 2010. Real public consumption is assumed to grow by 1.8 per cent this year, declining to 0.8 per cent in 2012. Growth in public investment is expected to be significant in 2010 due to factors such as the decision to bring forward a number of fixed public investments. In 2011-12, investment will gradually fall back to the 2009 level. Growth in public consumption is expected to be stronger than estimated in Economic Survey, reflecting the latest statistical information and the tendency to exceed the target.

APPENDIX 2: REVISIONS IN RELATION TO THE PREVIOUS FORECAST

The estimated GDP growth in 2010 has been adjusted upwards from 1.3 per cent in the March forecast to 1.6 per cent in this forecast, cf. Table 8, which shows a breakdown of the revisions of GDP and consumer prices into important underlying factors. The upward adjustment of GDP growth is mainly based on a similar revision of export market growth, primarily motivated by stronger development in the most recent quarters. In a longer perspective, export market growth has been adjusted downwards, which contributes to reducing GDP growth in 2011 and 2012.

Both short-term and long-term interest rates have declined since March so they are 1-1½ percentage points lower in this forecast than in the March forecast. This contributes to higher growth in 2011 and 2012. Moreover, the weakening of the effective exchange rate of the krone since March also contributes to slightly higher consumer prices. Overall, the financial conditions, measured in terms of interest and exchange rates, are thus considerably more expansionary than in the March forecast. Other factors, including data revisions, are pushing GDP growth downwards in 2010. This also applies in 2011 due to factors such as the Fiscal Consolidation Agreement from May 2010.

Unemployment has been adjusted downwards to a considerable extent relative to the March forecast. This revision reflects higher employment in this forecast and a greater level of activation.

REVISIONS IN RELATION TO THE PREVIOUS FORECAST — Table 8

	GDP			Consumer prices (HICP)		
Per cent year-on-year	2010	2011	2012	2010	2011	2012
Forecast, March 2010	1.3	1.7	1.9	2.0	1.5	1.5
Contribution to revised estimate from:						
Export market growth	0.6	-0.2	-0.3	0.0	0.1	0.1
Interest rates	0.0	0.3	0.3	0.0	0.0	0.0
Exchange rates	0.3	0.5	0.3	0.1	0.3	0.2
Oil prices	0.0	0.0	0.0	-0.1	-0.1	0.0
Other factors	-0.5	-0.6	-0.2	0.0	0.0	-0.3
This forecast	1.6	1.7	2.0	2.1	1.7	1.6

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

Global Imbalances – a Threat to the Upswing?

Niels Blomquist and Susanne Hougaard Thamsborg, Economics

INTRODUCTION AND SUMMARY

Global imbalances are a core issue in the world economy. International organisations are repeatedly underscoring the need to ensure a better balance between savings and investment, particularly in the USA, China, the oil-producing countries and among the euro area member states.

This article discusses why large imbalances can pose a risk to economic and financial stability. An account is given of the development in balances of payments since the onset of the crisis, as well as the measures taken so far to reduce imbalances. Finally, the article discusses the interaction between global imbalances and global growth and the challenges arising from the existence of both a fiscal deficit and a current-account deficit (twin deficits).

Our main focus is on the USA and China, which are key economies in the international debate on global imbalances and the policy recommendations of international organisations. Despite substantial internal imbalances within the euro area, its external balance of payments is more or less in equilibrium. We do not focus on imbalances in relation to oil-exporting countries as their surpluses to a large extent reflect oil price developments.

In the period up to the crisis in 2008-09, large global imbalances accumulated. After a temporary cyclical reduction, they are set to grow again. Although China has taken certain steps to stimulate domestic demand, and the US savings ratio has risen a little, the structural reforms implemented are modest. So there is still some way to go before the G20 target of rebalancing global growth through a lasting reduction of global imbalances can be met.

Structural initiatives to reduce global imbalances are required, and it is important that both surplus and deficit countries implement such measures. A unilateral change may reduce imbalances, but will also reduce global growth. Unchanged economic policies will increase imbalances, making the economic upswing more vulnerable.

WHY ARE LARGE GLOBAL IMBALANCES A PROBLEM?

The global imbalances discussed in these years relate to large current-account deficits in the USA in particular, but also in countries such as the UK and several southern euro area member states. These deficits are offset by large current-account surpluses in countries like China, the oil-exporting countries, Japan and Germany, cf. Chart 1. In the period up to the crisis in 2008-09, large current-account imbalances accumulated[1]. After a temporary cyclical reduction, they are set to grow again.

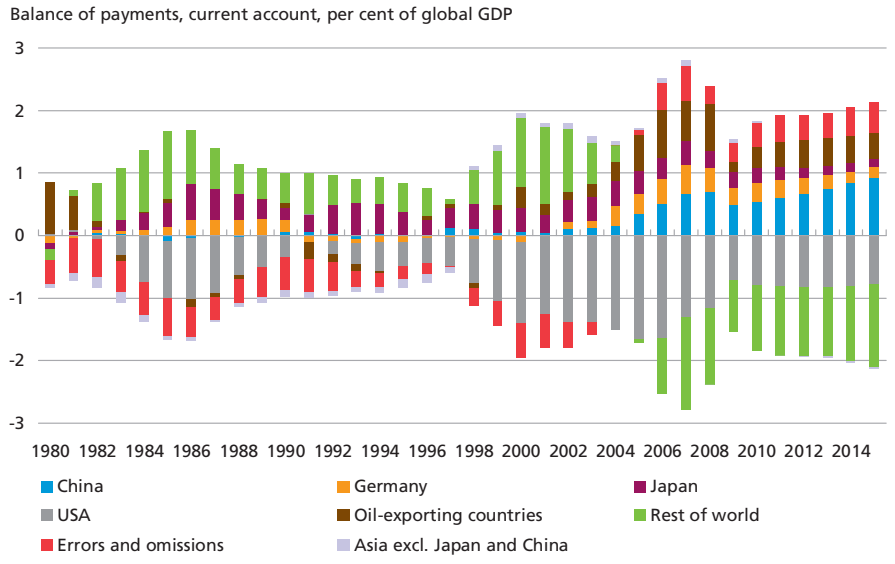
Large global imbalances are not necessarily a problem if they reflect a more efficient distribution of savings between surplus and deficit countries. Globalisation and increased financial integration have made it possible for deficit countries to finance investment and growth by means of foreign savings, and investors in surplus countries may seek higher returns on their savings and investment abroad. In practice, capital flows from China and other emerging economies to e.g. the USA. This may reflect factors such as greater trust in the institutional framework conditions for investment in the USA, including effective protection of property rights and better conditions for research and development. However, there are indications that the global imbalances are to a large extent driven by problematic factors in both deficit and surplus countries, including economic policies, capital restrictions and rigid exchange rates in several emerging economies, notably China.

Large global imbalances typically imply that deficit countries accumulate debt at a rate that exceeds growth in revenue. Sooner or later such a period of debt accumulation must make way for a period of debt stabilisation or reduction relative to revenue. Historical experience shows that such a reversal is often triggered by an abrupt fall in capital flows from abroad into the deficit countries because international investors suddenly lose confidence in the sustainability of developments. This may lead to financial crises and debt crises in these countries and bring on an international economic downturn. The US economy is, however, to some extent shielded by the dollar's status as a reserve currency. So far, this has made it possible to maintain large external deficits without investors losing confidence and halting their capital flows into the USA.

All other things being equal, a return to large global imbalances will pose a threat to international economic stability. If the Chinese savings surplus is still invested in US Treasury bonds, this will lead to very low

[1] The accumulation of global imbalances before the financial crisis is described in more detail in Kramp (2009).

GLOBAL IMBALANCES BROKEN DOWN BY COUNTRIES AND REGIONS Chart 1



Note: Oil-exporting countries are Algeria, Bahrain, Ecuador, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Oman, Qatar, Saudi Arabia, the United Arab Emirates and Venezuela.
Source: IMF (2010a).

interest rates in the USA, which may prompt excessive risk-taking. A sudden drop in investor appetite for dollar assets, triggering a sharp decline in the exchange rate of the dollar and rising US interest rates, could thus jeopardise economic stability. The international economic organisations have repeatedly pointed out the need to ensure a better balance between savings and investment in the various parts of the world economy. For countries with savings deficits this could mean increasing public savings by way of fiscal tightening, possibly combined with structural reforms to increase potential revenue and thus the overall savings potential of the economy in the long term.

Countries with current-account deficits (savings deficits) can only realise reductions if the present surplus countries also accept lower current-account surpluses, i.e. if they increase domestic demand relative to their output potential. In this context not least China plays a key role because it has had a considerable structural current-account surplus for many years on account of a very high propensity to save, measured by international standards. This is attributable to factors such as limited social security, which encourages the Chinese to save up for their own pensions and as a precaution against illness, unemployment, etc. Until now, China has sought to maintain a fixed exchange rate against the dollar or against a basket of currencies. Real revaluation of the exchange rate of the renminbi would make imports cheaper, thereby contributing to in-

creasing the consumption ratio in China and reducing the current-account surplus.

Who finances the USA's external deficit?

In accounting terms, the USA's current-account deficit is offset by an equivalent inflow of capital from abroad. The financing of the USA's external deficit may, however, follow other patterns than the bilateral current-account surplus or deficit, cf. Iversen (2006). Chart 2 shows how the US deficit is financed.

China's ownership share of the USA's external debt has risen from around 4 per cent in 2002 to 15 per cent in 2009, and one fourth of the externally financed government debt is held by the Chinese. In 2008 China overtook Japan as the country holding the largest foreign share of US debt, including US Treasury securities. During this period the Cayman Islands and other Caribbean islands as well as the UK have financed a more or less constant share of the USA's external deficit, namely around 8 per cent[1], while the oil-exporting countries hold only 4 per cent or so.

The increasing savings surpluses of China, the other Asian emerging economies and the oil-producing countries have made these countries willing to finance US consumption (the savings deficit) by holding more and more US bonds, etc. The Chairman of the Federal Reserve, Ben Bernanke, has referred to this phenomenon as a global "saving glut", cf. Bernanke (2005). It should also be seen against the background of the bitter experience from the Asian crisis, when investments were far higher than savings in many Asian emerging economies, making these countries dependent on inflows of foreign capital. When this source suddenly dried up, output and employment plummeted. This experience has encouraged the Asian emerging economies to increase national savings.

In IMF (2010b), the International Monetary Fund, IMF, emphasises the need for the USA to begin to finance a larger share of its government deficit itself if interest rates are not to rise sharply. As the risk that the USA will lose its status as a "safe haven" increases, and pressure on public spending mounts, the IMF expects the gap between the supply of and demand for Treasury bonds to grow to around 30 per cent of the gross domestic product, GDP, by 2015, which will push up interest rates by between 60 and 150 basis points. Such calculations are, however, subject to considerable uncertainty.

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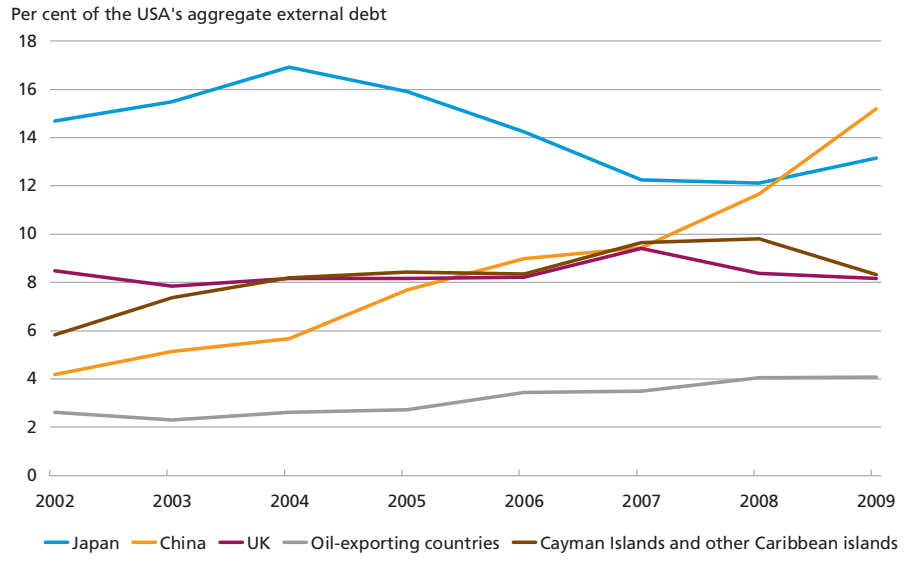
[1] The large holdings of US debt securities in the Cayman Islands and other Caribbean islands reflect factors such as tax rules, which have led many banks and asset managers to set up offices there.

SELECTED COUNTRIES' OWNERSHIP OF THE USA'S EXTERNAL DEBT Chart 2



Note: Oil-exporting countries are Algeria, Bahrain, Ecuador, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Oman, Qatar, Saudi Arabia, the United Arab Emirates and Venezuela.
Source: United States Treasury – Treasury International Capital System.

BALANCE-OF-PAYMENTS DEVELOPMENTS – CYCLICAL AND STRUCTURAL DRIVERS

After the financial crisis, the global imbalances shrank considerably. In principle, this could be attributable to either a cyclical or a structural reduction of the imbalances, but in practice it has been cyclical as the structural improvements have been limited.

Cyclical factors

The economic crisis in the wake of the financial crisis led to a dramatic fall in world trade. This reduced the global imbalances, partly because countries with large current-account deficits, such as the USA and the UK, were particularly severely hit by the crisis and therefore experienced a substantial drop in demand for imports. Moreover, China conducted very expansionary fiscal policy in order to counter the impact of the economic crisis. This contributed to increasing domestic demand and thus also to reducing China's export surplus.

As the turmoil in the financial markets spread, and asset prices tumbled in the USA and certain European countries, the international capital flows dried up. At the same time, the US savings ratio rose – partly reflecting increased precautionary savings in view of the worsening employment situation.

Oil prices also have a major impact on the global imbalances. As Chart 1 illustrates, oil-exporting countries have a current-account surplus of ½-1 per cent of global GDP, and the USA imports large quantities of oil-based products. In July 2008, the price of a barrel of oil briefly reached almost 145 dollars, but as the global growth outlook deteriorated, it plunged to 43 dollars in February 2009.

These factors have contributed to reducing global imbalances, but they are of a cyclical nature. From the 2nd quarter of 2008 to the 2nd quarter of 2009, the US balance of payments improved by 2.4 percentage points of GDP. According to Cheung et al. (2010), two thirds of this improvement is attributable to cyclical factors.

The IMF (2010a), among others, expects global imbalances to increase again, cf. Chart 1, as world trade picks up and commodity prices stabilise at a higher level.

Structural factors – status of reforms

At the G20 Pittsburgh Summit in the autumn of 2009, the G20 countries decided to coordinate their economic policies within a "Framework for Strong, Sustainable and Balanced Growth". The idea was to assess the derived impacts of the economic policies of individual countries on the global economy with a view to agreeing on common economic objectives and initiatives. These include recommendations for structural reforms to ensure a more lasting reduction of global imbalances, i.e. rebalancing of economic growth so that it is driven more by domestic demand in surplus countries and savings in deficit countries.

At the G20 Toronto Summit in June 2010, only modest progress had been made in terms of global rebalancing. The communiqué from the summit specified that deficit countries should increase national savings while also improving their international competitiveness, cf. G20 (2010). Surplus countries should strengthen their social security systems (healthcare and pensions) and develop their financial markets so as to reduce precautionary savings and stimulate private consumption. Furthermore, they should increase infrastructure investments in order to address any bottleneck issues for the manufacturing sector. Finally, the G20 calls for greater flexibility in exchange rates so that they better reflect the economic fundamentals. The ECB (2010) notes that the G20 differs from other forums that have discussed a reduction of the global imbalances.[1] All major economies are represented, the meetings take place at head-of-state level, and the countries are accountable to each other, not to an international organisation. This creates a basis for a certain peer pressure, which may improve the chances of success.

[1] E.g. the IMF's round of multilateral consultations in 2006 and 2007.

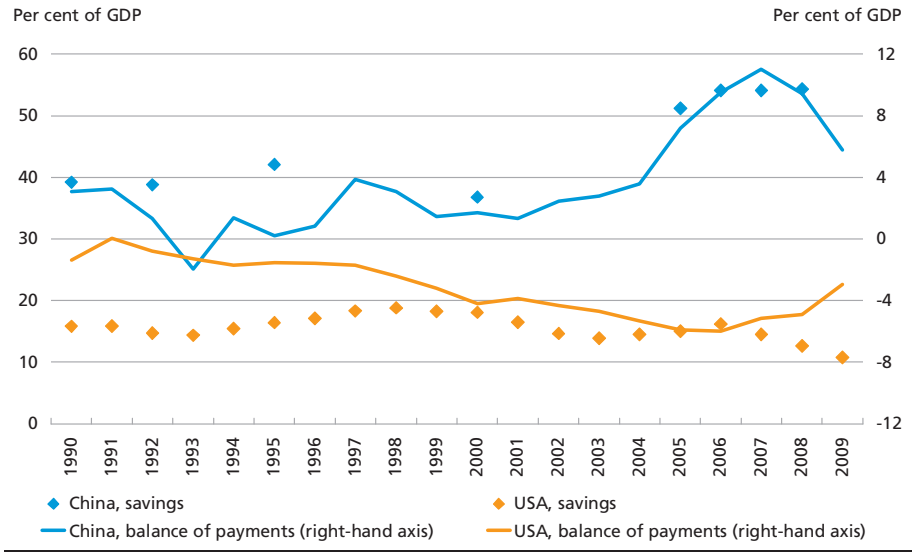
Prior to the G20 Toronto Summit, China to some extent bowed to sustained international pressure for a more flexible renminbi. China abandoned the fixed-exchange-rate policy against the dollar pursued since 2008 in favour of a fixed-exchange-rate policy against a basket of currencies, corresponding to the pre-2008 exchange-rate regime. In mid-August, the People's Bank of China also opened up for foreign banks to invest in the Chinese interbank market for bonds, albeit within certain limits.

As part of its crisis management, China has stimulated demand via increased infrastructure investment. These do not directly boost private consumption, so the Chinese budget for 2010, which was announced in March, marked a shift from infrastructure investment to more consumption-oriented measures such as investment in education, social security and healthcare. However, it will take quite a while before these initiatives are implemented and begin to have an effect. This means that the private savings ratio is likely to remain high for some time yet.

Ma and Yi (2010) estimate that the private savings ratio in China was just under 40 per cent of disposable income (and 23 per cent of GDP) in 2008. In an international context, savings are also high in both the corporate and public sectors (19 and 11 per cent of GDP, respectively, in 2008). According to Ma and Yi, this entails aggregate Chinese savings of more than 50 per cent of GDP in 2008, cf. Chart 3.

BALANCE OF PAYMENTS AND NATIONAL SAVINGS RATIO IN THE USA AND CHINA

Chart 3



Note: The national savings ratio is total private and public savings as a percentage of GDP. The national savings ratio for China consists of BIS estimates for certain years, which explains the "gaps" in the data.

Source: IMF (2010a) and Ma and Yi (2010).

The USA's aggregate savings in 2009 amounted to 10.8 per cent of GDP. Private savings increased from a trough of 1.8 per cent of disposable incomes in the autumn of 2007, before the culmination of the financial crisis, to just over 7 per cent in the summer of 2009. It then began to decline again, to a level of approximately 5.5 per cent, where it remained from the autumn of 2009 to the spring of 2010. Recent months' mounting uncertainty about the sustainability of the economic upswing has, however, led to a small increase in the savings ratio. Moreover, it looks as if the government deficit will fall when the fiscal stimulus measures are phased out and the Federal government slowly begins to tighten fiscal policy from 2011 in accordance with the most recent budget plans.

The USA has yet to implement measures to boost exports and reduce dependence on private consumption, which currently accounts for some 70 per cent of GDP. In July 2010, President Obama set up a panel of top executives with a view to doubling exports over the next five years. The reasoning is simple: export growth generates job growth and thus economic growth. But the target is ambitious, and US exports have never previously risen by that much over so short a period.

GLOBAL IMBALANCES AND GROWTH PROSPECTS

In the short term, fiscal consolidation, financial reform and growing savings are set to dampen domestically driven economic growth in the USA, Europe and Japan. China's export growth will thus decline, and in the absence of structural reform domestic demand will not make up for the fall. This entails lower growth in world trade and in the global economy.

Structural reforms in China to rebalance demand towards increased private domestic demand could benefit exports from e.g. the USA, Europe and Japan. This means that Chinese consumers can, to some extent, compensate for the falling domestic demand (and increasing savings) in other countries, thereby buoying up global growth. The IMF (2010c) has several proposals for how the Chinese can stimulate consumption-driven growth in future. These include lowering VAT and developing and liberalising the financial markets in order to facilitate loan-based financing of investments and purchase of consumer durables.

In a background document for the G20 Toronto Summit at end-June, the IMF made a number of simulations on the world economy, see IMF/G20 (2010). It simulates a "positive scenario" in which the western countries consolidate public finances, among other measures, and the emerging economies permit more flexible exchange rates and imple-

ment structural reforms to encourage domestic demand. According to the IMF, these measures will lift global GDP by 2.5 per cent in the medium term compared with a baseline scenario without these initiatives. The impact will be most pronounced in the western countries, but GDP will also increase in the emerging economies. Global growth will increase by 0.5 percentage point. Global imbalances will narrow by 0.75 percentage point of global GDP, corresponding to a 25-per-cent reduction.

The OECD has performed equivalent simulations of combined fiscal tightening and structural reform, cf. OECD (2010). The conclusion is that global imbalances will be reduced by approximately 10 per cent relative to the baseline scenario after five years and by approximately 35 per cent after 10 years. With fiscal consolidation alone or no initiatives at all, global imbalances will remain virtually unchanged at the 2010 level. The combination of structural reform in the emerging economies, not least China, and increasing savings in the deficit countries is therefore essential if the global economy is to be rebalanced.

Exchange rates

Rigid exchange rates are a major impediment to global rebalancing. The combination of export-driven growth and rigid exchange rates entails a continuous flow of capital by way of loans and investment, especially from China to the USA. This may lead to unsustainable tensions in the foreign-exchange markets. In response to persistent international pressure, China in mid-June abandoned its fixed-exchange-rate regime vis-à-vis the dollar. So far the impact has been modest, however.

There is considerable uncertainty linked to determining how far the renminbi is from its equilibrium rate. Various studies reach very different conclusions, ranging from underestimation by 60 per cent to slight overestimation, see OECD (2010).

OECD (2010) has investigated the impact of a gradual real appreciation of the renminbi against all other currencies, by 10 per cent from 2011 to 2025. In China, the balance of payments will deteriorate by 0.3-0.4 per cent of GDP in the short and medium term, cf. Table 1. In the

EFFECTS OF APPRECIATION OF THE REAL EFFECTIVE RENMINBI BY 10 PER CENT

Table 1

Balance of payments (per cent of GDP)	Year 1	Year 2	Year 5
USA	0.0	0.1	0.1
China	-0.4	-0.3	-0.4

Source: OECD (2010).

USA, the result will be a more modest improvement of the balance of payments, by 0-0.1 per cent of GDP. This limited effect of unilateral Chinese revaluation underscores the need for both surplus and deficit countries to adjust their economic policies in order to reduce imbalances.

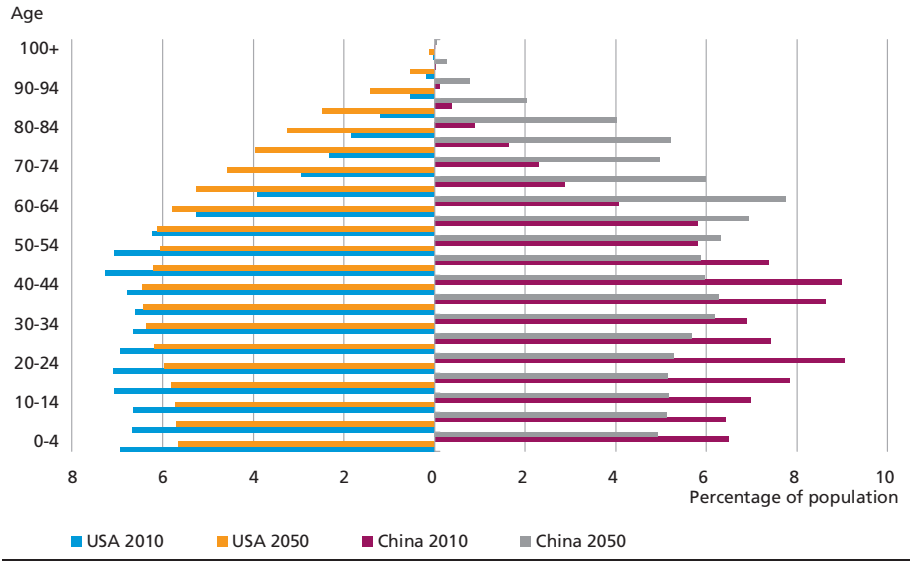
Demographics

Demographic trends are a major factor that may affect long-term developments in global imbalances and the growth potential.

According to economic theory, consumers wish to smooth consumption over their lives. A life can roughly be divided into three phases. In the periods before and after a person's working life, savings are typically low, while they are high during one's working life. Cyclical factors may also impact on the propensity to save. If the probability of becoming unemployed increases, people typically increase their savings (precautionary savings).

As Chart 4 shows, the populations of both the USA and, especially, China are ageing. The ratio of people of working age to senior citizens is rapidly decreasing. According to theory, this should reduce the propensity to save in the USA as well as China. Whether this will have a positive or negative impact on global imbalances remains to be seen. Viewed in isolation, a decline in Chinese private-sector savings will reduce global imbalances. On the other hand, if the Chinese are concerned about

DEMOGRAPHIC STRUCTURES OF THE USA AND CHINA IN 2010 AND 2050 Chart 4



Note: Projections based on the UN's "medium variant" fertility scenario.
Source: United Nations – World Population Prospects, 2008 revision.

future generations and leave a large share of their wealth to their descendents, this may prevent a fall in Chinese savings.

A public transfer-benefits system as seen in the West does not exist in China, where individual citizens hold substantial private savings for e.g. pensions, healthcare expenses and so forth. The US pension system, on the other hand, is based on some degree of government transfer between generations, so private savings tend to be lower. As the proportion of senior citizens increases, pressure on public spending will mount due to a rising volume of transfer benefits for pensions and healthcare, among other things. If these expenses are not financed by higher taxes or reduction of other government expenditure items, public savings will decline. This may exert further pressure on external balances if the budget deficit cannot be financed by private domestic savings. This will aggravate the "twin deficits" in the USA, i.e. a fiscal deficit combined with a current-account deficit.

Empirical studies have typically estimated a correlation between the government budget balance and the balance of payments of between 0.1 and 0.3, see Bussière et al. (2005). In other words, when the government deficit increases by 1 per cent of GDP, the balance of payments deteriorates by between 0.1 and 0.3 per cent of GDP on average. In that connection, the planned reforms of the US healthcare system are welcomed as they are likely to limit government debt and thus reduce global imbalances, although some observers have questioned whether the healthcare reform will actually reduce government spending significantly. Bernanke (2005) rejects the hypothesis that the US current-account deficit is attributable to the government deficit, as the current account also deteriorated during a period when the USA posted government surpluses.

RISKS

In the absence of structural improvements, global imbalances will begin to grow again when the cyclical balance-of-payments effects have faded away in the near future. True, the fiscal consolidation taking place in the western countries in particular will help to stabilise government debt, but in e.g. the USA debt is likely to stabilise at a much higher level than today. This may push up long-term interest rates and dampen medium-term growth prospects, which will also make it more difficult to address future shocks and rising ageing-related expenses.

Viewed in isolation, protectionist measures will reduce global imbalances. When e.g. the USA's imports and China's exports are reduced, their respective current-account deficit and surplus will also decrease.

But this will be at the expense of global growth as world trade will contract. In connection with the US stimulus package, a "Buy American" declaration of intent was formulated. So far the USA has not taken steps to increase protectionism (except by imposing trade restrictions on Chinese car tyres) – one reason being that China recently bowed to pressure from the USA and other countries to introduce a more flexible exchange-rate regime. President Obama's plan to double exports over the next five years also signals increased openness. If the renminbi does not strengthen considerably more than it has done so far, there is, however, a risk of increased US protectionism.

Guo and N'Diaye (2009) have examined whether China's current export-oriented growth is sustainable in the slightly longer term. They find that a number of industries must win substantial market shares to maintain this growth rate. However, experience from other Asian economies with similar export-oriented growth shows that there are limits to the global market share that one country can achieve. This means that China may not be able to maintain its current high growth rates. If growth is rebalanced in favour of greater domestic demand, this will support GDP growth and reduce the need to win further market shares.

Market participants and international organisations see a risk of an emerging asset price bubble in China, especially in the housing market. A housing bubble that bursts will pose a significant risk in the form of lower domestic demand and may impede the rebalancing of global growth by means of higher private consumption and investment in China (and increased savings in the USA).

Blanchard and Milesi-Ferretti (2009) conclude that there is a need for three key adjustments: (i) higher private savings in the USA, (ii) lower budget deficits in the USA, and (iii) lower current-account surpluses in China (and other emerging economies). So far, we have only seen cyclically driven improvements in respect of counts (i) and (iii). If no permanent improvements take place, the authors see a substantial risk that the global upswing will be weak and unevenly distributed.

Overall, many issues still need to be resolved in terms of meeting the G20 objective of a lasting reduction of global imbalances. Large global imbalances need not necessarily prevent an international economic upswing, but larger imbalances increase vulnerability to future shocks such as changes in investor appetite for dollar assets. It would therefore make sense to implement structural reforms in both deficit and surplus countries with a view to reducing global imbalances without curbing the growth potential of the global economy.

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Labour Market Development in the Industrialised Countries during the Crisis

Thomas Munk Gade and Niels Peter Hahnemann, Economics

INTRODUCTION AND SUMMARY

Experience shows that financial crises often leave profound long-term traces on the economy.[1] In many countries, the global financial crisis resulted in the largest loss of output since the depression in the 1930s, and employment declined substantially from the beginning of 2008. With a loss of 8.4 million jobs, or four years' growth in employment, up to the end of 2009, the USA experienced the greatest decline. During the same period, 3.9 million jobs were lost in the euro area (corresponding to two years' growth), 1.6 million in Japan, and 0.7 million in the UK. From the 2nd half of 2009 the large industrialised countries have seen a cyclical reversal, and there are now indications that the situation in the labour markets has stabilised, cf. Chart 1.

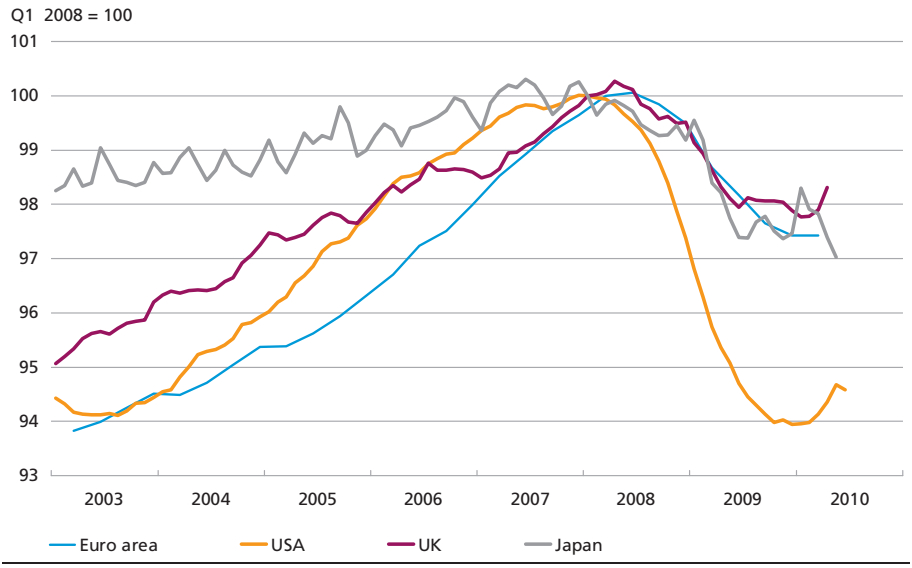
In view of the serious crisis, the most recent development in the labour markets has exceeded expectations. In June 2009, the OECD expected unemployment in the OECD area overall to reach 9.8 per cent in the 2nd quarter of 2010. In fact, it peaked at 8.8 per cent in October 2009, and according to the latest figures, unemployment in the OECD area had fallen to 8.5 per cent in June. At the same time, development in the gross domestic product, GDP, has been more favourable than expected.

The sustainability of the labour market improvement depends on the drivers of the cyclical reversal. One factor is undoubtedly the time-limited monetary and fiscal policy incentives launched in many countries after the onset of the crisis. A continued upswing will thus require more self-sustained demand. In this connection, the adaptability of the labour markets is important: the faster the labour markets adapt to the shock of the crisis, the easier it will be to support growth in aggregate demand, even if the economic-policy incentives no longer apply.

This article outlines the development in the industrialised countries' labour markets during the crisis in a comparative perspective[2]. It shows

1 See e.g. Reinhart and Rogoff (2009) and IMF (2009a and b), Chapters 3 and 4, respectively.
2 The development in the Danish labour market is reviewed in Recent Economic and Monetary Trends.

DEVELOPMENT IN TOTAL EMPLOYMENT Chart 1



Note: Seasonally adjusted indices, monthly data (USA: nonfarm payroll), quarterly data for the euro area.
Source: Reuters EcoWin.

that the responses of the labour markets in individual countries have differed substantially. The extremes are decreasing unemployment in Germany and rapidly rising unemployment in particularly the USA, Ireland and Spain. The relations between loss of output, employment and unemployment have varied significantly, and more so than during previous crises. There are indications of structural changes in the labour markets, e.g. as a result of increasing globalisation. Labour-market policies in individual countries have also diverged considerably, and the development in the labour markets in the near term can also be expected to vary from country to country. Unemployment may continue to rise in many countries over the next 6-12 months and will remain high for some time to come. The risk of a jobless recovery exists mainly in Europe, while the risk of a sustained increase in long-term unemployment (hysteresis) is particularly high in the USA.

DIFFERENCES IN LABOUR-MARKET ADJUSTMENT

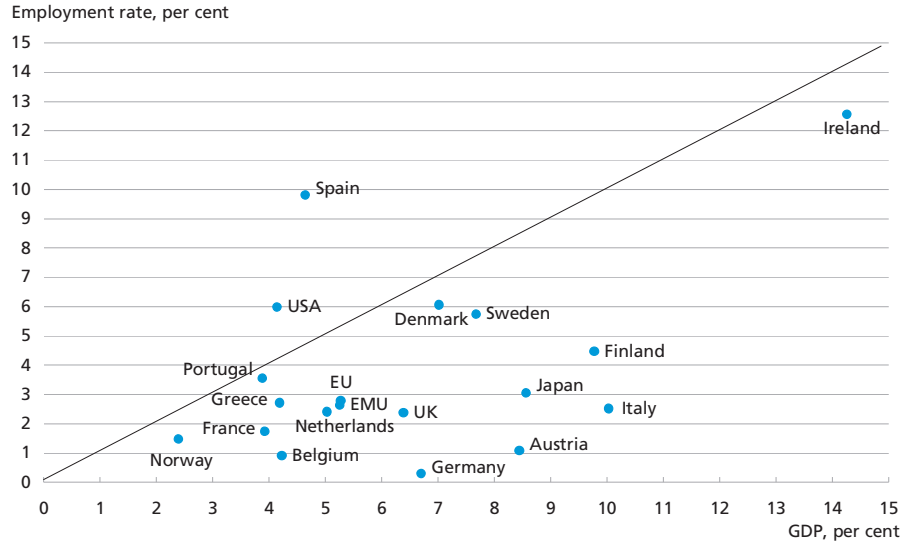
The financial crisis was a global crisis with a broad impact on the international economy, resulting in loss of output in a large number of countries, including the developed economies in particular. The loss of output led to decreasing employment, but the labour markets' responses to the common shock diverged considerably. The USA is among the countries where employment has been most severely affected, as are Spain

and Ireland in Europe. In other countries the decline has been relatively moderate. The difference between the countries cannot be explained by GDP development alone. The countries that have experienced a strong downward trend in employment, and the countries with the largest losses of output are not the same. In Germany and Japan, for example, the impact on employment has been relatively moderate, even though these two countries have suffered some of the largest losses of output, cf. Chart 2.

The diverging trends in output and employment have resulted in large variations in productivity development in individual countries. The decline in US employment during the crisis was so substantial that it has improved labour productivity. A similar tendency has been seen in Spain, among other countries, with temporary employment contracts in particular accounting for the adjustment. Most European countries and Japan, on the other hand, have experienced labour hoarding and a resulting fall in hourly productivity. This is normally seen in connection with temporary downturns where firms try to retain their employees. In Germany, Italy and Japan, among other countries, this tendency has been accentuated by job sharing schemes with reduced working hours, cf. below.

The response patterns on the labour markets' supply side have also differed widely. Poorer employment opportunities during an economic crisis will make some employees withdraw from the labour force, there-

FALL IN GDP AND EMPLOYMENT DURING THE CRISIS Chart 2



Note: Peak-to-trough changes in indices.
Source: Reuters EcoWin and own estimates.

by causing the average participation rate to drop. For example, some students may extend their period of study, while an increasing proportion of older workers retire early. The latter effect may be offset by losses on e.g. pension assets and home equity, which may encourage older workers to postpone their retirement. In countries such as the USA, the UK and Ireland in particular, pension benefit payments are sensitive to wealth fluctuations. According to the OECD, the effect on the labour supply is estimated to be small, however.[1]

In many countries, the participation rate has fallen during the crisis, but the responses have diverged considerably from country to country. Ireland and Spain are among the countries whose labour markets have been most severely affected. The participation rate in Ireland has fallen, with mostly young workers withdrawing from the labour force. In Spain, on the other hand, the participation rate has risen, as more older people have entered the labour market. The changes in participation rates in the industrialised countries generally seem small despite the large decline in total employment. However, the negative impact of the crisis on the labour supply may also result in shorter average working hours, which has indeed been the case in many countries during the recession.[2]

The crisis has resulted in falling employment, especially for young workers (age 15-24), while employment in older age groups (55+) has increased.[3] Youth unemployment has increased, particularly in Spain, Italy and the USA, cf. Chart 3.

The decrease in GDP during the crisis in 2008-09 was deeper than in previous crises, and the loss of jobs and the rise in unemployment were consequently greater than before. However, the wider variation in labour market response patterns is also worth noting.[4]

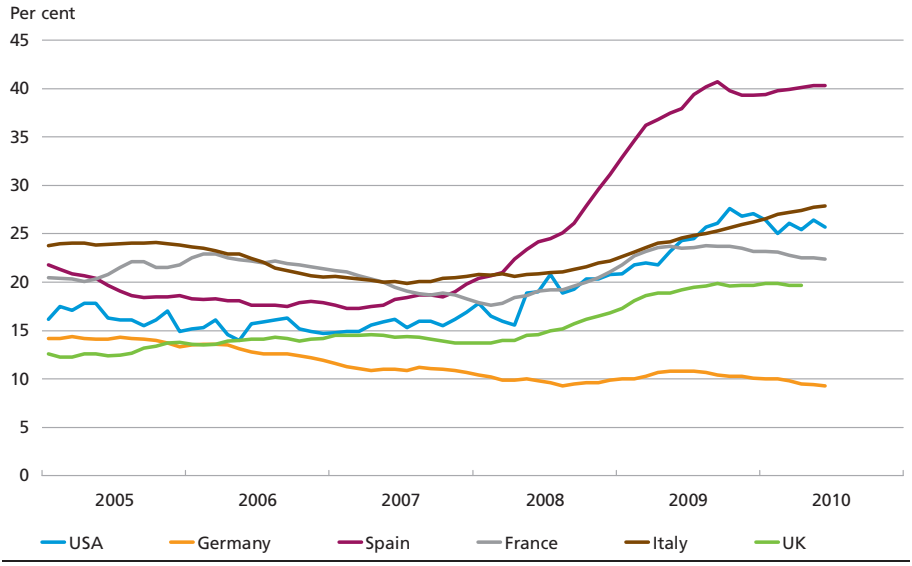
IMBALANCES ARE ONLY PART OF THE EXPLANATION

Part of the explanation for the different responses in the labour markets is presumably the differences in housing-market developments as well as differences in the size of the financial sectors and in individual countries' dependence on exports.

Before the outbreak of the crisis, large imbalances in the form of housing bubbles built up in several countries, notably the USA, the UK and Spain, among the major industrialised countries. Especially in Spain, dismissals in the construction sector accounted for a substantial part of the

1
2 OECD (2010b), Box 5.2, pp. 267-68.
3 OECD (2010b), Figure 5.4, p. 258, Table 5.1, p. 260, and OECD (2010c), Tables C and G.
4 OECD (2010b), Box 5.9, p. 266.
OECD (2010a), Figure 1, p. 8; and OECD (2010b) Figure 5.1, p. 264.

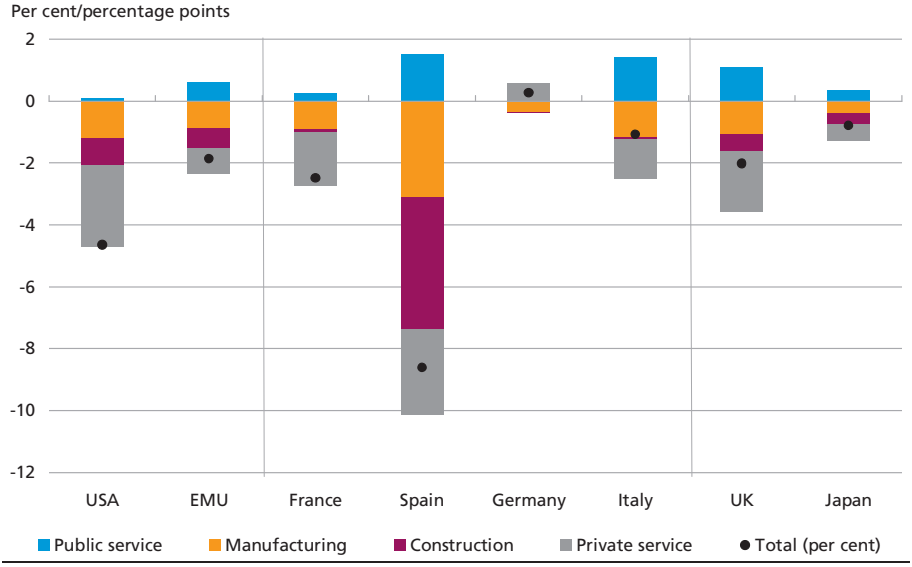
YOUTH UNEMPLOYMENT Chart 3



Note: European countries: harmonised unemployment rate for young people under the age of 25; USA: under the age of 20.
Source: Reuters EcoWin.

drop in total employment, cf. Chart 4. This is partly attributable to more widespread use of temporary employment contracts, but also to the fact that the construction sector represented a larger share of the economy in Spain than in e.g. the USA or the UK.

FALL IN EMPLOYMENT FROM CYCLICAL PEAK TO TROUGH DURING THE CRISIS Chart 4



Source: Reuters EcoWin and own calculations.

Another distinctive feature is that the service sector has accounted for a larger part of several industrialised countries' labour-market adjustments compared with previously. This is particularly evident in the USA, the UK and Spain where the adjustments have been driven by the financial and retail sectors and, as far as Spain is concerned, the tourism sector.

As world trade collapsed during the crisis, employment in the manufacturing sector has also had to be adjusted. Relatively open economies typically require stronger adjustments. As Chart 4 shows, employment in the manufacturing sector has decreased in practically all countries except Germany and Japan.

The development in employment in Germany, Italy and Japan stands out, mainly in that the adjustment of the number of people in employment has been almost negligible compared to the significant drop in GDP during the crisis, cf. Chart 2. This is particularly remarkable for Germany and Japan because of the relatively large manufacturing sectors of those economies. One of the reasons for the lack of employment adjustment in these countries is the labour-market policies pursued during the crisis, e.g. schemes enabling reduced working hours, cf. below.

CHANGED CORRELATION BETWEEN UNEMPLOYMENT AND GDP

The labour-market adjustment during the crisis is affected not only by cyclical but also by long-term structural factors. Okun's Law describes a historical correlation between the change in the unemployment rate (ΔU) and the percentage change in GDP (ΔY);

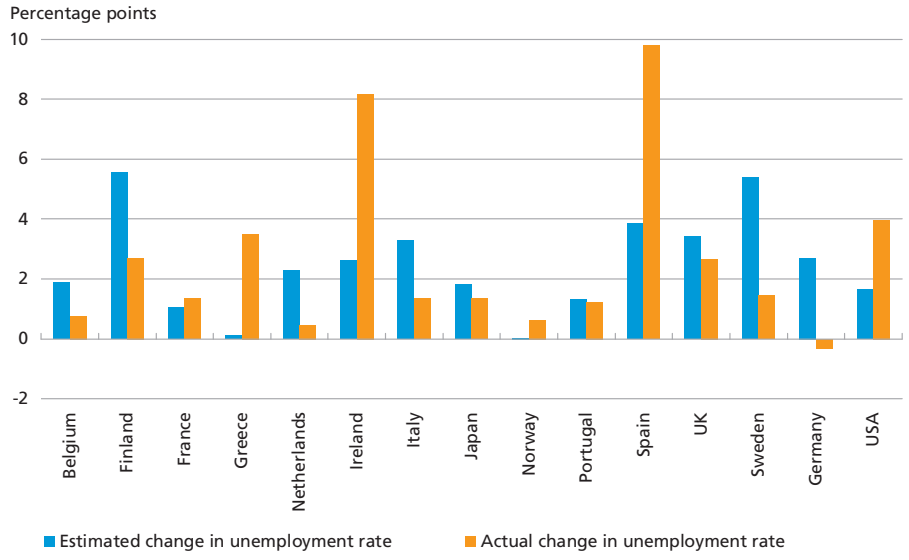
$$\Delta U = \alpha - \beta \Delta Y,$$

where α is a constant, and β is the sensitivity of the unemployment rate to the GDP growth rate. The higher the value of β, the stronger the change in unemployment as a result of changes in GDP.

Okun's Law is more of an empirical macroeconomic rule of thumb than an actual theoretically based rule. The idea is that at given rates of labour productivity and participation, changes in GDP must be reflected directly in a change in the unemployment rate. If an unequivocally negative correlation does not exist between GDP and unemployment, this is because the rates of labour productivity and participation have also changed.

The size of β will be influenced by a number of institutional factors such as employment legislation, the degree of unemployment compensation, the use of time-limited or permanent employment contracts,

RISE IN UNEMPLOYMENT DURING THE CRISIS Chart 5



Note: The estimated change in unemployment is the percentage peak-to-trough decline in GDP during the most recent recession multiplied by the historical unemployment rate sensitivity in terms of the GDP growth rate, where the sensitivity is calculated on the basis of quarterly data 1988-2008. The actual change in unemployment is the change in the unemployment rate during the most recent crisis period, where GDP moves from peak to trough (in most cases the unemployment rate will continue to rise after GDP begins to rise; this delayed further rise is not included in the yellow columns).
Source: Reuters EcoWin, IMF and own calculations.

wage development flexibility, etc. Okun's Law may be said to reflect the degree to which labour-market volumes, i.e. the number of employees and unemployed, adapt to fluctuations in output. This adaptability varies across countries, depending on institutional factors. And in fact the calculated values of β for individual industrialised countries do differ.[1]

In principle, the historical differences in the size of the β coefficient in different countries could explain why the rise in unemployment across countries did not match output losses during the crisis, cf. Chart 2. As it turns out, the historical correlation cannot explain the actual rise in unemployment in individual countries during the current crisis, cf. Chart 5.

Presumably, the explanation of the difference between historical and actual correlations is that the degree of labour hoarding in the recent crisis has diverged from previous crises. Accordingly, unemployment has risen less than expected based on the historical correlation in a number of European countries and Japan. In the USA, on the other hand, where the crisis did not lead to labour hoarding, the actual rise in unemployment has been greater than expected based on the historical correlation.

[1] IMF (2010), Figure 3.7 (bottom), p. 82.

So Okun's Law has not been stable during the current crisis. The correlation between the cyclical fluctuations in unemployment and GDP may be changing. It is affected by structural labour-market changes, e.g. labour-market reforms in individual countries, which may result in a different β value over time. The International Monetary Fund, IMF, has found that the average β value for the industrialised countries increased from 0.25 in the 1990s to 0.36 in the 2000s, i.e. the unemployment rate has become more sensitive to the GDP growth rate.[1]

WAGE, EMPLOYMENT AND PRODUCTIVITY ADJUSTMENTS

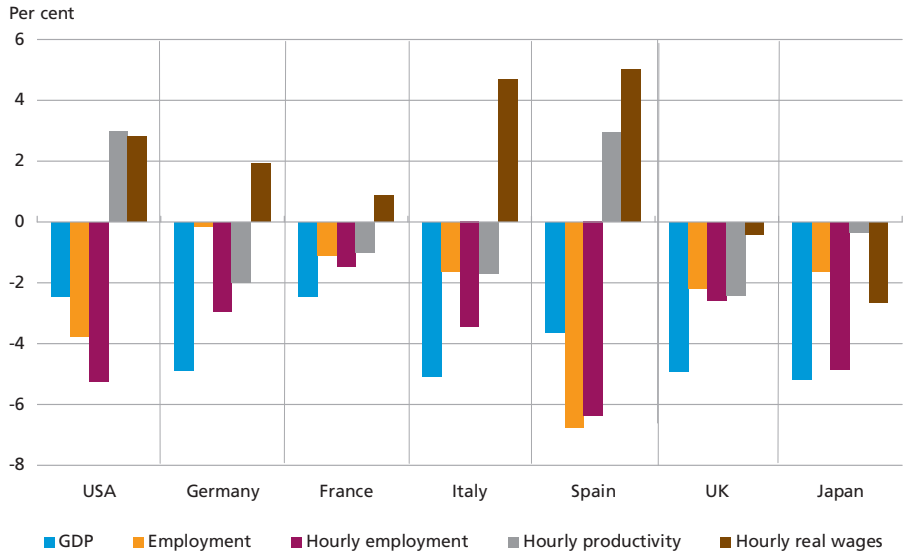
Labour markets may show flexibility in several ways. Adjustment to an economic downturn may take the shape of hourly employment or real wage adjustment. Both factors will typically be adjusted during a severe economic downturn, but wages will often be adjusted later than hourly employment. A drop in labour productivity can only be avoided if hourly employment is reduced – by reducing either the number of employees or the number of working hours per employee.

According to economic theory, employees earn their marginal product, i.e. real hourly wages correspond to the additional output produced by an extra working hour. Accordingly, the development in productivity per hour should have a positive correlation with real hourly wages. Looking at the development in productivity and wages during 2009, this applies to the USA, the UK, Spain and Japan, cf. Chart 6. Productivity per hour has increased, and at the same time an increase in real wages can be observed in both the USA and Spain. While the expected relationship between productivity and wages can also be seen for the UK and Japan, both productivity and real wages have been declining during 2009.

The opposite is the case in several large euro area member states. Here, Germany, France and Italy showed lower productivity per hour during 2009, while real hourly wages rose during the same period. This is particularly true in the case of Italy, where productivity per hour fell by 1.7 per cent in 2009, while real hourly wages increased by 4.7 per cent. In both Germany and Italy and, to some extent, in France it is seen that the fall in the total number of hours worked in the economy better reflects the decline in GDP than the decline in the number of employees does. At the same time the fact that productivity fell not only per employee but also per hour during 2009 is a characteristic feature.

[1] IMF (2010), Figure 3.7 (top), p. 82. As regards European countries, see also Arpaia and Curci (2010), pp. 28-32.

DEVELOPMENT IN HOURLY PRODUCTIVITY AND REAL WAGES IN 2009 Chart 6



Note: Hourly wages relate to the private sector, while all other categories relate to the economy as a whole. Real hourly wages have been calculated by deflating nominal wages by the private consumption deflator.
Source: OECD and own calculations.

Stickiness in adverse nominal wage adjustment is probably part of the reason why real wages have not been adjusted in several large euro area member states. Adjustment of real wages might be expected during an economic crisis of such severity as experienced by the economies during 2008-09, but according to a recent survey conducted by the Wage Dynamics Network under the European System of Central Banks, 37.1 per cent of the reporting firms in the euro area maintained their nominal wages over the summer of 2009, and 43.1 per cent indicated that they planned to do so. At the same time, the proportion of firms that have either maintained or plan to maintain their nominal wages is rising compared to previously.[1]

However, the fact that nominal wages have remained unchanged was not enough to bring about a drop in real wages. On average, the firms did not succeed in avoiding increases in nominal wages, as all large members of the euro area saw nominal wage growth in 2009, especially Italy and Spain. For countries that fail to adjust either employment or real wages appropriately, this may ultimately result in loss of competitiveness if the ensuing loss of productivity is not recovered during the subsequent upswing.

[1] ECB (2009). As Germany did not participate in the survey, the overall conclusion regarding the euro area as a whole may be subject to some uncertainty.

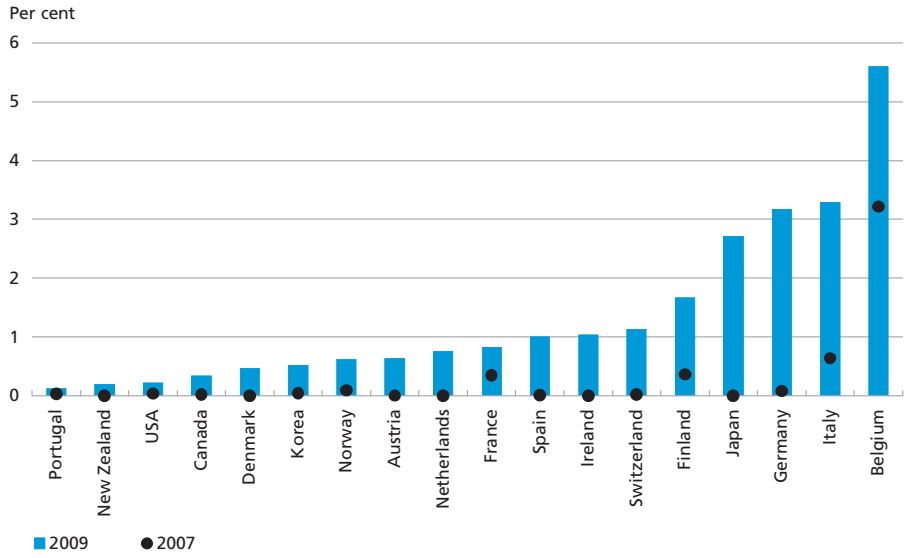
REDUCED WORKING HOURS CONTRIBUTE SIGNIFICANTLY TO ADJUSTMENT DIFFERENCES

The predominant reason for the substantial differences in labour-market adjustment is to be found in the labour-market policies pursued. During the crisis, some of the countries where employment did not decline so much despite a significant drop in GDP have used reduced working hours, i.e. employees work fewer hours, but remain employed. That has typically been the case in e.g. Belgium, Italy, Germany and Japan, but less so in countries such as the USA, the Netherlands, France and Spain, cf. Chart 7. This section describes the pros and cons of such schemes.

In terms of distribution, the advantage of a job sharing scheme with reduced working hours is that while the burden of lower demand is distributed on more employees who work reduced hours, fewer employees will actually be dismissed. The schemes typically include a form of public subsidies, so that reductions in the number of working hours are not fully offset by corresponding wage cuts. In countries with progressive tax systems, the decrease in wages after tax may also be dampened by lower marginal taxes.

In terms of labour-market efficiency, another advantage of job schemes with reduced working hours during recessions is that employees who would otherwise be dismissed retain their attachment to the labour market. This reduces the risk of hysteresis effects where the fact that

SHARE OF EMPLOYEES WORKING REDUCED HOURS — Chart 7



Source: OECD (2010c).

employees become long-term unemployed results in a permanent rise in unemployment, e.g. because their lack of ongoing skills development and increasingly marginal labour-market attachment may make it difficult for employees to get back into work.

But job sharing schemes with reduced working hours may also have certain drawbacks. Primarily, they may prevent the transfer of labour from less productive sectors to more productive ones. This drawback is most significant if the shock to certain sectors of the economy is of a permanent nature, e.g. on adjustment of economic imbalances between the sectors, and not the result of temporary cyclical fluctuations. The schemes may consequently have the unintended effect of reducing flexibility in the labour market.

Another drawback of schemes with reduced working hours is that they may reduce the required adjustment of hourly wages that would otherwise have been made as a result of rising unemployment. There will typically be a risk of insufficient wage adjustment if the schemes include an element of public subsidies whereby employees are partly compensated for the wage cuts. This means that employees are less inclined to offer to work more hours.

Overall, the advantages of job sharing schemes with reduced working hours probably outweigh the drawbacks in connection with temporary economic setbacks. This is particularly true of schemes agreed on a decentralised basis in firms that do not receive public subsidies. If the economic setback is due to economic imbalances, such schemes should not be used, because the economic adjustment is of a permanent nature and requires redistribution of labour among the sectors of the economy. However, assessing whether an economic adjustment is temporary or permanent may often be difficult at the beginning of an economic downturn. Accordingly, job sharing schemes should be time-limited.

PROSPECTS OF A JOBLESS RECOVERY?

The conclusion of the above review is that the labour-market responses to the crisis have differed substantially in the developed countries, and that the response patterns have also been more diverse than during previous crises. The major difference is between the USA on the one hand and Europe and Japan on the other. This is mainly attributable to labour hoarding, i.e. the tendency of firms to retain their employees during a recession, resulting in lower labour productivity. This tendency has not been seen in the USA during the current crisis. There have also been large differences in the response patterns of the European countries, however – declining unemployment in Germany being a case in point.

As a result of the different approaches to labour hoarding during the crisis, a coming recovery may create more employment in the USA in the short term. In view of their more stable labour markets and job sharing schemes, Europe, especially Germany, and Japan, are set to experience a more jobless recovery. But this will follow relatively better developments in employment and thus in total wage earnings.

According to an OECD estimate, GDP in Japan and Germany may rise by 8-10 per cent without creating increased employment if labour productivity (hourly productivity plus the number of working hours per employee) returns to trend. On the other hand, only relatively slight GDP growth is needed to reduce unemployment in the USA and Spain.[1] The general reservation should be made that the estimates assume unchanged growth in potential GDP. If the crisis turns out to permanently reduce trend productivity growth, future GDP growth will result in a greater employment increase in both Europe and the USA.

Rising unemployment typically leads to higher long-term unemployment. The OECD finds a tendency for rising unemployment to be accompanied by a larger proportion of long-term unemployed 12-18 months after the economic downturn.[2] In the longer term, there is a risk of the originally cyclical unemployment turning into structural long-term unemployment, e.g. by impeding young people's access to the labour markets, or because the long-term unemployed lose their skills. This effect is called hysteresis and is the reason why unemployment may continue to rise despite an output reversal.

All other things being equal, the fact that unemployment has not increased so much in Europe implies that the risk of hysteresis here is lower than in the USA where long-term unemployment has in fact already risen substantially.[3] Due to hysteresis effects, unemployment may continue to rise in many countries over the next 6-12 months and it will remain high for some time to come.

1 OECD (2010b), Figure 5.10, p. 272.
2 OECD (2010a), pp. 11 and 17.
3 Guichard and Rusticelli (2010), p. 13, and Figure 6, p. 17.

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Business Surveys as Forecasting Tools

Jonas Sørensen, Economics

INTRODUCTION AND SUMMARY

The most detailed compilation of economic activity is found in the national accounts, but they are published with a lag of several months after the development described in the accounts. Consequently, there is keen interest in economic indicators that offer a more timely picture of cyclical trends. For example, various business surveys can play an important role in an assessment of the current economic situation. The production time is short for these surveys as they are based on (qualitative) questionnaire responses.

The questions typically concern expectations regarding developments in various economic fundamentals over the next 3-6 months. Due to the forward-looking perspective, it might be expected that these indicators not only point to economic trends here and now, but also to developments in the near future.

This article looks at the information content of the business surveys based on two approaches – their ability to describe contemporaneous economic developments (nowcasts) and to predict *future* developments (forecasts). The indicators discussed are Statistics Denmark's surveys for the manufacturing, construction and service sectors and Green's indicator.

The analysis shows that to some extent the indicators can contribute to an assessment of the current economic situation. The statistical models estimated on the basis of the indicators predict the overall movements in the output of the sectors, but sometimes with considerable short-term deviations. The models all capture recent years' drop in output, but consistently underestimate its magnitude. This applies no matter whether the focus is on the models' nowcasting or on their (short-term) forecasting properties.

The analysis also shows that, in general, the business surveys have no prediction power beyond the next quarter. The overall impression of the estimations is thus that the business surveys are mainly short-term indicators describing general current activity trends.

DATA DESCRIPTION

Quarterly surveys for manufacturing and construction have been compiled back to 1963 and 1970, respectively. The indicators have been adjusted to EU standards on an ongoing basis, and since 1998 the indicators have been compiled monthly according to fully harmonised standards. Likewise, Statistics Denmark has compiled a monthly survey for the service sector since April 2000.

The indicators are based on questionnaires sent to the managements of large firms in the respective sectors. The managements perform qualitative assessments of a range of factors concerning output, employment, order book, etc. A net percentage balance is compiled for each question on the basis of the responses. The net balance is the difference in percentage points between the proportion of the respondents giving a positive answer and the proportion giving a negative answer to the question. The responses are weighted on the basis of the number of employees in the respective firms. A positive net balance, e.g. for turnover, indicates that the proportion of respondents expecting rising turnover is higher than the proportion expecting falling turnover. For each sector, a composite indicator is compiled as a simple average of the net balances for selected subcomponents.[1]

Besides Statistics Denmark, other institutions compile similar surveys of economic developments. For example, Greens Analyseinstitut compiles quarterly business surveys also based on questionnaires. Green's indicator is similar to those of Statistics Denmark in many respects, but it deviates in that it is quarterly and the composite indicator contains more subquestions.[2]

Chart 1 shows the development in the seasonally adjusted composite indicators for the manufacturing, construction and service sectors, respectively, as well as Green's indicator. The indicators have many patterns in common. At the beginning of the 2000s, they declined and then picked up again as optimism grew. In 2006-07, the indicators were historically high. However, a strong drop set in, and in 2009 all of the indicators had plummeted to their lowest levels in the compilation period. This illustrates the depth of the most recent recession.

The applied output measure is gross value added, GVA, in the sectors. In this article, GVA is sourced from the national accounts up to and including the 1st quarter of 2010 (revised).

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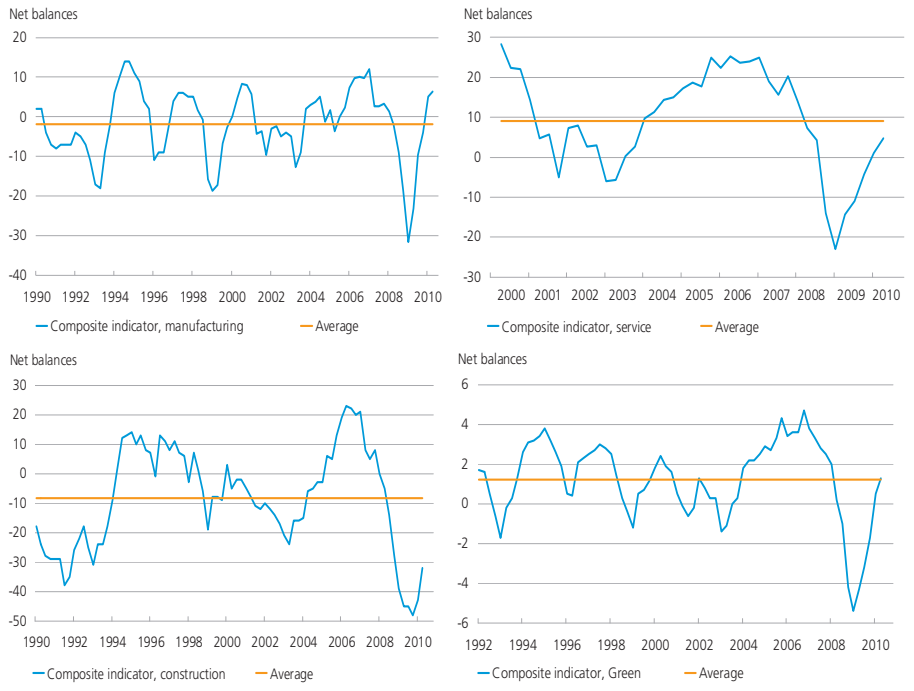
1 The surveys are described in more detail in the declarations of contents at the Statistics Denmark website, www.dst.dk/varedeklaration.

2 For more detail on Green's indicator, reference is made to Greens Analyseinstitut for Dagbladet Børsen, www.borsen.dk/vaerktoejer/analyser/konjunkturundersoegelse.html.

COMPOSITE INDICATORS Chart 1



Note Greens Analyseinstitut scales down the composite indicator.
Source: Statistics Denmark and Greens Analyseinstitut for the newspaper Børsen.

NOWCASTING PROPERTIES

In order to examine the value of the business surveys as *contemporaneous* indicators of activity patterns for each sector, simple regressions have been made on the following ARX model[1]:

$$(1)\quad \Delta GVA_t^i = \alpha_1^i \cdot \Delta GVA_{t-1}^i + \ldots + \alpha_q^i \cdot \Delta GVA_{t-q}^i + \beta_0^i \cdot ind_t^i + \ldots + \beta_k^i \cdot ind_{t-k}^i + c^i + \varepsilon_t^i$$

ΔGVA_t^i is the percentage annual growth in GVA in sector *i*, α and β are parameters, *q* are *k* are lags in GVA and the indicator, respectively, while *c* is a constant, ind^i is the net balance for the indicator in sector *i*, and ε is the error term. The frequency is quarterly. As regards the Statistics Denmark surveys, the monthly figures have thus been converted into quarterly figures taking a simple average of the three months of the quarter.

The GVA growth rate applied is annual rather than quarterly because the latter is considerably more volatile than the composite indicators. Consequently, estimations applying quarterly growth rates do not pro-

[1] An ARX model is a simple autoregressive (AR) model with exogenous variables (X).

duce interesting results. Annual growth rates are widely used in the empirical literature on forecasting.[1]

The estimation periods have different starting points according to data availability. However, the periods are all bounded by end-2007, and the remaining nine observations up to and including the 1st quarter of 2010 are used to evaluate the model properties outside the estimation period.

Survey for manufacturing

The composite indicator for manufacturing is compiled by Statistics Denmark as a simple average of the assessment of inventories of finished goods, the order book at the end of the previous month and output expectations for the next three months. The stocks have a negative weight since large stocks of finished goods are assumed to have a negative impact on future production activity. Table 1 shows the mean value and standard deviation of the composite indicator and the subcomponents.

In the period under review, the mean value of the composite indicator was negative. The same applies to the assessment of order books, whereas the average output expectations and stocks of finished goods were positive.[2] It is also seen that the assessment of order books showed the greatest variation among the subcomponents.

Estimation

The value of the survey for manufacturing as an indicator of the sector's activity is examined by estimating a simple type (1) model with the composite indicator as the explanatory variable (model 1).[3] The OLS estimation approach is applied.

Initially, four lags are included for both GVA growth and the indicator. Insignificant lags are gradually eliminated, and the model is reestimated. Moreover, various information criteria are considered in the selection of the final model[4] In addition, the model is tested for signs of misspeci-

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1 Using annual growth rates on quarterly observations can result in problems with overlapping observations. This may produce autocorrelation in the error term, cf. Verbeek (2004). The calculation of the standard deviations is thus no longer correct, despite the OLS estimates remaining consistent. However, this article focuses on the Newey-West standard deviations, which take into account any remaining autocorrelation (and heteroscedasticity) in the error term.

2 The mean value of 7.4 for the assessment of stocks of finished goods e.g. means that, on average, firms representing 7.4 per cent of the number of employed people have assessed that their stocks of finished goods have been larger than normal.

3 Andersen and Nielsen (2003) have made similar estimations for manufacturing and construction.

4 Focus is on the Akaike information criterion, AIC, the Hannan–Quinn information criterion, HQ, and Schwartz' Bayesian information criterion, SC or BIC. The principle of these criteria is that they weigh the explanatory power of the model against its complexity, measured by the number of variables. The information criteria include a term that rewards high explanatory power and a penalty term, which increases with the number of regressors in the model. According to Verbeek (2004, p. 285), the AIC criterion has a tendency to asymptotically result in overparameterised models. Consequently, the AIC is less in focus if the criteria produce unclear signals.

BUSINESS SURVEY, MANUFACTURING Table 1

	Composite indicator	Stocks of finished goods	Order book	Output expectations
Mean value	-1.9	7.4	-8.2	9.6
Standard deviation	8.9	9.7	19.7	8.7

Note: Net balances. Own seasonal adjustment of subcomponents. The period under review is 1st quarter 1990-2nd quarter 2010 for the composite indicator and 1st quarter 1998-2nd quarter 2010 for the subcomponents.
Source: Statistics Denmark and own calculations.

fication. The estimation results are shown in the first two columns of Table 2.

The model constructed for GVA in manufacturing based on the composite indicator is able to explain almost 60 per cent of the variation in data, and there are no signs of error specification. The composite indicator with a lag of one quarter has significant explanatory power as regards sector GVA. According to the model, an increase by 1 in the net balance relative to the preceding quarter causes year-on-year growth in GVA to rise by 0.29 percentage point in the following quarter. However, the composite indicator has no significant explanatory power for GVA in the same period. The constant is significantly positive, meaning that a net balance of 0 is normally associated with positive growth in GVA.

A similar regression is then performed, in which the composite indicator is split into subcomponents (model 2). This identifies the subcomponents with the greatest indicator value in the explanation of GVA. This is not possible in estimation on the composite indicator, as it, in principle, corresponds to binding the coefficients in the split model to being equal, as the three subcomponents in the composite index have the same weight.

The corresponding model estimated on the split indicator is able to explain almost half of the variation in GVA for manufacturing. The poorer explanatory power should be viewed in light of the shorter estimation period due to limited data availability. It is seen that the assessment of order books in the same period has significant positive explanatory power for GVA. The same applies to the output expectations from the preceding quarter and the assessment of stocks of finished goods in the preceding quarter.[1] The constant is significantly negative, meaning that a net balance of 0 for the subcomponents is, according to the model, compatible with negative growth in GVA.

[1] A positive coefficient for assessment of stocks of finished goods is initially surprising. However, the timing of changes in inventories may be quite complicated. For example, it is not surprising that a firm builds up inventories when the management expects higher turnover in the future. A distinction between planned and unplanned changes in inventories would therefore be useful in this article in order to achieve a more precise identification of the role of inventories.

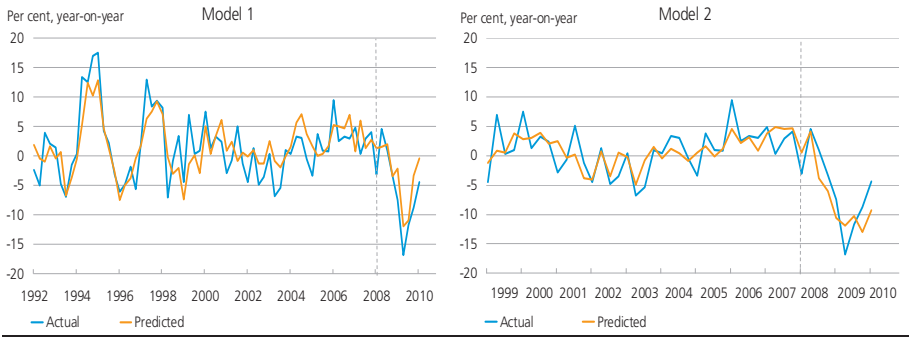
REGRESSION RESULTS FOR MANUFACTURING — Table 2

Right-hand-side variables	Model 1 Composite		Model 2 Split	
	Coefficient	Standard deviation	Coefficient	Standard deviation
Constant	1.91	0.65	-3.86	1.49
ΔGVA_{t-1}	0.31	0.07	-0.30	0.14
ΔGVA_{t-2}	*-0.04*	0.11		
ΔGVA_{t-3}	*0.18*	0.10		
ΔGVA_{t-4}	-0.55	0.08		
$Indicator_{t-1}$	0.29	0.10		
$Order_{t}$			0.16	0.03
$Output_{t-1}$			0.23	0.09
$Inventories_{t-1}$			0.34	0.08
R^2	0.58		0.44	
RMSE (Q1 2008-Q1 2010)	3.79		3.65	
Estimation period	Q1 1992-Q4 2007		Q1 1999-Q4 2007	

Note: The standard deviations in this article are Newey-West standard deviations, which are consistent with respect to autocorrelation (and heteroscedasticity) in the error term. As a main rule, insignificant variables (5 per cent level of significance) have gradually been removed from the estimations, but the constants have been retained irrespective of significance. The same applies to insignificant lags in the endogenous variable if the surrounding lags are significant. Insignificant parameter estimates are in italics. RMSE stands for root mean square error.
Source: Statistics Denmark and own calculations.

In the evaluation period from the 1st quarter of 2008 to the 1st quarter of 2010, the performance of the two models is almost identical measured in terms of root mean square error, RMSE. However, this masks different profiles of predicted values during the evaluation period, cf. Chart 2. The model based on the composite indicator systematically underestimates the decline in GVA, although the predicted value shows almost the same profile as the actual development. This is not quite the case for the model based on subcomponents, although this model's bias is smaller.

ACTUAL AND PREDICTED VALUES, MANUFACTURING — Chart 2



Note: The left-hand chart shows predictions from the model based on the composite indicator, while the right-hand chart shows predictions based on the split model.
Source: Statistics Denmark and own calculations.

The actual development in GVA is more volatile than predicted by the models. In many cases, however, there is general covariation between strong fluctuations in the predicted values and strong fluctuations in actual values. This also applies at the beginning of the evaluation period, with good performance of the model based on the composite indicator. As from 2009, however, it underestimates the decline in GVA in manufacturing. Overall, these factors show that the estimated model for the composite indicator can, to some extent, act as an indicator for GVA in the manufacturing sector. This applies especially when the focus is on trend GVA rather than the specific development in a single quarter.

Survey for the construction sector

The composite indicator for the construction sector is compiled by Statistics Denmark as a simple average of employment expectations for the coming 3-month period and the assessment of the order book.

In the period under review, the mean values of the composite indicator and both subcomponents have been negative, cf. Table 3. Relative to the assessment of order books, employment expectations have shown a higher mean value and lower variance.

Estimation

Estimations are made on the composite indicator (model 3) and on the indicator split into subcomponents (model 4). The same approach as for manufacturing has been used and the results are shown in Table 4.

The model based on the composite indicator is able to explain more than one third of the variation in GVA for the construction sector. There are no signs of error specification. The coefficient for the net balances of the indicator is significant and has the expected sign. According to the model, an increase by 1 on the previous quarter causes year-on-year growth in GVA to rise by 0.13 percentage point.

The model split into subcomponents is able to explain almost one third of the variation in data. The split shows that the assessment of the order book is not significant, whereas the assessment of employment has a significantly positive effect on GVA.

BUSINESS SURVEY, CONSTRUCTION — Table 3

	Composite indicator	Employment	Order book
Mean value	-8.4	-6.1	-10.0
Standard deviation	17.6	12.0	23.4

Note: Net balances. The period is 1st quarter 1990-2nd quarter 2010 for the composite indicator and 1st quarter 1998-2nd quarter 2010 for the subcomponents.
Source: Statistics Denmark and own calculations.

REGRESSION RESULTS FOR CONSTRUCTION — Table 4

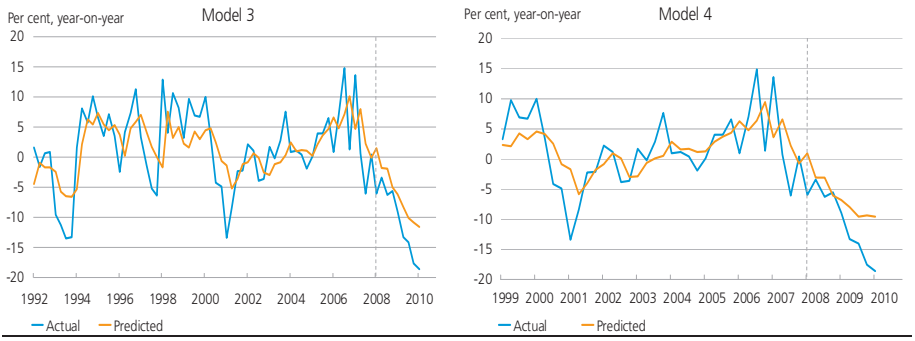
Right-hand-side variables	Model 3 Composite		Model 4 Split	
	Coefficient	Standard deviation	Coefficient	Standard deviation
Constant	*1.36*	0.79	*1.32*	1.04
ΔGVA_{t-1}	0.41	0.12	0.40	0.18
$Indicator_t$	0.13	0.05		
$Employment_t$			0.18	0.08
R^2	0.36		0.31	
RMSE (Q1 2008-Q1 2010)	4.97		5.38	
Estimation period	Q1 1992-Q4 2007		Q1 1999-Q4 2007	

Note: See Table 2. The specification of the split model is very sensitive to the starting point of the estimations, which is probably attributable to the short estimation period.
Source: Statistics Denmark and own calculations.

In the evaluation period, the model based on the composite indicator performs marginally better than the split model, measured in terms of RMSE. This should be viewed in light of the shorter estimation period for model 4. As was the case for manufacturing, the models for the construction sector considerably underestimate recent years' decline in GVA, cf. Chart 3. This applies especially to the end of the evaluation period.

It appears from Chart 3 that the actual development in GVA is more volatile than predicted by the models. Moreover, in the estimation period, the predicted value tends to change with a lag relative to the actual value. Naturally, this is a weakness if it is to function as an indicator of the current development. In general, the models do, however, capture strong fluctuations in GVA, including the drop in 2008-10. Overall, the models for the construction sector are not particularly useful for exact predictions of GVA in the current quarter, but they can give some idea of trends.

ACTUAL AND PREDICTED VALUES, CONSTRUCTION — Chart 3



Note: The left-hand chart shows predictions from the model based on the composite indicator, while the right-hand chart shows predictions based on the split model.
Source: Statistics Denmark and own calculations.

BUSINESS SURVEY, SERVICE — Table 5

	Composite indicator	Employment	Turnover expectations
Mean value	9.1	5.4	12.6
Standard deviation	12.6	13.5	11.9

Note: Net balances. Own seasonal adjustment of subcomponents. The period is 2nd quarter 2000-2nd quarter 2010.
Source: Statistics Denmark and own calculations.

Survey for the service sector

The composite indicator for the service sector is a simple average of expectations of employment and turnover. Average expectations of both subcomponents have been positive since 2000, with about the same standard deviation, cf. Table 5.

Estimation

The survey for the service sector is considerably newer than the surveys for the construction and manufacturing sectors, but the time series is now long enough for meaningful estimation. The national accounts contain no compilation of GVA for the service sector. Instead, an approximative series has been constructed for the service sector by deducting GVA for the manufacturing and construction sectors from GVA for the private non-agricultural sector. Table 6 shows the results of the regressions.

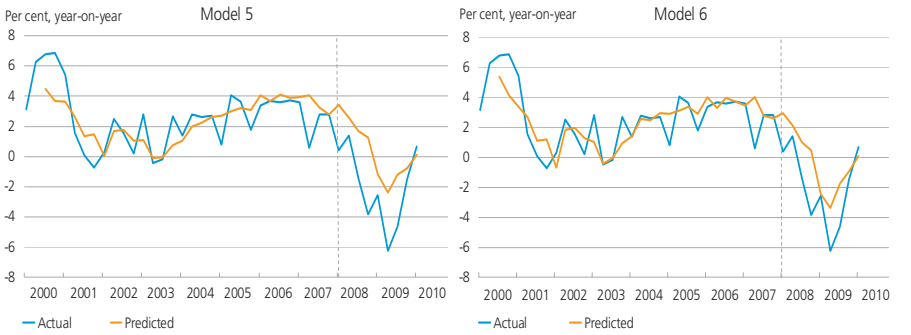
The explanatory power of the service indicator is quite good. The model based on the composite indicator (model 5) is able to explain almost half of the variation in GVA in the private non-agricultural sector excluding manufacturing and construction. The composite indicator with a one-period lag has significant explanatory power, but the indicator

REGRESSION RESULTS FOR SERVICE — Table 6

	Model 5 Composite		Model 6 Split	
Right-hand-side variables	Coefficient	Standard deviation	Coefficient	Standard deviation
Constant	0.70	0.35	*-0.23*	0.43
Indicator$_{t-1}$	0.13	0.03		
Turnover$_{t-1}$			0.16	0.03
R^2	0.49		0.56	
RMSE (Q1 2008-Q1 2010)	2.90		2.32	
Estimation period	Q3 2000-Q4 2007		Q3 2000-Q4 2007	

Note: See Table 2. The lag structure of the model is sensitive to the starting point of the estimation period. Given the short estimation period, it has been moved back as far as possible.
Source: Statistics Denmark and own calculations.

ACTUAL AND PREDICTED VALUES, SERVICE Chart 4



Note: The left-hand chart shows predictions from the model based on the composite indicator, while the right-hand chart shows predictions based on the split model.
Source: Statistics Denmark and own calculations.

does not contribute significantly to explaining the development in GVA in the same quarter.

The model broken down into subcomponents (model 6) is able to explain more than half of the variation in data, and there appears to be no problems with misspecification. Turnover expectations have significantly positive explanatory power as regards GVA in the subsequent quarter. Employment expectations are insignificant.[1]

In both models, the lagged growth in GVA has no significant impact on GVA growth when controlled for the indicator or its subcomponents. This was not the case for the models for the manufacturing and construction sectors, which showed some autocorrelation in GVA growth. The model with subcomponents has better properties than the composite indicator, which also appears from Chart 4. In addition, RMSE in the evaluation period is lower for the split model. Thus, identical weights of subcomponents in the composite indicator do not provide the best indication of the development in GVA in this sector.

Green's indicator

Greens Analyseinstitut has conducted regular business surveys since 1992. Like the corresponding surveys compiled by Statistics Denmark, Green's indicator is compiled as a simple average of the net balances from 10 subquestions, including e.g. assessments of sales opportunities, order intake, inventory situation and employment. The mean value of the composite indicator is 1.2, while the standard deviation is 2.0.

[1] The insignificant assessment of employment might be attributed to multicollinearity. There is a high degree of positive correlation between the two subcomponents, and the relatively short estimation period may imply that the number of observations is simply to small to identify the separate effects of the individual subcomponents.

REGRESSION RESULTS, GREEN'S INDICATOR Table 7

Right-hand-side variables	Model 7	
	Coefficient	Standard deviation
Constant	1.10	0.44
ΔGVA_{t-1}	0.34	0.09
ΔGVA_{t-2}	*0.13*	0.09
ΔGVA_{t-3}	*0.04*	0.15
ΔGVA_{t-4}	-0.28	0.11
$Indicator_t$	0.45	0.16
R^2	0.44	
RMSE (Q1 2008-Q1 2010)	2.64	
Estimation period	Q1 1992-Q4 2007	

Note: See Table 2. The left-hand-side variable is annual growth in GVA in the private non-agricultural sector.
Source: Statistics Denmark, Greens Analyseinstitut for the newspaper Børsen and own calculations.

Estimation

A simple type (1) regression has been made to throw light on the value of the survey as an indicator of activity. The composite Green's indicator contains no specific (national accounts) split into sectors, but only large firms are included in the survey.[1] Consequently, it seems most natural to assess the ability of the indicator to capture the development in GVA in the private non-agricultural sector.[2] The estimation results are shown in Table 7.

It appears that the model is able to explain almost 45 per cent of the development in GVA in the private non-agricultural sector since 1992. There are no signs of error specification. The contemporaneous indicator is significant, while the lags are insignificant. The constant is significantly positive, as was the case in the models for manufacturing, construction and service.

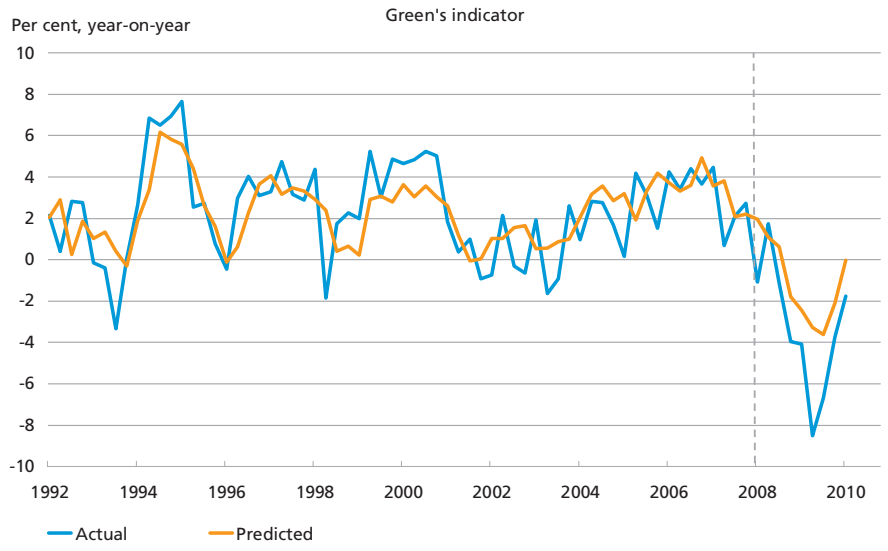
Chart 5 shows annual growth in GVA in the private non-agricultural sector and the predicted value. The pattern is the same as that of the models based on Statistic Denmark's business surveys. In the years outside the estimation period, the 1st quarter of 2008 to the 1st quarter of 2010, Green's indicator also systematically underestimates the decline in GVA in the private non-agricultural sector. However, the model captures the general trends in GVA well.

[1] Only firms with more than 35 employees or turnover exceeding kr. 50 million receive the questionnaire.

[2] It can also be argued that it is just as relevant to compare the indicator with GDP growth. However, it makes little difference regarding the estimation results whether GDP or GVA in the private non-agricultural sector is used as a measure of output.

ACTUAL AND PREDICTED VALUES, THE PRIVATE NON-AGRICULTURAL SECTOR

Chart 5



Source: Statistics Denmark, Greens Analyseinstitut for the newspaper Børsen and own calculations.

FORECASTING PROPERTIES

In terms of analysing the forecasting properties of the business surveys, the information set available at the time plays a role. For example, to forecast the development in GVA in period *t*, based on simple regressions as presented here, the indicator for period *t+1* may not be contained in the information set. The forecasting model thus changes from (1) to (2).

(2) $$\Delta GVA^i_{t+1} = \alpha^i_0 \cdot \Delta GVA^i_t + \ldots + \alpha^i_q \cdot \Delta GVA^i_{t-q} + \beta^i_0 ind^i_t + \ldots + \beta^i_k ind^i_{t-k} + c^i + \varepsilon^i_{t+1}$$

In the regressions based on (1), in which the contemporaneous indicator is included in the information set, this is insignificant for manufacturing and the service sector, cf. previously. Consequently, estimation based on (2) for these sectors results, as expected, in the same model specifications as presented above. The nowcasting models for the manufacturing and service sectors are thus, in effect, also forecasting models. For the manufacturing sector there is one important difference, however, when it comes to evaluating its forecasting properties. Data on GVA growth in the preceding quarter will often not be available at the time of forecasting. Consequently, a forecast will typically have to use the model's prediction of lagged GVA growth as an approximation of actual

REGRESSION RESULTS, FORECAST — Table 8

Right-hand-side variables	Model 8 Construction		Model 9 Green	
	Coefficient	Standard deviation	Coefficient	Standard deviation
Constant	*1.10*	0.84	1.26	0.46
ΔGVA_{t-1}	0.44	0.13	0.35	0.09
ΔGVA_{t-2}			*0.11*	0.10
ΔGVA_{t-3}			*0.02*	0.14
ΔGVA_{t-4}			-0.33	0.11
$Indicator_{t-1}$	0.28	0.13	0.47	0.23
$Indicator_{t-2}$	-0.20	0.10		
R^2	0.36		0.44	
RMSE (Q1 2008-Q1 2010)	7.23		3.51	
Estimation period	Q1 1992-Q4 2007		Q1 1992-Q4 2007	

Note: The standard deviations are Newey-West standard deviations, which are consistent as regards autocorrelation (and heteroscedasticity) in the error term. Here, RMSE is based in *2-steps-ahead forecasts*.
Source: Statistics Denmark, Greens Analyseinstitut for the newspaper Børsen and own calculations.

growth. For the model for manufacturing, this means higher RMSE when GVA growth in the preceding quarter has been estimated.[1] However, this is no problem in the model for the service sector because it does not include GVA lags.

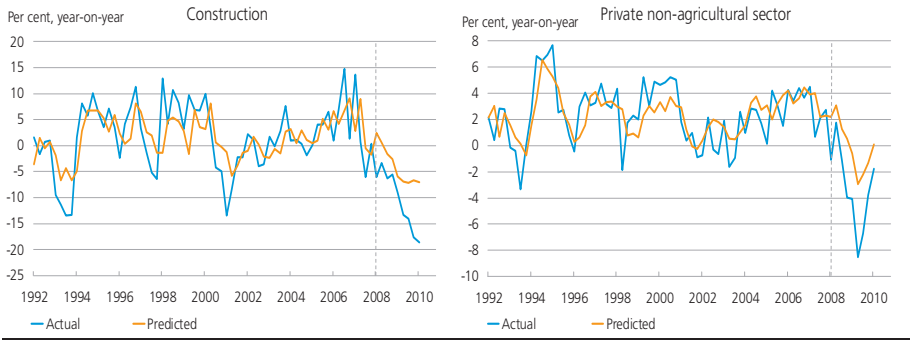
As regards the model with the construction indicator and the model with Green's indicator, the final selection of model is influenced by the exclusion of the contemporaneous indicator from the information set. Table 8 summarises the regression results from these two forecasting models.[2]

The forecasting model for the construction sector is able to predict more than one third of the variation in construction GVA, while the model with Green's indicator is able to predict almost 45 per cent of the variation in GVA in the private non-agricultural sector. The coefficient for the indicator in the last quarter is significantly positive in both models, whereas the coefficient for the construction indicator with two lags is significantly negative.

RMSE from the forecasting models with the construction indicator and Green's indicator is somewhat higher than RMSE from the corresponding nowcasting models. The reason is that there is less information available at the time of estimation for the forecasting models. Chart 6 shows the actual and predicted values for the forecasting models. The systematic underestimation of the decline in GVA in the years 2008-09 is

1 RMSE rises from 3.79 to 4.26.
2 Except for the described problem with autocorrelation in the error term due to overlapping observations, the exclusion of the contemporaneous indicator does not give rise to misspecification of the models.

FORECASTING MODELS FOR CONSTRUCTION AND THE PRIVATE NON-AGRICULTURAL SECTOR Chart 6



Note: The left-hand chart shows predictions from the forecasting model based on the composite indicator for construction, while the right-hand chart shows predictions from the forecasting model based on Green's indicator.
Source: Statistics Denmark and Greens Analyseinstitut for the newspaper Børsen.

also evident here. Both models capture the general trends, however. RMSE in the model for construction is relatively large as this sector shows the highest GVA volatility.

Along the lines of exclusion of the contemporaneous indicator, the indicator from the previous quarter can be excluded from the information set. This makes it possible to investigate whether the indicators have explanatory power in relation to GVA in the relevant sectors beyond the coming quarter. The indicators with two or more lags are generally insignificant across the model types. Against this background, it can be concluded that the indicators have no explanatory power beyond the coming quarter.

Overall, the models seem to have a certain ability to capture general economic trends in the short term. However, caution should be exercised when drawing firm conclusions on the basis of the development in the surveys since the actual development in output is more volatile than predicted output.

DISCUSSION

All the models underestimate the decline in GVA in the evaluation period. This common feature illuminates the limitations of the business surveys as indicators, but the fact that the most recent recession in Denmark is the strongest for decades also plays a role. The choice of evaluation period thus puts the models presented to an extremely hard test, in that the economy was in many ways in uncharted territory. However, in general the models show no signs of structural breaks. Recursive estimations, whereby one quarter at a time is added to the

estimation period, shows that the parameter estimates are rather stable across the models – even when the estimation period includes 2008-10.

The analysis is partial in the sense that the estimations include only a limited set of indicators and no "hard" data such as industrial production and turnover. Moreover, it would be interesting to investigate whether the business surveys provide additional information. Since the constructed models have certain forecasting properties, it is likely that the surveys do indeed provide valuable information besides other types of data not containing actual forward-looking elements.

Another advantage of using the business surveys is that ongoing data revisions are small compared with other data types. This makes the estimation results presented less sensitive to data revisions than models containing hard data, cf. Kitchen and Monaco (2003).

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Current Trends in the Faroese Economy

Ann-Louise Winther, Economics

INTRODUCTION AND SUMMARY

The Faroese economy has contracted since 2008. The slowdown was initially limited to the fisheries sector, but subsequently spread to the whole economy as the financial and economic crisis evolved. In 2009, employment declined in all sectors except the public sector, resulting in a strong increase in unemployment since the beginning of 2009, but from a very low starting point.

In recent years the fisheries sector has been affected by low catches and falling fish prices, but some parts of the sector are beginning to show signs of improvement. The output of farmed salmon has soared to a level close to the capacity limit, and prices are favourable. The continued growth in salmon exports contributed to stable exports throughout 2009, while imports saw a strong decline. Consequently, the trade deficit was eliminated.

The Faroese banks, which have been affected by the financial crisis to varying degrees, posted an overall deficit in 2009. The deficit was, however, smaller than that seen in 2008 due to the stabilisation of the financial markets.

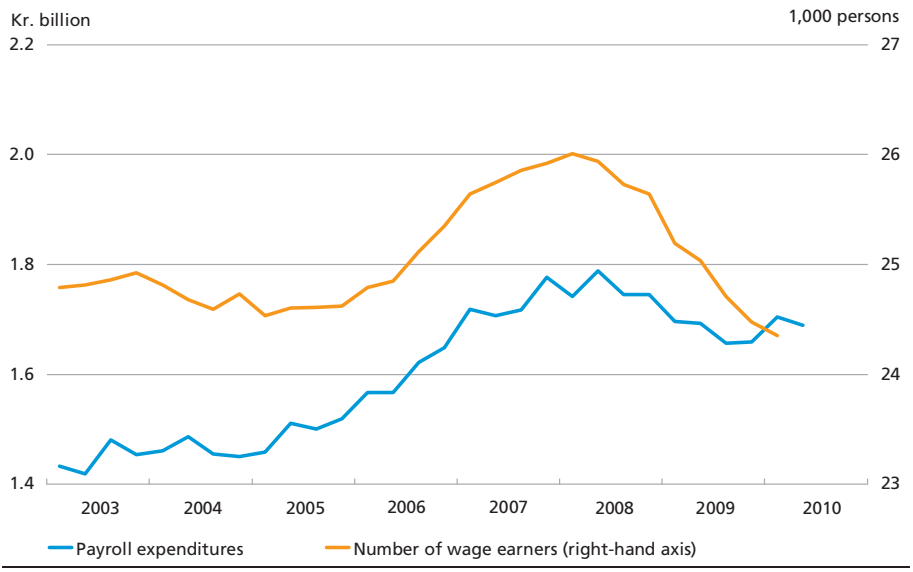
The economic slowdown and expansionary fiscal policy have resulted in a growing deficit and debt for the central and local government. Fiscal tightening measures have been implemented already from 2010 in order to address the fiscal deterioration. Further tightening measures have been announced. This is indeed necessary to rebalance the government budget.

ECONOMIC ACTIVITY[1]

Economic activity in the Faroe Islands declined in 2008 and 2009. Preliminary statistics point to a drop in the nominal gross domestic product, GDP, by 0.8 per cent in 2008 and 4.2 per cent in 2009. The economic

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

PAYROLL EXPENDITURES AND EMPLOYMENT Chart 1



Note: Seasonally adjusted quarterly data. The most recent observation is the 1st quarter of 2010 for the number of wage earners and the 2nd quarter for payroll expenditures.
Source: Hagstova Føroya and own calculations.

contraction started early in 2008, cf. Chart 1, and accelerated when the international financial crisis unfolded.

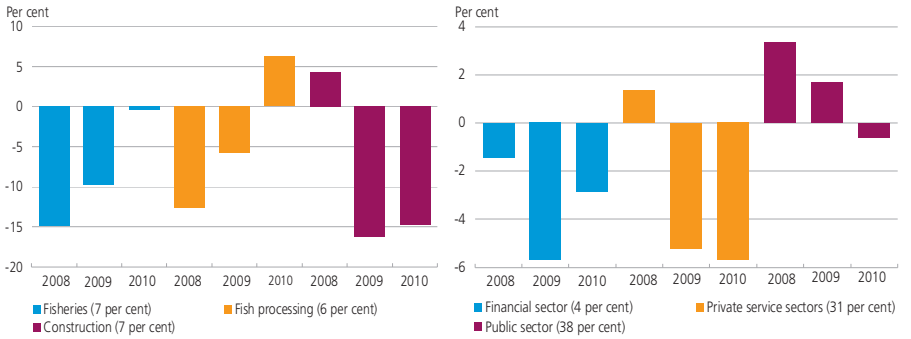
Payroll expenditures dropped by just under 5 per cent from 2008 to 2009. The first seven months of 2010 showed tentative signs of an economic recovery since payroll expenditures rose by almost 1 per cent on the same period of 2009.

As a result of the economic slowdown, employment fell by just under 4 per cent in 2009. The slowdown continued in the spring of 2010, and overall employment was just over 3 per cent lower in the first five months of 2010 compared with the same period of 2009.

Employment decreased strongly in both fisheries and the fish-processing industry in 2009, cf. Chart 2. This primarily reflects lower catches and weak development in fish prices, which seem to have picked up again from the 2nd half of 2009, however. Payroll expenditures in the fisheries sector fell by just over 20 per cent in 2009 but were 19 per cent higher in the first seven months of 2010 than in the corresponding period of 2009.

From 2004 to 2009, employment in these two sectors declined from 19 to 13 per cent of total employment in the Faroe Islands. On the other hand, fish farming has gained considerable ground over the last few years. In 2009, employment in this sector accounted for just under 3 per cent of total employment, having almost doubled since 2005.

WAGED EMPLOYMENT IN SELECTED SECTORS Chart 2

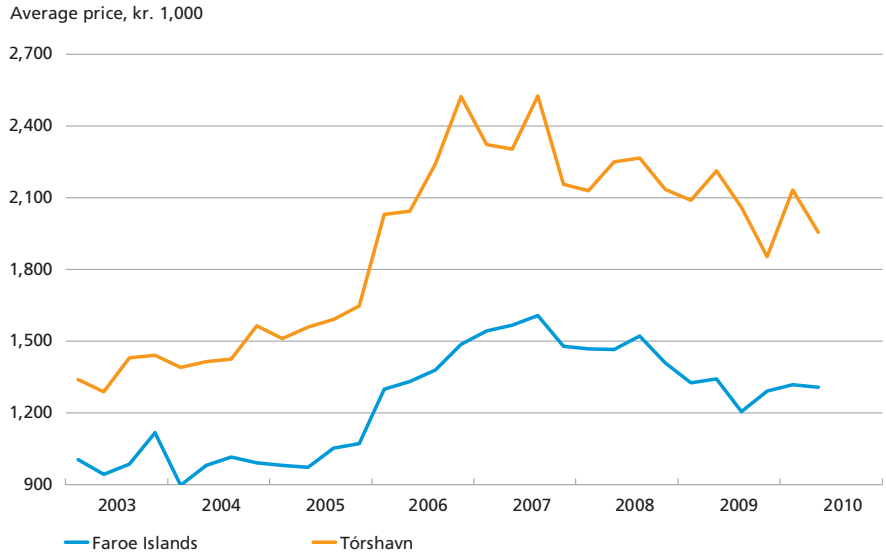


Note: Data for 2010 shows the change in the period January-May 2010 in relation to the same period of 2009. Figures in brackets indicate the sector's share of total waged employment in 2009.
Source: Hagstova Føroya.

As in other countries, the construction sector was severely hit by the financial crisis. Employment in the construction sector dropped by 16 per cent in 2009, and the downward trend continued in the first five months of 2010. This has brought employment in the construction sector back to the level in 2005, before the boom with soaring housing prices began in the Faroe Islands.

The decline in housing prices began in mid-2007, cf. Chart 3, and turnover in the housing market was low in 2009. For the Faroe Islands over-

HOUSING PRICES Chart 3



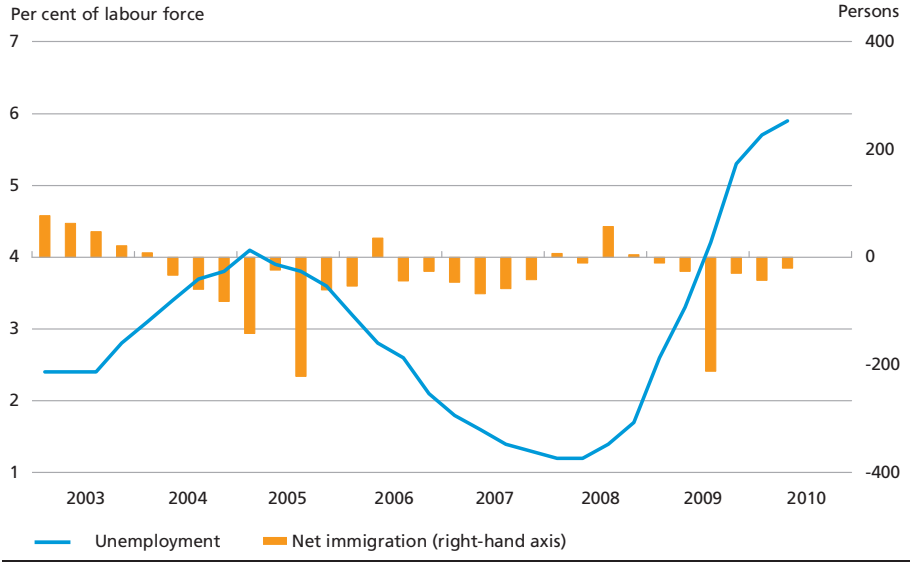
Note: Quarterly averages, most recently from the 2nd quarter of 2010. Housing prices for the Faroe Islands overall are calculated by weighing average prices for houses with a floorspace of 250-1,000 m^2 in small settlements, large settlements and Tórshavn, respectively. The relative number of transactions in the areas in the period 2000-10 has been applied.
Source: Eik Bank, Hagstova Føroya and own calculations.

all, housing prices in 2009 returned to the level from the 1st half of 2006, i.e. in the period when the introduction of new loan types with longer maturities and deferred amortisation led to a pronounced upward adjustment of prices. Housing prices showed signs of stabilisation in the 1st quarter of 2010.

Moreover, in 2009 employment and payroll costs fell in the banking sector and the other private service sectors. The public sector was the only sector that posted positive growth in employment and payroll expenditures. A contributing factor could be that it was easier to fill vacancies than in the preceding boom with a widespread shortage of labour.

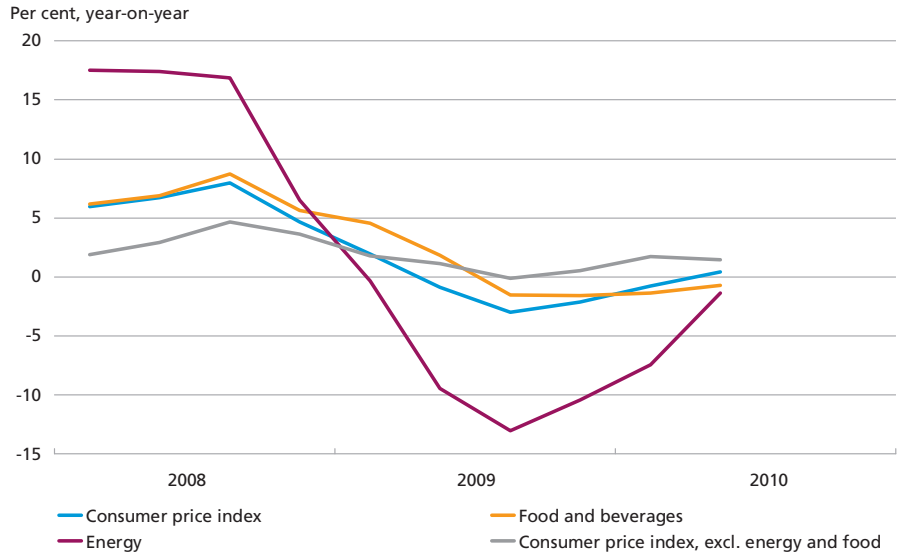
The decline in employment in all sectors except the public sector led to a surge in unemployment, cf. Chart 4, but from a very low starting point. From March to July 2010, seasonally adjusted unemployment stabilised at just under 6 per cent of the labour force. The increasing unemployment led to net emigration in 2009, although the latter may have been dampened by rising unemployment in the neighbouring countries and a higher rate of unemployment benefit as from 2009. In addition to cyclical factors, the substantial net emigration in the 3rd quarter of 2009 can be attributed to Faroese citizens going abroad to study. Emigration for education purposes was less pronounced during the preceding boom, and a similar trend has not been observed since 2005.

UNEMPLOYMENT AND IMMIGRATION — Figur 4



Note: Quarterly observations. Both unemployment and immigration have been seasonally adjusted. The most recent observation is the 2nd quarter of 2010.
Source: Hagstova Føroya and own calculations.

CONSUMER PRICE INDEX BROKEN DOWN BY SUBCOMPONENTS Chart 5



Source: Hagstova Føroya and own calculations. The most recent observation is the 2nd quarter of 2010.

As in many other countries, inflation has declined after a period of relatively high price increases, cf. Chart 5. The consumer price index fell by 1.0 per cent in 2009 mainly due to lower energy prices. Recent quarters have seen a reversal of the development in inflation, and in the 2nd quarter of 2010 the consumer price index was on a par with the 2nd quarter of 2009. According to a recent survey,[1] the price level in the Faroe Islands is the highest in Europe. There are large price differences between the Faroe Islands and Denmark as regards both imported goods such as food and services such as mobile telephony. As a result of the high prices, purchasing power in the Faroe Islands was 14 per cent lower than in Denmark in 2009.

Fisheries

Fisheries in waters close to the Faroe Islands mainly consist of demersal fishing for cod, haddock and saithe. In 2008 and 2009, the cod and haddock segments were severely affected by low stocks and low prices. Overall, the value of fish caught in Faroese waters fell by just over 30 per cent from 2007 to 2009, and the trend continued in the first seven months of 2010.

Haddock catches dropped to one third and cod catches halved from 2007 to 2009 as a result of significant declines in stocks. In 2010 to date,

[1] Heri á Rógvi, *Price Levels in the Faroe Islands – Purchasing Power and Consequences (in Faroese only)*, The Faroese Competition Authority, 2010.

both cod and haddock catches have risen relative to the same period of 2009.

As a consequence of the low stocks of haddock and cod, the International Council for Exploration of the Seas, ICES, recommends that, in the fishing year 2010-11, the fish mortality for cod be reduced by 24 per cent, and that no direct fishing for haddock be allowed. Against this background, the Faroe Marine Research Institute has recommended a reduction of the number of fishing days by 25 per cent. In August 2010, the Løgting (parliament) decided to reduce the number of fishing days by 3 per cent. Growing consumer focus on sustainable fishing is putting increasing pressure on the fisheries sector. UK importers have almost ceased to buy haddock from the Faroe Islands, citing overfishing.

Cod prices fell considerably throughout 2008 due to a large supply of cod from the Barents Sea, but began to rise again in 2009. Meanwhile, haddock prices have stabilised, following a decline in 2008.

A small increase in saithe catches was replaced by a fall in the first seven months of 2010. Prices, however, have shown a rising trend since 2008, due to a more limited global supply.

Salmon farming has seen considerable growth in recent years after the setback in 2006, when the stocks were affected by disease. Salmon output grew from 16,000 tonnes in 2006 to 49,000 tonnes in 2009. Exports to the US market have benefited from the sharp drop in Chilean salmon output after epidemic diseases in 2008 and 2009. The reduced global supply also led to substantial price increases for salmon in 2009. Salmon prices have soared to new levels in 2010 so far. However, output is very close to the capacity limit, so volumes are expected to decline in 2010.

FOREIGN TRADE

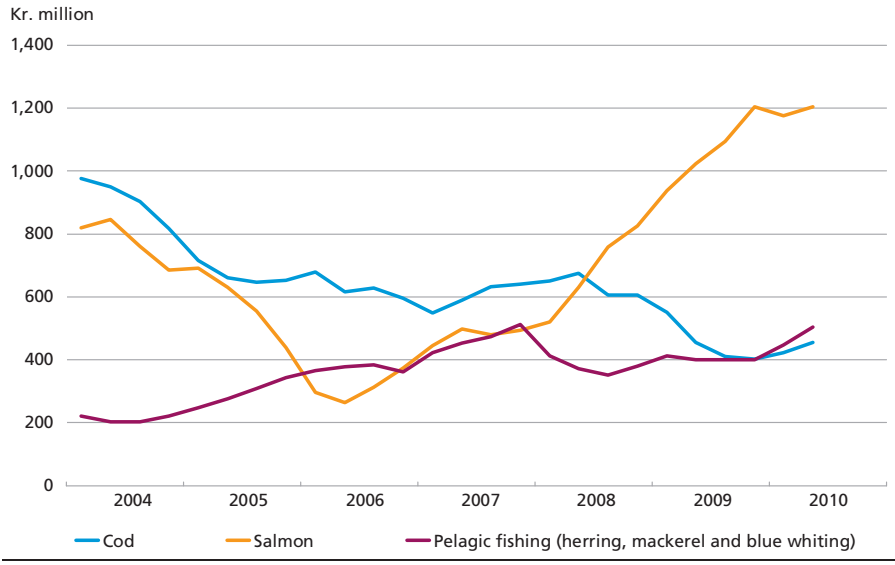
The trade balance, excluding ships, showed a surplus in 2009 following increasing deficits towards 2008, cf. Table 1. The recovery can be attrib-

TRADE BALANCE Table 1

Kr. million	2007	2008	2009
Exports	4,057	4,346	4,098
Exports excluding ships	3,963	3,741	3,872
Imports	5,522	5,021	4,199
Imports excluding ships	5,032	4,930	3,705
Trade balance	-1,466	-675	-101
Trade balance excluding ships	-1,069	-1,189	167

Source: Hagstova Føroya.

EXPORT VALUES OF COD, SALMON AND PELAGIC FISHING Chart 6



Note: 4-quarter sums. The most recent observations are the sums for the period 3rd quarter 2009-2nd quarter 2010.
Source: Hagstova Føroya and own calculations.

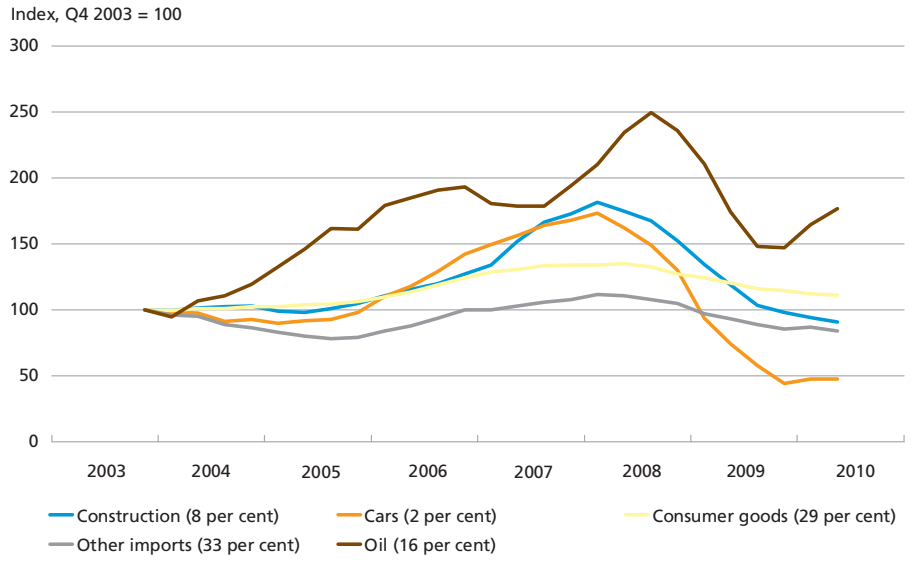
uted to a strong drop in imports from 2008 to 2009, while exports were more stable. The trade surplus continued in the 1st half of 2010.

Since 2008, farmed salmon, rather than cod, has been the most important source of revenue, cf. Chart 6. Exports of farmed salmon, measured as a percentage of total export revenue (excluding ships), increased from 12 per cent in 2007 to no less than 31 per cent in 2009. Cod exports fell from 2008, but began to rise again during 2009. Pelagic fishing for herring and mackerel has also yielded higher export revenue in recent years, whereas exports of blue whiting plummeted in 2008 and 2009 due to very low catches. The total export value of pelagic fishing fell by 26 per cent in 2008, but rose again in 2009 and 2010 so far.

Excluding ships, exports in the 1st half of 2010 were 12 per cent higher than in the 1st half of 2009, primarily due to higher exports of blue whiting, cod and other fish.

Imports declined strongly in the first three quarters of 2009, particularly imports of cars, energy and construction materials, cf. Chart 7. Imports of consumer goods and other imports also declined, but less sharply. Excluding ships and aircraft, imports began to rise again in the 4th quarter of 2009, reversing to a decrease in the 2nd quarter of 2010. Overall, imports excluding ships, etc. were almost 3 per cent higher in the 1st half of 2010 than in the 1st half of 2009. The increase in exports and weaker development in imports resulted in a trade surplus of kr. 95 million (excluding ships and aircraft) in the 1st half of 2010, compared

IMPORT VALUE BROKEN DOWN BY SUBCOMPONENTS Chart 7



Note: 4-quarter sums converted into indices. The most recent observations are the sums for the period 3rd quarter 2009-2nd quarter 2010. "Other imports" are total imports excluding construction materials, cars, consumer goods, energy and ships. Figures in brackets indicate percentages of total imports in 2009.
Source: Hagstova Føroya and own calculations.

with a deficit of kr. 57 million in the same period of 2009. The balance of payments for 2009 is not yet available. In 2008, it showed a deficit of kr. 347 million, or almost 3 per cent of GDP.

THE FINANCIAL SECTOR

In 2009, the Faroese banks realised a total loss before tax of kr. 222 million, compared with a deficit of kr. 412 million in 2008. The result in 2009 was still influenced by considerable impairment charges and loan loss provisions, cf. Table 2. The main driver of the reduction of the deficit in 2009 relative to 2008 is that value adjustments of securities and foreign exchange became positive in 2009.

In 2009, the Faroese banks generally faced the same challenges as the financial sector elsewhere in Europe, i.e. low economic activity and a prolonged period of low interest rates. The individual Faroese banks show varying developments, reflecting e.g. differences in activity outside the Faroe Islands in the previous years. In 2009, Føroya Banki posted a profit before tax of kr. 135 million, while Eik Bank and Norðoya Sparikassi posted losses before tax of kr. 386 and 46 million, respectively.

The banks' lending to the corporate sector and households has decreased since mid-2008, following very strong lending growth for several

THE BANKS' FINANCIAL STATEMENTS — Table 2

Kr. million	2005	2006	2007	2008	2009
Net interest and fee income	550	632	830	948	951
Value adjustments, etc.	47	49	181	-204	27
Profit from financial items	597	682	1,011	744	978
Operating costs	313	371	483	515	576
Net losses and provisions	-15	-74	25	438	397
Profit from subsidiaries, etc.	41	123	149	-203	-228
Ordinary operating result before tax	341	507	652	-412	-222
Solvency ratio	20.6	18.4	18.7	18.4	20.5

Note: Eik Bank Danmark is a wholly-owned subsidiary of Eik Bank and is included under "Profit from subsidiaries, etc.".
Source: Financial statements of Eik Bank, Føroya Banki, Norðoya Sparikassi and Suðuroyar Sparikassi. As from 2009, Føroya Banki amended its accounting policies to International Financial Reporting Standards. The financial statements for 2008 have also been adjusted accordingly.

years before the crisis. The decline in lending to households can, to a certain extent, be attributed to conversions into Danish mortgage loans effected through Faroese banks. As regards the corporate sector, lending to the fisheries sector showed a particularly pronounced fall in 2009.

PUBLIC FINANCES

After a couple of years with surpluses, the Faroe Islands posted a government deficit in 2008. The government deficit grew further from kr. 330 million in 2008 to kr. 688 million in 2009, cf. Table 3, equivalent to 5.8 per cent of GDP. The deficit in 2009 was almost kr. 200 million above

GOVERNMENT FINANCES — Table 3

Kr. million	2006	2007	2008	2009	Budget 2010
Taxes and duties, etc.	3,349	3,558	3,502	3,256	3,369
Block grants	632	632	635	636	635
Total income	3,981	4,190	4,137	3,893	4,005
Operating costs	3,578	3,766	4,251	4,366	4,558
Capital investments	268	292	232	184	181
Net interest costs	-7	-14	-16	31	46
Total expenses	3,839	4,044	4,467	4,581	4,785
Balance	142	146	-330	-688	-780
Net government debt, year-end	1,405	-48	591	1,232	

Note: Income and balance are exclusive of extraordinary income of kr. 535 million from distribution of extraordinary dividend by Føroya Banki in 2006 and of kr. 1,212 million and kr. 87 million from the respective sales of 2/3 of the shares in Føroya Banki and 1/3 of the shares in Atlantic Airways in 2007. Net government debt is exclusive of financial assets, which amounted to kr. 2,425 million in 2009.
Source: Fíggjarmálaráðið and Landsbanki Føroya.

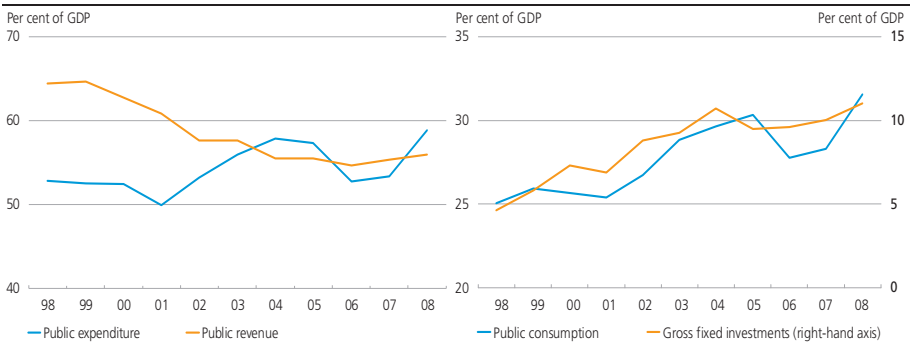
budget as laid down in the Finance Act. The principal reason is lower revenue from personal taxes and VAT, but also higher net interest expenses as a result of the growing debt burden. The Faroese government, which had no debt in 2007, had by end-2009 accumulated a net debt of kr. 1.2 billion due to the weakening of public finances.

The fiscal deterioration from 2008 can be attributed primarily to the economic slowdown, but the increase in the government deficit is very pronounced in relation to the point of departure of the Faroese economy and the magnitude of the slowdown. Consequently, the reversal also reflects the expansionary fiscal policy pursued during the previous upswing. Both public consumption and public investment have surged over the last decade, cf. Chart 8. At the same time, public revenue as a ratio of GDP fell from 1998 to 2006, followed by a slight increase. The development in total public revenue as a ratio of GDP to a high degree reflects a decline in the block grant from Denmark, which is not offset by an equivalent upturn in tax revenue.

In the 2010 Finance Act, the deficit is expected to rise to approximately kr. 780 million, since the expected growth in expenditure strongly exceeds the growth in revenue. So far, both the revenue and expenditure sides seem to be in accordance with the budget. The debt burden rose further in 2010 as a result of the deficit in 2009.

A number of consolidation measures have been implemented in 2010, including reduction of subsidies for interest costs on housing and student loans, reduction of the existing VAT refund for development of housing properties, as well as temporary raising of income taxes. Moreover, the Løgting (parliament) adopted a resolution on consolidation to achieve fiscal balance by 2015. The negotiations on the 2011 Finance Act include tightening measures by way of higher corporation taxes and expansion of the basis for indirect taxes on fossil fuels and tobacco. In

PUBLIC EXPENDITURE AND REVENUE — Chart 8



Source: Hagstova Føroya.

addition, a political agreement on a pension reform was concluded in the spring of 2010, against the backdrop of the increasing number of elderly people. This implies cuts in old-age pensions and mandatory private pension savings. The pension reform is expected to be put to the vote in the Løgting during the autumn of 2010. No other specific proposals for the consolidation plan up to 2015 have been tabled. Looking forward, a medium-term fiscal plan should be prepared in order to support fiscal sustainability.

Local authorities, which make up around a quarter of the public economy, are also saddled with a rapidly increasing debt burden. They have not shown surpluses since 2005. Their net debt amounted to kr. 552 million in 2009, and is set to increase further if the budgeted deficit of just over kr. 90 million for 2010 is realised. The central government has only limited influence on local authority budgeting. It may only step in and change the budget if the net debt exceeds one year's tax revenue at a tax rate of 23 per cent.

ECONOMIC PROSPECTS

After the economic slowdown in 2008 and 2009, there are signs of improvement in 2010 so far. Payroll expenditures have begun to rise, and unemployment stabilised during the spring. After declining for some years, fish prices and catches have begun to climb again. The emerging economic recovery has spurred an increase in foreign trade. Stronger dynamics in exports than in imports have generated a trade surplus in 2010 so far.

Continued economic growth will have a favourable impact on the weakened public finances, but further consolidation is necessary in order to reduce the debt burden of the central and local governments. A key challenge is curbing the rapidly increasing public expenditure.

Notwithstanding the favourable development in catches and prices, the fisheries sector still needs to employ more efficient and sustainable fishing methods. Since the fish farming sector is close to its capacity limit, further growth will be difficult to achieve. With the current outlook for the fisheries sector, a renewed deficit on the balance of trade can be expected if import growth is resumed.

Banks' Liquidity Management

Anne-Sofie Reng Rasmussen, Financial Markets

INTRODUCTION AND SUMMARY

Liquidity, or the lack thereof, has been a key element during the financial crisis. When the financial markets froze, banks which were dependent on access to them experienced severe problems. Governments and central banks worldwide were compelled to implement liquidity-supporting measures such as government guarantees and expanded collateral bases in central banks in order to ensure financial stability. The consequences of insufficient liquidity management by banks have emphasised the need for improved awareness of the banks' liquidity management and the liquidity risks they incur. The problems have put the banks' liquidity management at the top of the political agenda and resulted in a number of international initiatives aimed at strengthening the banks' liquidity and the management thereof.

Banks receive deposits from depositors and grant loans to borrowers. While deposits can typically be withdrawn without notice, loans are repayable over longer periods. This business model has an inherent liquidity risk which must be managed like other types of risk. This article discusses liquidity, the role of banks in the creation of liquidity in society and how they manage their liquidity. Finally, the current liquidity situation of Danish banks is outlined.

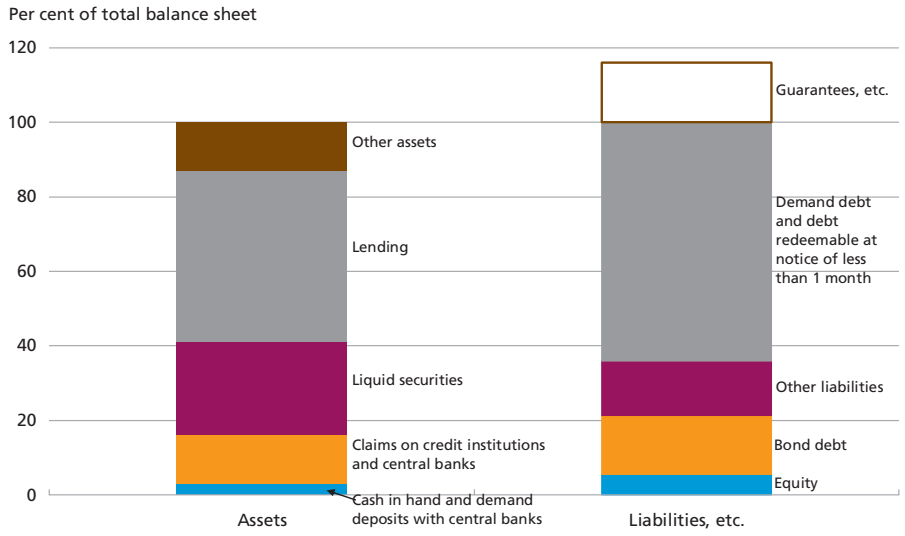
WHAT IS LIQUIDITY?

Liquidity is the ability to raise cash the moment it is needed. This applies to banks, business enterprises and individuals alike. A bank must be able to raise cash when depositors want to withdraw their deposits; firms must be able to pay suppliers for goods delivered; and individuals must be able to pay rent and to pay for purchases at the supermarket.

Banks' sources of liquidity

Banks widely use deposits and short-term debt issuance to obtain liquidity. Overnight deposits and debt/deposits redeemable at notice of up to 1 month account for just over 65 per cent of the liabilities of Danish banks, cf. Chart 1. Deposits with short maturities made by house-

DANISH BANKS' BALANCE-SHEET STRUCTURE Chart 1



Note: Compiled at end-December 2009. The statistics are compiled on the basis of section 152 definitions of the balance-sheet elements used.
Source: The Danish Financial Supervisory Authority.

holds, firms and public authorities are common sources of short-term funding, and collateralised and uncollateralised loans from other credit institutions or central banks are extensively used. Banks with a high credit rating can also issue Commercial Paper, CP, to obtain short-term funding.

Short-term funding sources naturally require frequent refinancing. Maintaining sound liquidity therefore requires intensive liquidity management and continuous access to funding markets. To supplement the short-term funding sources, the banks use medium-term and long-term funding by issuing bonds with varying maturities or raising loans from one or more lenders. Maturities vary from a few years to more than 30 years. Long-term funding is typically more expensive, but the refinancing risk is inherently lower.[1]

Banks can also raise liquidity by selling or borrowing against their assets, e.g. real property, financial assets such as shares and bonds, or loans. The more easily assets can be converted into liquid funds, the more liquid they are said to be. A bank's stock of liquid assets typically comprises a small cash balance, deposits in central banks and a portfolio of securities traded actively in the financial markets, e.g. shares, government bonds and mortgage bonds. Just over 20 per cent of the asset

[1] See Danmarks Nationalbank (2010), Chapter 4, for a detailed description of the liquidity situation of Danish banks.

LIQUIDITY REGULATION IN DENMARK Box 1

The liquidity of Danish banks is regulated by section 152 of the Financial Business Act. According to this Act, a bank shall have appropriate liquidity. It shall have a portfolio of liquid funds including cash in hand, fully secured and liquid demand deposits with credit institutions and insurance companies, and secure, easily realisable, securities and credit funds not used as collateral for a loan. Such liquidity shall amount to no less than:

- 15 per cent of the debt exposures that, irrespective of possible payment conditions, shall be payable by the bank on demand or are redeemable at less than one month's notice, or
- 10 per cent of the total debt and guarantee exposures of the bank, less subordinated debt that may be included in calculations of the base capital.

In addition to the quantitative liquidity requirement, it appears from the Danish Financial Supervisory Authority's guidelines of 18 January 2010 on calculating the capital need of banks that the banks must set aside sums in their capital need for additional costs of raising capital under their own 1-year stress scenarios. Moreover, in July 2010 the Danish Financial Supervisory Authority introduced the "supervisory diamond" for banks which defines a number of guiding points for what must be regarded as banking activity subject to enhanced risk. In this connection it is recommended that banks should in principle have excess cover of section 152 liquidity of 50 per cent or more. The supervisory diamond will be phased in up to the end of 2012.

Finally, the Danish Financial Supervisory Authority will issue a section 71 Executive Order at the beginning of October 2010, concerning, *inter alia*, the handling of liquidity risk by banks and mortgage banks, which is to contribute to ensuring liquidity management in Danish banks. The Executive Order lays down the tasks of the board of directors and the board of management in relation to the bank's liquidity management and policy requirements for supervision of the bank's current liquidity flows, intraday liquidity, liquidity stress tests, composition of liquidity reserves, contingency funding plan, calculations of collateral received and pledged, and distribution of funding costs on various business areas internally in the bank. The Executive Order will enter into force on 1 January 2011.

volume of Danish banks consists of liquid assets as defined in Section 152 of the Danish Financial Business Act, cf. Box 1.

Liquidity position

A bank's liquidity position and thus its need for liquidity are determined especially by the extent of maturity mismatch between its assets and liabilities and the liquidity of its assets.

Banks finance their lending and other assets by market-based funding and other liabilities. The greater the differences in the maturities of the bank's assets and liabilities, the more important it is to have easy access to liquidity.

The liquidity ratio of the bank's assets is dependent on the extent to which the assets can be realised or pledged as collateral at short notice and without a significant loss of value. Lending accounts for a large part of a bank's assets and is typically relatively illiquid, even when it is redeemable at short notice. The fact that a loan is terminable at short notice does not mean that the borrower is able to repay the loan immediately, and the real degree of liquidity is consequently low. To address this, a bank typically holds portfolios of highly liquid financial assets that can be converted quickly into liquid funds should the need arise.

The more liquid its assets, the greater a maturity mismatch the bank can afford, as liquid assets can prevent liability run-offs. Conversely, the smaller a bank's maturity mismatch, the less it needs to worry about the liquidity ratio of its assets. The bank is less likely to be forced to convert assets into liquid funds, and it may thus allow the assets to run until contractual maturity.

BANKS' LIQUIDITY RISK

Liquidity risk is defined as the risk of not having sufficient liquid funds to make payments as they fall due. It is the risk that a bank is unable to raise sufficient liquid funds by selling and borrowing against assets to meet liquidity requirements, and the risk that the bank's funding sources are no longer available.

A bank's liquidity risk cannot be summarised as a single liquidity indicator, but the extent of the risk can be quantified by a number of procedures. The most important ones are balance-sheet-based analyses and analyses of differences in cash flows between assets and liabilities. The balance-sheet-based analysis takes as its point of departure the degree of liquidity of the bank's assets and the stability and volatility of its funding at a given time, cf. Matz and Neu (2007). Liquidity risks are reduced if illiquid assets are funded by stable funding sources, while liquid assets can be funded by more volatile funding sources[1]. Analyses based on differences in cash flows are described in more detail in the section "Liquidity forecast and contingency funding plan".

Liquidity risk differs from other financial risks incurred by banks. It arises as a consequence of the obligations the bank undertakes. Liquidity risks grow as a result of other financial risks increasing, e.g. large unexpected credit losses. In most cases, a non-liquidity-related shock will

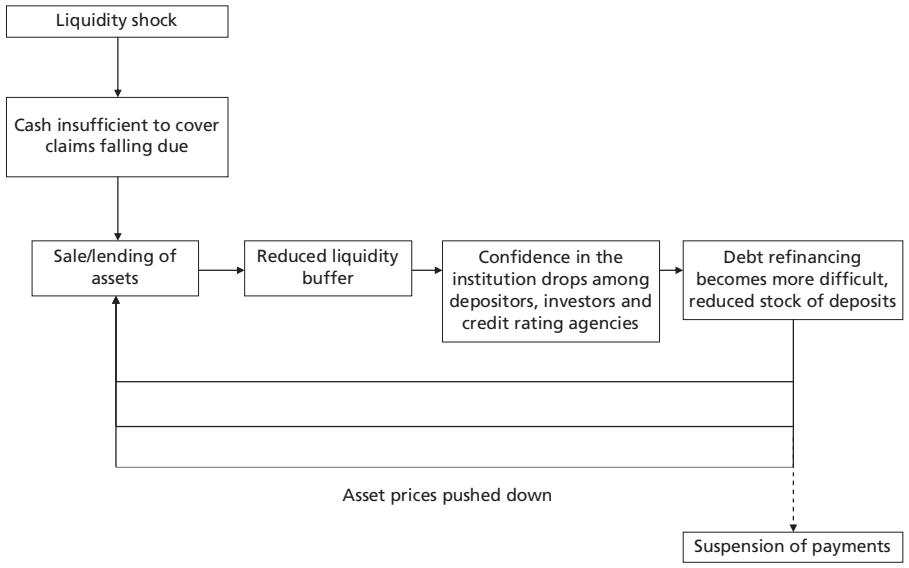
[1] This is the basis of the Basel Committee's proposed Net Stable Funding Ratio as a new quantitative liquidity requirement. It compares the extent of a bank's stable funding with the degree of liquidity of its assets, cf. BCBS (2009).

turn into a liquidity problem if it triggers existing vulnerabilities in the bank's liquidity position, e.g. strong reliance on short-term market-based funding. Furthermore, unlike credit and operational risks, liquidity risk cannot be covered by capital alone. Capital does not in itself ensure that a bank is able to meet certain payments within a given time frame. The crucial factor is that its assets can be converted into liquid funds at the speed at which its obligations fall due.

PRINCIPLES FOR BANKS' LIQUIDITY MANAGEMENT

Unlike a bank's credit risks, which materialise regularly to a greater or lesser extent, liquidity risks materialise only periodically. However, if they do materialise, they often entail high costs. In case of problems or uncertainty about a bank's liquidity, depositors and other creditors will often react rapidly by withdrawing funds, thereby exacerbating the problem, cf. Chart 2. In addition, liquidity problems in one bank may spread to other banks. This is due to the close links between banks in terms of liquidity as a result of the widespread use of the interbank market and of binding commitments for credit or liquidity facilities at another bank (committed facilities). Increased uncertainty about the liquidity situation of one bank may also create uncertainty about the situation of other banks. Finally, a fire sale of a bank's assets may push down the market price of those assets, thereby exacerbating the bank's

LIQUIDITY SPIRAL FOR A BANK — Chart 2



liquidity problems. This may also affect the value of other banks' stocks of liquid assets through mark-to-market valuation of the assets, thereby weakening the banks' liquidity position.

In 2008, the Basel Committee published a number of guidelines for good liquidity management[1]. According to these guidelines, a bank is responsible for the sound management of liquidity risk, and this should be an integral part of the bank's general risk management. In addition, the bank should clearly articulate a liquidity risk tolerance that is appropriate for the business strategy of the organisation and its role in the financial system. In normal times, it is unprofitable for banks to hold such amounts of liquid funds that they would be able to withstand any liquidity stress. Accordingly, liquidity management is not a question of being able to eliminate all liquidity risks. The aim is to reduce the bank's liquidity risk exposure to an acceptable level.

The framework set up by the Basel Committee can be transformed into concrete liquidity management tools. The following provides a description of a number of the central liquidity management tools used by Danish and foreign banks.

LIQUIDITY FORECAST AND CONTINGENCY FUNDING PLAN

Projections of its expected cash flows are key elements of a bank's liquidity management. The projections are made over suitable time horizons and at relevant frequencies. Together with the bank's chosen liquidity risk tolerance, the projections can be used to get an overview of its liquidity position in relevant currencies, to calculate its short-term and long-term liquidity requirements and to lay down a general funding strategy. This creates a basis for mitigating future negative liquidity positions in time and without unnecessarily high costs.

Projecting cash flows

The first step in the preparation of a liquidity forecast is to establish the expected cash flows. Projecting fixed cash flows is relatively simple, whereas projections of cash flows without a fixed payment structure require a number of assumptions and modelling.

Most of a bank's market-based funding will have a contractual maturity structure where cash flows are known in advance and are in accordance with the real expected maturity structure. It is relatively simple to establish expected cash flows for that part of the bank's balance sheet.

[1] See Lund (2008) for an elaboration of the guidelines.

As regards other parts of the balance sheet, it is necessary to make a number of assumptions. Basically, there are two sources of uncertainty relating to a bank's future cash flows, cf. Matz and Neu (2007). The first is how expired contracts are replaced by new business. The other is the development in the value of products without a contractual maturity profile. This does not necessarily mean products with infinite maturity, but rather products whose maturity profiles have not been defined in advance.

The first source of uncertainty relates to both assets and liabilities on the bank's balance sheet. On the assets side, the bank must assess the volume of new lending over the forecast horizon. Part of its outstanding volume will fall due on a regular basis, resulting in cash inflows. New lending will lead to cash outflows. The bank's model assumption concerning lending growth will thus affect the expected net cash flows.

On the liabilities side, the bank must consider how and to which extent funding sources falling due are to be replaced by new ones. If all it wants is a forecast of liquidity development under continuation of the current market conditions, refinancing in full as the outstanding amount falls due can be assumed. Alternatively, the bank can assume that, say, all medium-term and long-term funding falls due contractually and cannot be refinanced. In this way it gains an impression of future funding needs and is able to prepare a funding plan for the coming period. The assumptions chosen depend to a large extent on the purpose of the forecast.

Finally, the bank must consider developments in the portfolios of liquid assets. For example, it may choose to assume that the portfolio will be converted into liquid funds during the first period of the forecast, resulting in a substantial inflow of funds at the beginning of the forecast period. Alternatively, the bank can assume that the portfolio of liquid assets is maintained over the entire forecast horizon to exclude liquidity effects of this portfolio on the forecast. This is done by reinvesting maturing securities.

The other source of uncertainty to be taken into account in the liquidity forecast is the changing impacts on liquidity of products without a contractual maturity profile. Again, both assets and liabilities on the bank's balance sheet will be subject to uncertainty.

On the assets side, overdraft facilities, etc. will constitute an element of uncertainty. Within certain limits in terms of value and time, customers are free to choose the rate of utilisation of these facilities, and the bank must model expected developments accordingly.

On the liabilities side, most of a bank's deposits are subject to similar uncertainty. Large parts of the volume of deposits are payable on

demand and can, in principle, be withdrawn without notice. This is not the expected cash flow structure under normal circumstances, however. Every day, some depositors will withdraw deposits and others will increase their deposits. The bank must establish the expected impacts thereof on liquidity. This is done on the basis of historical experience, the expected stability of deposits and the extent to which the bank expects to be able to attract new deposits. The expected degree of stability is dependent on the extent of other business relations with individual depositors, the duration of the customer relationship and the bank's expected deposit rate compared to other business opportunities for depositors.

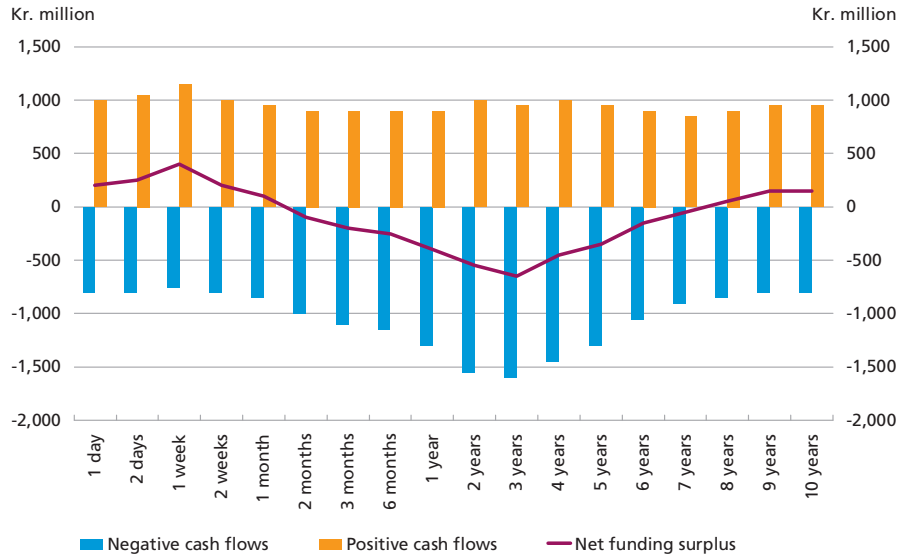
Finally, part of the bank's assets and liabilities will result in cash flows that cannot be determined in advance, because they depend on developments in e.g. stock prices, interest rates and exchange rates. Expected cash flows can be generated by setting up scenarios for the development in relevant variables and deriving expected cash flows on this basis.

Liquidity forecast

Chart 3 illustrates an example of the result of a bank's projection of expected positive and negative cash flows accumulated over future periods.

It shows that the bank has positive net cash flows over the next month. After this, cash outflows exceed expected cash inflows. The bank

EXAMPLE OF LIQUIDITY FORECAST FOR A BANK — Chart 3



will therefore need to raise further liquidity to maintain a positive liquidity position.

Based on its risk tolerance and liquidity forecast, the bank can establish a funding strategy. For example, its risk tolerance may indicate that its future net funding requirement must never exceed kr. 350 million. In the example, the bank has a maximum net funding requirement of kr. 650 million and thus needs to obtain further long-term funding to meet its internal requirements.

Liquidity forecast of section 152 liquidity

Danish banks must meet the liquidity requirement in section 152 of the Financial Business Act on an ongoing basis, cf. Box 1. To supplement forecasts of net cash flows, a large number of banks therefore use forecasts of section 152 liquidity. Based on this, the Association of Local Banks has prepared a model that is available to members of the Association.

By projecting the expected value of the portfolio of liquid assets, short-term liabilities and total debt and guarantee commitments, the bank is able to estimate the expected value of the section 152 liquidity. The projections give an estimate of the extent to which the bank will be able to meet the statutory minimum requirement.

However, the projection does not indicate whether the bank will have positive absolute liquidity on each banking day and thus be able to meet all its obligations as they fall due. In principle, the bank may experience days when net cash outflows exceed the 10 per cent share of the bank's total debt and guarantee commitments or the 15 per cent share of its debt commitments payable on demand or at less than one month's notice, which, pursuant to section 152, the bank is required to hold in liquid funds. A section 152 forecast must therefore be combined with forecasts of the bank's other significant cash flows to avoid sudden shortages of liquidity.

STRESS TEST

A liquidity forecast such as that described above is based on normal market conditions. However, this does not provide a full overview of the bank's liquidity position. A stress test is an important supplement.

By comparing the results of a liquidity forecast in the event of stress with the liquidity buffer the bank obtains an impression of the ability of the current liquidity position to withstand liquidity stress. At the same time, the bank can get an idea about its dependence on individual liquidity sources.

Stress scenarios

The first step in the preparation of a liquidity stress test is to establish a relevant stress scenario. The Basel Committee recommends that banks set up three types of stress test:

- a test reflecting bank-specific liquidity stress,
- a test reflecting general liquidity stress in the financial markets, and
- a test reflecting a combination of these two types of stress.

According to the sections relating to liquidity risk in the forthcoming Executive Order regarding section 71 in the Danish Financial Business Act to be issued by the Danish Financial Supervisory Authority Danish banks must, as a minimum, conduct the above three types of liquidity stress test. It also includes a number of minimum requirements concerning the stress scenarios. The majority of Danish banks conduct internal liquidity stress tests, though often under a single stress scenario, i.e. the combination scenario. Accordingly, the Executive Order should be expected to lead to increased bank focus on liquidity stress tests and a better understanding of liquidity risks.

A survey conducted by the Basel Committee in 2008 shows that European banks typically use either a combination of bank-specific stress and general market stress or conduct stress tests based on the two separate types of stress.[1] According to the survey, the bank-specific types of stress are based mainly on a downgrading of the bank's credit rating. Other bank-specific stress assumptions include operational risks, deposit volume reductions, large credit losses, rumours, reduced access to capital-market funding, higher haircuts and increased requirements for the pledging of collateral, falling asset prices and an actual bank run. The market stress scenarios are typically based on specific situations such as a general financial crisis in the global markets, the closing down of individual funding markets such as the commercial paper and/or covered bond markets or the interbank market, or on a general negative trend in economic indicators. Moody's curve is another example of a stress test[2]. In this model, devised by the credit rating agency Moody's, it is assumed that a bank will not have access to market-based funding over the next 12 months.

LIQUIDITY BUFFER

A key element of a bank's liquidity management is its administration of unencumbered liquid assets, also known as the liquidity buffer. This is the immediate protection against negative liquidity shocks.

1 A number of survey results are presented in ECB (2008).
2 See Moody's (2007) for further details.

In December 2009, the Committee of European Banking Supervisors, CEBS, published guidelines for the composition of liquidity buffers. CEBS recommends that a bank's liquidity buffer should be large enough to enable it to resist periods of severe liquidity stress of up to one month, i.e. the greater a bank's liquidity risk exposure, the larger its liquidity buffer should be. In its proposal for new quantitative liquidity requirements, the Basel Committee also recommends that a bank should hold a stock of liquid assets large enough to offset the net cash outflows that might be the result of a 30-day stress scenario, cf. BCBS (2009).

The composition of the liquidity buffer should emphasise assets of high market liquidity, and rather than high concentrations of individual assets, banks should hold well-diversified portfolios of liquid assets. Attempts to convert large concentrated stocks of individual assets may push down the prices of these assets, thereby reducing the value of the liquidity buffer. This may also affect the value of other banks' balance sheets through mark-to-market valuation of the assets, and ultimately result in a negative liquidity spiral.

LIQUIDITY MANAGEMENT

The liquidity management tools described constitute only part of a bank's overall liquidity management system. This also includes tools for the management of intraday liquidity, monitoring and administration of assets that have been or may be pledged as collateral, management and distribution of liquidity in the bank, etc.

To ensure the sustainability of a bank over protracted periods of liquidity stress it is also important to have a contingency funding plan. In addition to practical information, this includes plans and strategies for the bank's response in the event of liquidity stress and the liquidity-improving measures it expects to take.

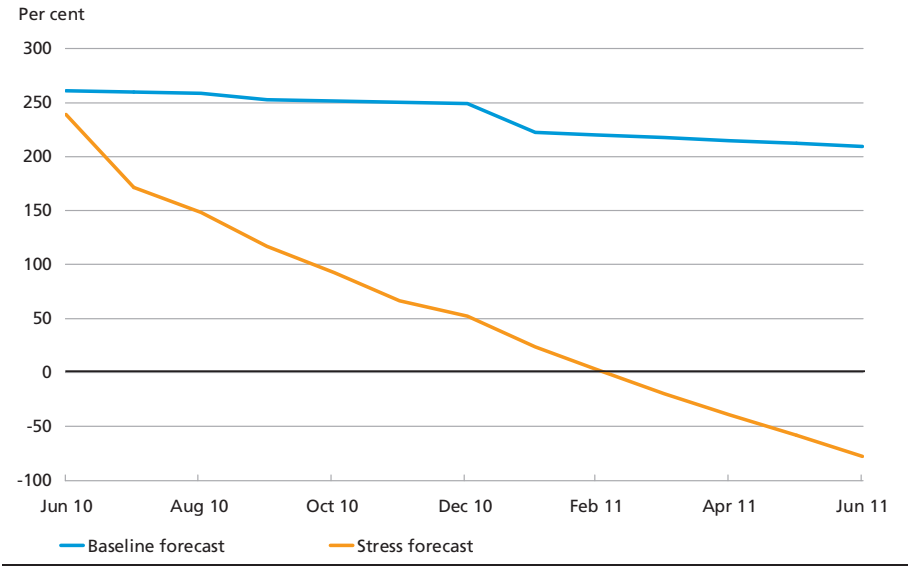
The tools contribute to ensuring that a bank has sufficient liquid funds to honour the payments it is required to make at any given time.

CURRENT LIQUIDITY SITUATION OF DANISH BANKS

Danmarks Nationalbank and the Danish Financial Supervisory Authority monitor the liquidity situation of Danish banks on the basis of reports on the banks' liquidity positions, liquidity stress tests, etc.[1]

[1] See Danmarks Nationalbank (2010).

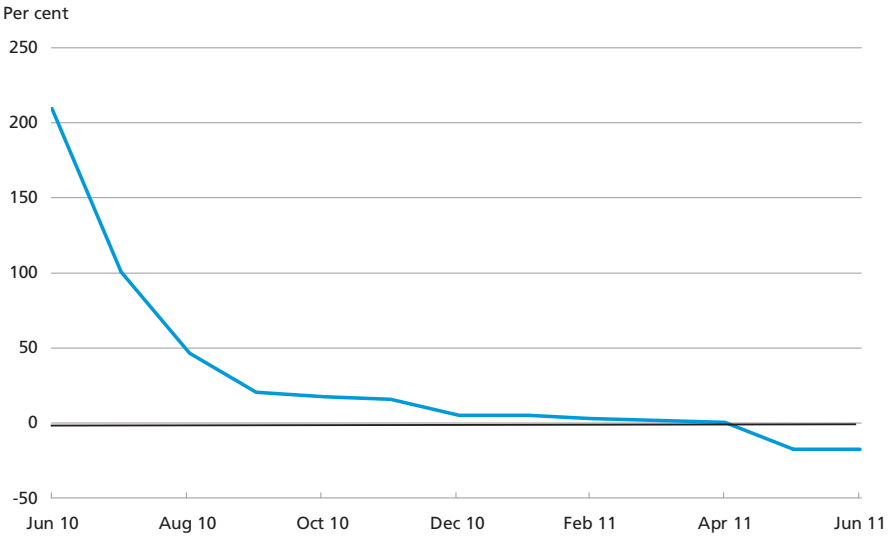
MEDIAN VALUE OF SECTION 152 EXCESS COVER FOR THE LIQUIDITY FORECAST AND STRESS TEST OF THE ASSOCIATION OF LOCAL BANKS Chart 4



Note: Data at end-June 2010. The break in the baseline forecast at end-January 2011 can be attributed to the expiry of Danmarks Nationalbank's temporary liquidity-supporting measures. For further details, see Danmarks Nationalbank (2010). As the stress scenario does not include these temporary measures, there is no similar break in the above curve.
Source: Liquidity reports to Danmarks Nationalbank and the Danish Financial Supervisory Authority.

Chart 4 shows the median value of liquidity forecasts of excess section 152 liquidity over the next 12 months for 78 banks basing their monthly liquidity forecasts in their liquidity reports to Danmarks Nationalbank and the Danish Financial Supervisory Authority on the forecast model of the Association of Local Banks. It also shows the result of a standardised stress test of the same banks' liquidity forecasts. The baseline forecast indicates substantial excess liquidity now and over the next 12 months given stable development in the banks' deposits and outstanding volume and full access to market-based funding. The stress scenario shows a steady deterioration of the banks' liquidity position, reflecting assumptions of ongoing deposit run-off, contractual maturing of all debt to credit institutions and no possibilities of refinancing market-based funding. However, the stress forecast also shows that should such a stress scenario materialise, the banks generally have sufficient liquidity buffers to maintain positive excess section 152 liquidity for several months. This ensures a certain amount of latitude to restructure the bank's business and funding strategies in case of a lengthy period of stress. At the same time, the stress test does not indicate any severe deterioration of the banks' liquidity positions in connection with the expiry of the general government guarantee on 30 September 2010.

MEDIAN VALUE OF SECTION 152 EXCESS COVER UNDER LIQUIDITY STRESS TESTS FOR BANKS IN GROUPS 1 AND 2 Chart 5



Note: Data at end-June 2010.
Source: Liquidity reports to Danmarks Nationalbank and the Danish Financial Supervisory Authority.

However, Chart 4 reflects the median value of the banks' liquidity forecasts, and the amount of latitude of some banks in the event of liquidity stress may thus be insufficient.

The liquidity forecast of the Association of Local Banks is used primarily by group 3 banks and a few banks in groups 2, 4 and 6[1]. Large Danish banks in many cases use their own liquidity forecast and stress test models to assess their liquidity positions. To make it easier to compare the liquidity positions of banks in groups 1 and 2, Danmarks Nationalbank and the Danish Financial Supervisory Authority have developed a standardised liquidity stress test where banks report their test results on a monthly basis. The stress scenario runs for 12 months, and the liquidity stress intensity is highest during the first month. The scenario assumes e.g. that the banks will lose part of their volume of deposits during the first month; that all debt to credit institutions will contractually mature; that there will be increased withdrawals from committed credit and liquidity facilities during the first month; and that all market-based funding will contractually mature. The result of this stress scenario can be seen in Chart 5.

A considerable deterioration of the banks' excess liquidity cover occurs during the first months of the stress scenario, cf. Chart 5. This trend is

[1] Banks in group 4 have a working capital of less than 250 million kr., i.e. they are the smallest Danish banks. Group 6 consists of banks on the Faroe Islands.

more pronounced than for the banks using the model of the Association of Local Banks. This is partly attributable to differences in the stress scenarios, but also to the fact that large banks are more dependent on short-term market-based funding and short-term debt to other credit institutions. This pattern emphasises one of the strengths of liquidity stress tests, i.e. the possibility of quantifying the banks' liquidity sensitivity to various liquidity sources. In line with the result for small banks, most large banks will have a positive excess liquidity cover during the first months of this scenario.

CONCLUDING REMARKS

The financial crisis has taught both the authorities and banks that it is at least as important to be aware of and evaluate liquidity risk as it is to be aware of all other types of risks incurred by banks. The crisis has also shown that situations may arise where issuance is not possible in certain markets. It is therefore important for banks to adapt their business models and liquidity positions accordingly and to ensure a wide range of possible actions in the event of liquidity stress.

On the part of the authorities, a combination of qualitative and quantitative requirements for sound liquidity management will set out the framework for the banks' liquidity management in the future. The requirements have not yet been defined in detail, but, as always, the overall objective that all banks should have a sound liquidity position and sound liquidity management will apply.

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Current Trends in the Money Market for Danish Kroner

Anders Jørgensen, Market Operations, and Lars Risbjerg, Economics

INTRODUCTION AND SUMMARY

In the money market for Danish kroner, banks exchange liquidity in kroner, either as uncollateralised loans (deposits), or as collateralised loans (repurchase agreements and FX swaps). In principle, Danmarks Nationalbank only supplies (absorbs) liquidity to (from) the banks and mortgage banks – the monetary-policy counterparties – once a week. During the week, the counterparties therefore need to exchange liquidity among themselves via the short-term money market.

The money market is key to the transmission from Danmarks Nationalbank's monetary-policy interest rates to interest rates in the rest of the financial system. Interest-rate formation in the money market is the basis for the banks' deposit and lending rates vis-à-vis households and the corporate sector. A well-functioning money market is essential to the functioning of the overall financial system.

Danmarks Nationalbank monitors developments in the money market on a continuous basis and conducted a survey of turnover in April 2010. Like the international money markets, the Danish market was hit by the financial crisis. The survey documents that turnover in the money market has declined relative to the period before the onset of the crisis in August 2007, and that collateralised products account for a larger share of turnover than previously. A similar trend is seen in the euro area.

Turnover of uncollateralised loans has mainly decreased for the longer maturities, where the market has disappeared. Average daily turnover of uncollateralised loans with a maturity of more than one week totalled just under kr. 0.1 billion, less than 1 per cent of total turnover of uncollateralised loans. The decline in the turnover of uncollateralised krone-denominated loans reduces the actual trading volume behind the fixing of Cibor (Copenhagen Interbank Offered Rate). Cibor is a reference interest rate for uncollateralised lending in kroner at maturities of 1 week to 1 year. Cibor constitutes the basis for a large number of loan agreements and other financial contracts and thus has a major influence on the borrowing costs of households and the corporate sector.

TURNOVER IN THE MONEY MARKET

The money market for Danish kroner is the interbank market for cash products and interest-rate derivatives in kroner with maturities of up to 1 year. The cash products, which are used to procure or place liquidity, are primarily uncollateralised loans (deposits) and loans against bonds (repos) and currency (FX swaps) as collateral. Interest-rate derivatives, including short-term interest-rate swaps, are used to manage interest-rate risk, and the exchange of liquidity is limited to settlement of interest-rate differences. The various money-market products are described in Box 1.

The 11 Tomorrow/Next (T/N) reporting banks, which include the largest Danish and foreign players in the Danish money market, participated in a survey of the money market in April 2010. They reported their total turnover (i.e. the volume of transactions concluded) in kroner with other banks in deposits, repos, FX swaps and T/N interest-rate swaps in April 2010. The most recent previous survey of this type was carried out in the 1st half of 2007.[1]

In the following, the results of the 2010 survey are examined further and compared with previous years. Focus is on turnover of cash products, while turnover of short-term interest-rate swaps is briefly touched upon at the end of this section.

Development in total turnover

Total turnover in money-market lending has decreased by 37 per cent since 2007, to a daily average of kr. 56 billion, cf. Chart 1, left. The most remarkable fall is seen for uncollateralised lending, which has dropped by 47 per cent. The largest decline in turnover of uncollateralised loans took place from 2007 to 2008,[2] but the downward trend continued subsequently, cf. Chart 2. The higher counterparty and liquidity risks resulting from the crisis have thus led the banks to transfer much of their money-market trading to the collateralised market. Turnover in the euro area money market also declined during the crisis, but the trend is

[1] Only lending was reported in 2007 (not deposits). In the 2010 money-market survey, a group of reporting banks representing a large share of total turnover also reported their total turnover in deposits in April 2008 and 2009. All T/N reporting banks report their turnover in the day-to-day money market, i.e. the market for loans with a maturity of 1 day, on a daily basis. The day-to-day market comprises overnight loans (O/N), Tomorrow/Next loans (T/N) and Spot/Next loans (S/N). O/N loans start on the day of agreement and expire on the following banking day. T/N loans start on the 1st banking day after the agreement date and expire on the 2nd banking day after the agreement date. S/N loans start on the 2nd banking day after the agreement date and expire on the 3rd banking day after the agreement date.

[2] Total turnover in deposits in April 2008 and 2009 has been estimated on the basis of reporting by a group of T/N reporting banks representing 89 and 59 per cent of total turnover in deposits in April 2007 and April 2010, respectively.

PRODUCTS IN THE MONEY MARKET FOR DANISH KRONER Box 1

Cash products

Deposits are uncollateralised loans in kroner with maturities ranging from 1 day to 12 months. Under normal circumstances, the rate of interest on deposits is higher than on corresponding collateralised loans.

Repurchase agreements (repos) are collateralised loans at standard maturities ranging from 1 day to 6 months. The collateral pledged comprises securities, typically bonds.

FX swaps are agreements comprising a simultaneous spot transaction and forward contract. In the spot transaction, an amount is exchanged between two currencies, and in the forward contract it is agreed to reverse the transaction at a future time at an exchange rate agreed when concluding the swap. FX swaps are concluded at standard maturities ranging from 1 day to 12 months. FX swaps can be viewed as a collateralised loan in one currency against collateral in another currency. When the spot transaction involves delivery of kroner and receipt of foreign exchange, this corresponds to lending in kroner.

Bonds in kroner with a remaining term to maturity of up to 1 year are normally also regarded as money-market products.

Danmarks Nationalbank's certificates of deposit are zero-coupon paper with a maturity of 7 days issued by Danmarks Nationalbank as part of its monetary policy. Certificates of deposit can be traded among the monetary-policy counterparties only. Such trading involves no credit risk, as claims on Danmarks Nationalbank are risk-free. Interbank trading in certificates of deposit is very limited, averaging kr. 12 million a day in 2009. The reason is that certificates of deposit are primarily traded with Danmarks Nationalbank.

Interest-rate derivatives

Short-term interest-rate swaps are also known as Tomorrow/Next Interest-Rate Swaps (T/N IRS) or CITAs (Copenhagen Interest T/N Average). A variable rate of interest (the T/N rate) is swapped for a fixed rate of interest determined at the start of the contract. Contracts are concluded at standard maturities ranging from 1 to 12 months. On expiry of the contract, the difference between the agreed fixed rate and the T/N rate over the term of the contract is settled.

A *FRA (Forward Rate Agreement)* is an agreement to pay interest on a fictitious principal for an agreed future period at an agreed rate. At the start of the future period, an amount is settled corresponding to applying the difference between the agreed reference interest rate (Cibor), cf. Box 2, p. 125, and the agreed FRA rate on the fictitious principal. For example, if a bank wants to be sure that it can obtain financing in a future period at a rate of interest that is known today, the FRA rate, it can purchase a FRA now and raise a loan at Cibor in the future period.

An *interest-rate option* is an agreement giving one party the right, but not the obligation to receive or pay a given rate of interest on an agreed principal in a future period.

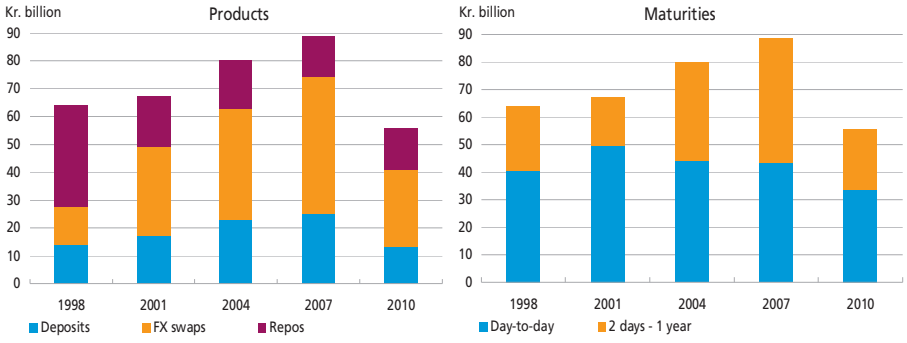
Note: See Danmarks Nationalbank (2009) for further information about money-market products.

less pronounced if developments in uncollateralised lending until 2009 are compared, cf. ECB (2009).[1]

[1] In the 2nd quarter of every year, the ECB conducts a money-market survey of the euro area.

DEVELOPMENT IN TOTAL LENDING TURNOVER, BROKEN DOWN BY PRODUCTS AND MATURITIES

Chart 1



Note: Average daily turnover in April of the individual years. The timing of Easter may influence the development pattern.

Source: Danmarks Nationalbank.

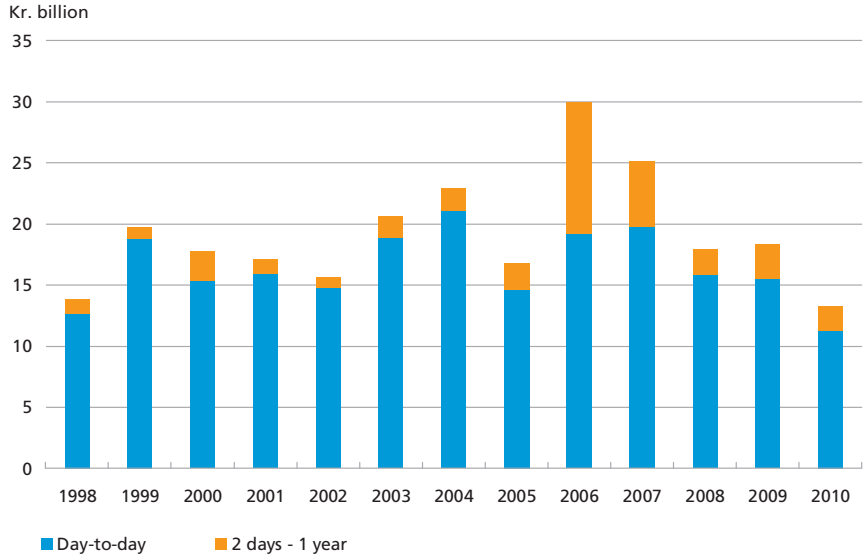
Size of the money market

Reported daily turnover of lending and borrowing in deposits, repos and FX swaps totalled kr. 148 billion in the survey, which is around 9 per cent of the annual gross domestic product, GDP.

Turnover in lending and borrowing differs, cf. Chart 3. The reason is that T/N reporting banks report total turnover with other banks, not

DEVELOPMENT IN TURNOVER OF DEPOSITS BROKEN DOWN BY MATURITIES

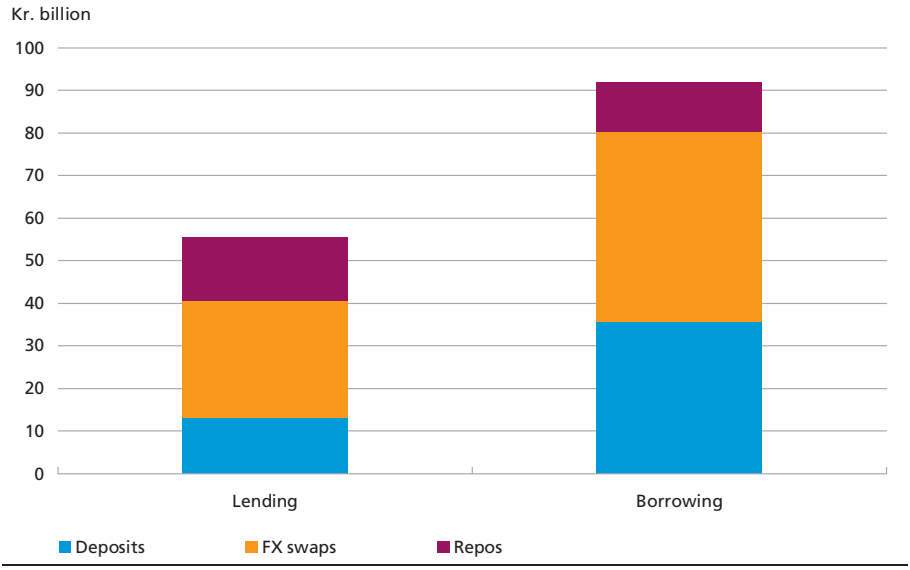
Chart 2



Note: Daily average turnover in April of each year. Turnover in total lending in 2008 and 2009 has been estimated on the basis of reporting by T/N reporting banks on the day-to-day market and reporting of total turnover from a group of T/N reporting banks.

Source: Danmarks Nationalbank.

TURNOVER IN LENDING AND BORROWING IN 2010 Chart 3



Note: Daily average turnover in April 2010.
Source: Danmarks Nationalbank.

only turnover from trade with other T/N reporting banks. The higher turnover in borrowing may reflect factors such as a large appetite for investing in kroner on the part of foreign banks that are not included in the group of T/N reporting banks.

On the basis of the breakdown of turnover by maturities, total outstanding lending in kroner is estimated at kr. 562 billion in April 2010, of which kr. 19 billion in deposits, kr. 193 billion in repos and kr. 351 billion in FX swaps.[1]

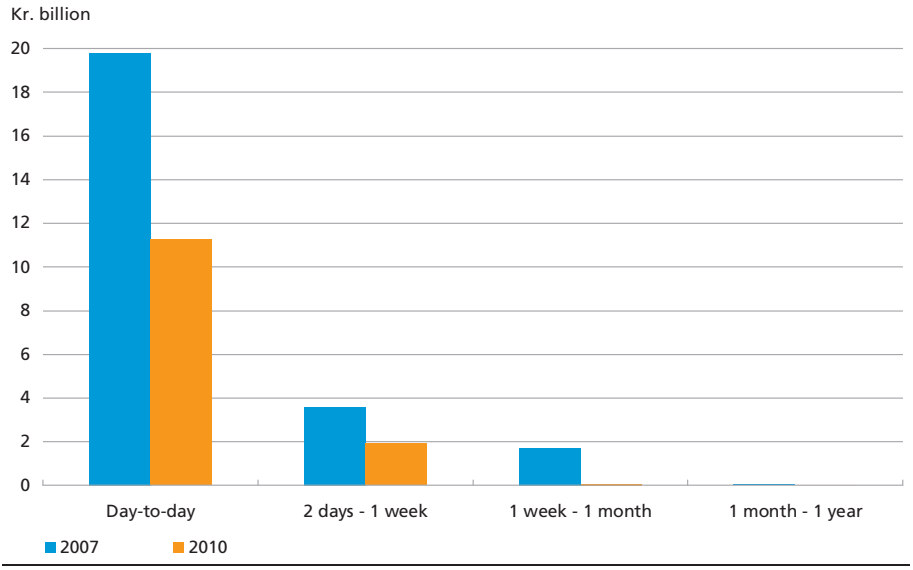
Turnover broken down by products

The predominant share of total turnover in lending and borrowing – around two thirds – is on a collateralised basis, cf. Chart 3. In the euro area this share is higher – around 79 per cent. FX swaps account for almost half of total turnover in cash products. The remainder is more or less equally distributed on deposits and repos on the lending side, while deposits are dominant on the borrowing side. The share of uncollateralised lending has declined relative to 2007 in favour of collateralised lending by way of repos.

[1] The outstanding volume is estimated by assuming that, on each trading day, transactions are concluded with a maturity distribution corresponding to the distribution of turnover in the money-market survey, and that the average maturity of the transactions corresponds to the mid-point in the individual maturity segments. For repos, where the maturity has only been broken down by day-to-day turnover and other turnover in 2010, it is assumed that the average maturity for other turnover is the same as in 2007.

TURNOVER IN DEPOSITS IN 2007 AND 2010 BROKEN DOWN BY MATURITIES

Chart 4



Note: Average daily lending turnover in April. In 2007, "2 days-1 week" is 2-6 days, "1 week-1 month" is 7 days-33 days and "1 month-1 year" is 34 days-1 year. In the 2010 money-market survey, "2 days-1 week" is 2-7 days, "1 week-1 month" is 8 days-31 days and "1 month-1 year" is 32 days-365 days.
Source: Danmarks Nationalbank.

Turnover broken down by maturities

Today, the major share of turnover takes place in the day-to-day market, which accounts for 60 per cent of turnover on the lending side, cf. Chart 1, right. For deposits, the share is 85 per cent. The day-to-day market's share of the total deposit market in 2010 was in line with its share before 2006, cf. Chart 2.

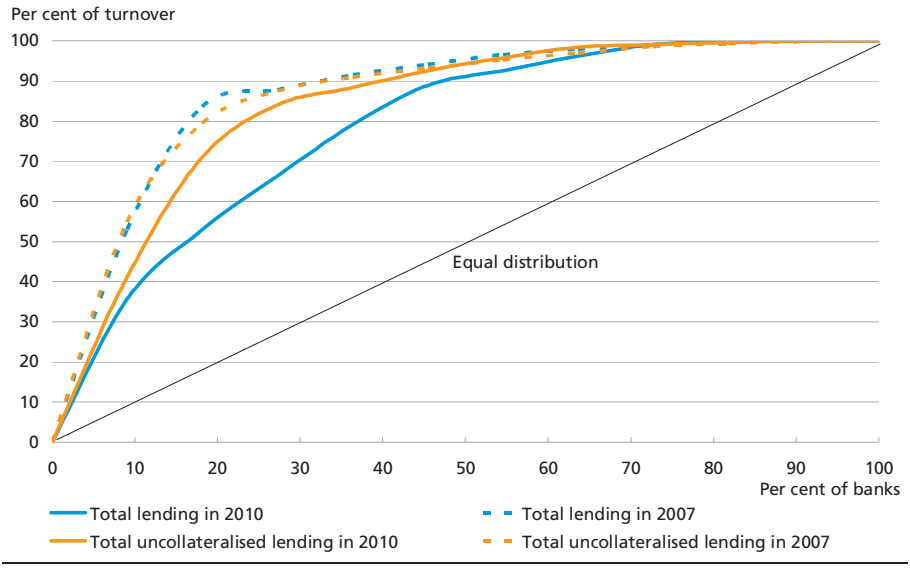
The market for uncollateralised lending at maturities exceeding 1 week is very small, and for maturities exceeding 1 month it is virtually non-existing, cf. Chart 4. In 2007 there was some turnover in the maturity segment from 1 week to 1 month, but practically no turnover in the longer maturities. In the euro area, a larger part of turnover in deposits is at maturities of more than 1 month.[1]

Concentration in the money market

Turnover in the money market is concentrated on few banks. One third of the institutions participating in the 2010 money-market survey accounted for 75 per cent of lending via deposits, repos and FX swaps,

[1] Comparison of turnover in April 2010 for Denmark and the 2nd quarter of 2009 for the euro area. Turnover with a maturity of more than 1 month accounts for around 2 per cent of total turnover in deposits in the euro area, but only 0.1 per cent in Denmark.

LORENZ CURVE OF CONCENTRATION IN MONEY-MARKET LENDING Chart 5



Note: Based on turnover in April 2007 and 2010.
Source: Danmarks Nationalbank.

cf. Chart 5. In 2007, the figure was around 90 per cent. Turnover in lending has thus become slightly less concentrated as regards the number of banks. The same trend is seen in the market for uncollateralised lending, where the concentration nevertheless remains high. A similar concentration is seen in the euro area's uncollateralised money market, cf. ECB (2009).

Turnover in short-term interest-rate swaps

As regards interest-rate derivatives, data has been collected for turnover in short-term interest-rate swaps.[1] Average daily turnover is around kr. 3 billion.

The relatively limited turnover should be viewed in light of Denmark's fixed-exchange rate policy, which means that the euro market has become widely used for managing interest-rate risk on short-term positions in kroner via interest-rate derivatives in euro. Short-term interest-rate swaps are typically traded under 3-month contracts.

[1] These interest-rate swaps are also known as CITAs (Copenhagen Interbank Tomorrow/Next Average). Besides short-term interest-rate swaps, FRAs (Forward Rate Agreements) are the most important type of interest-rate derivatives in the Danish money market. Turnover of FRAs and interest-rate options is illustrated in more detail in the international survey of the foreign-exchange and derivatives markets coordinated by the Bank for International Settlements, BIS. The survey is conducted triennially, most recently in April 2010.

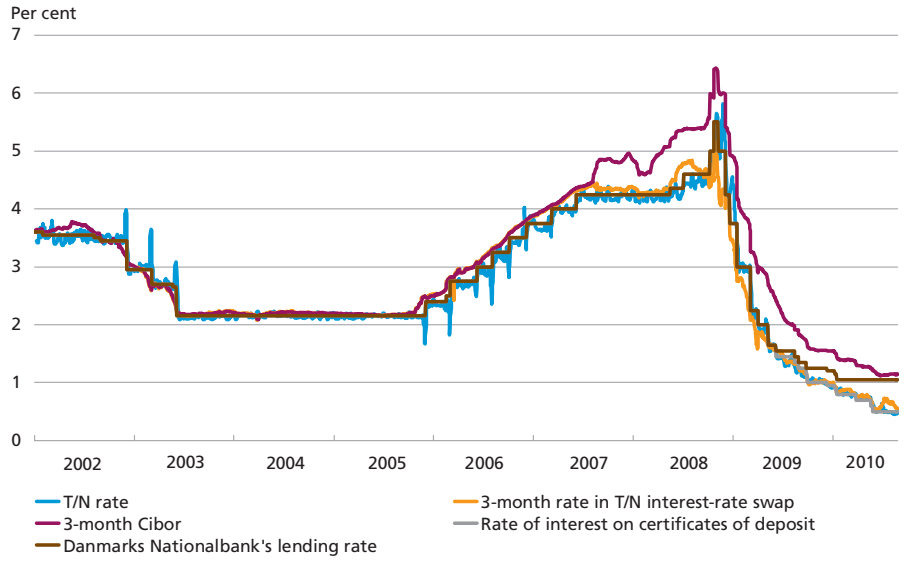
INTEREST-RATE DEVELOPMENTS IN MONEY-MARKET PRODUCTS

Interest-rate formation in the money market is the basis for interest rates in the rest of the financial system. A well-functioning money market supports the transmission of Danmarks Nationalbank's interest-rate changes to the rest of the financial system. Interest rates in the money market reflect current and expected monetary-policy interest rates, cf. Chart 6, but also depend on e.g. the specific product and maturity.

Two types of reference interest rates are fixed on a daily basis in the money market, namely the T/N rate and Cibor. The T/N rate is a reference interest rate for the uncollateralised day-to-day market. It is calculated as the turnover-weighted average of rates of interest actually traded. Cibor is determined on the basis of quoted, but not necessarily traded, interest rates from primary market participants in the money market for Danish kroner. Cibor is a reference interest rate for uncollateralised lending in kroner at maturities ranging from 1 week to 12 months and is similar to Libor (London Interbank Offered Rate), Euribor (Euro Interbank Offered Rate), Stibor (Stockholm Interbank Offered Rate), etc. The individual banks do not have any obligation to trade at the quoted rates. Cibor and the T/N rate are described in more detail in Box 2.

With the crisis that erupted in August 2007, Cibor has increased substantially relative to comparable collateralised interest rates for all

SELECTED MONEY-MARKET INTEREST RATES AND MONETARY-POLICY INTEREST RATES — Chart 6



Note: The T/N rate is a 5-day moving average.
Source: Danmarks Nationalbank and Reuters.

THE T/N RATE AND CIBOR Box 2

The *T/N (Tomorrow/Next) rate* is based on actual lending in kroner with a maturity of 1 day, starting on the following banking day. The group of T/N reporting banks comprises 11 banks that report the preceding day's actual turnover and average interest rate to Danmarks Nationalbank. Danmarks Nationalbank calculates the turnover-weighted average rate, which is published at noon every day.

Cibor (Copenhagen Interbank Offered Rate) is a reference for the rate of interest for uncollateralised lending in kroner to prime banks at maturities ranging from 1 week to 12 months. Cibor is calculated on the basis of interest rates quoted by eight domestic and foreign banks. The Cibor rates should reflect the reporting banks' perception of a level of interest rates that is as realistic as possible, but are not necessarily traded rates. The trading volume behind the fixing of Cibor is very limited, cf. the money-market survey. Cibor reporting banks are organised under the auspices of the Danish Bankers Association. Detailed rules for Cibor are published on the Danish Bankers Association's website. Every day, each Cibor reporting bank quotes 14 interest rates to Danmarks Nationalbank for lending at different maturities. Cibor for a given maturity is calculated as an average of the rates quoted, eliminating the highest and the lowest quote. Cibor is published daily at 11 am along with the rates quoted by the individual reporting banks.

Like Cibor, Euribor (Euro Interbank Offered Rate), which is used in the euro area, reflects the lending rate. For the USA and the UK, Libor (London Interbank Offered Rate) is applied, which does not reflect the lending rate, but the rate of interest at which the reporting bank can borrow in the interbank market.

[1] Cibor and T/N rates can be found at the websites of the Danish Bankers Association, www.finansraadet.dk, and Danmarks Nationalbank, www.nationalbanken.dk.

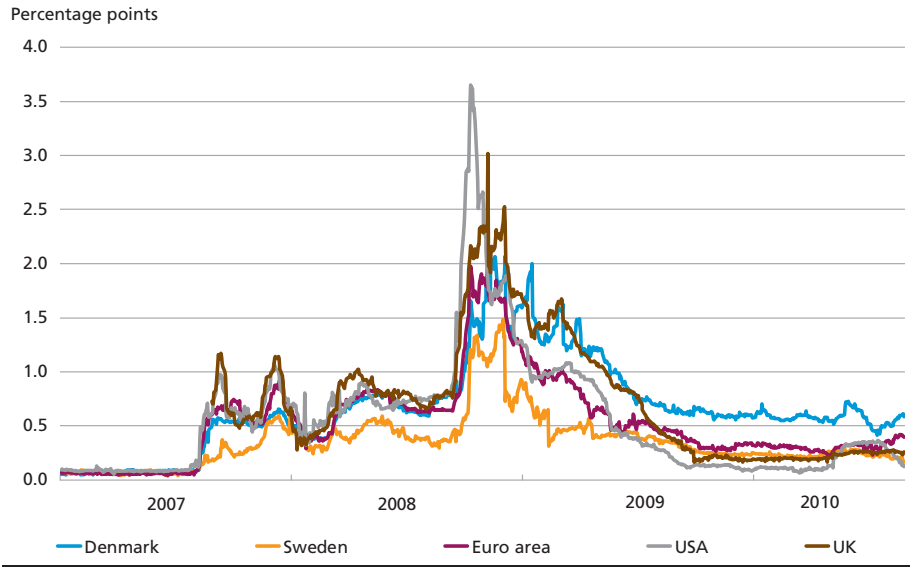
maturities. This is attributable to factors such as higher counterparty and liquidity risk, which meant that the banks demanded higher interest on their uncollateralised lending, cf. Ejerskov (2009) and Kjærgaard and Skjærbæk (2008). Since early 2009, the spread between uncollateralised and collateralised 3-month interest rates in Denmark has been higher than the corresponding spread in a number of other countries, cf. Chart 7.

The Cibor reporting banks have been more or less in agreement on the level of Cibor since mid-2009, cf. Chart 8, but this should also be viewed in light of the low absolute level of interest rates.

Cibor and the T/N rate form the basis for many loan agreements and financial contracts and thus have a major impact on the borrowing costs of households and the corporate sector. Many variable-rate loan agreements operate with Cibor plus a premium, depending on individual credit risk and negotiating power. For example, Cibor is the basis for variable-rate mortgage bonds totalling kr. 385 billion, corresponding to 17 per cent of the total outstanding volume of mortgage bonds.[1] Most of these are linked to 3- and 6-month Cibor.

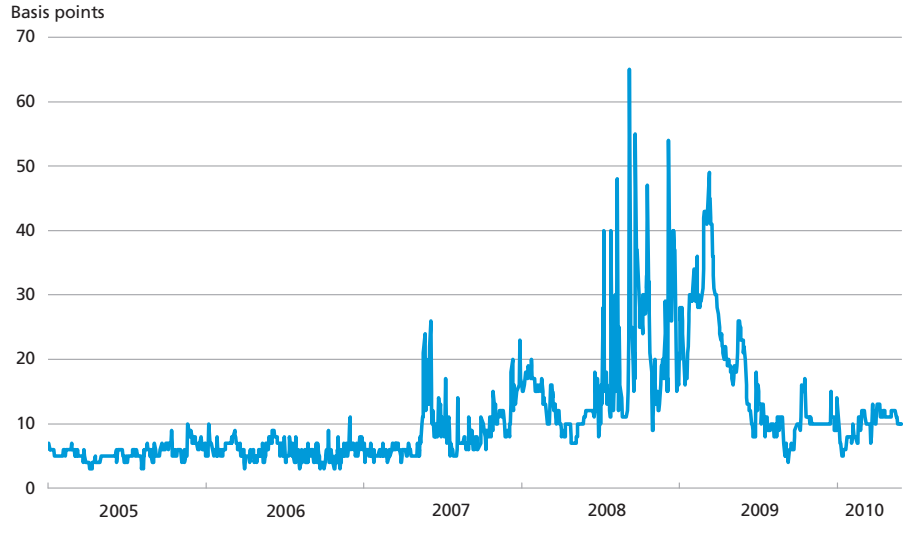
[1] Based on data from May 2010.

SPREAD BETWEEN UNCOLLATERALISED AND COLLATERALISED 3-MONTH INTEREST RATES IN SELECTED COUNTRIES — Chart 7



Note: Uncollateralised interest rates for Denmark, the euro area, the USA, the UK and Sweden are Cibor, Euribor, Libor, Libor and Stibor, respectively. Collateralised interest rates are the 3-month rate in an interest-rate swap with the day-to-day interest rate.
Source: Reuters.

SPREAD BETWEEN HIGHEST AND LOWEST QUOTES FOR 3-MONTH CIBOR — Chart 8



Source: Danmarks Nationalbank.

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Clearing via Central Counterparties in Denmark

Søren Korsgaard and Peter Restelli-Nielsen, Payment Systems

INTRODUCTION AND SUMMARY

Most European stock markets, including the Danish market, have seen the creation of central counterparties, CCPs, in recent years with a view to reducing participants' counterparty risks. A CCP is a unit that acts as intermediary between the buyer and the seller in a securities transaction. Put simply, it becomes buyer for the seller and seller for the buyer, guaranteeing the settlement of the transaction for both parties.

A major factor behind this development is the deregulation of the European infrastructure in securities trading, following the EU Markets in Financial Instruments Directive, MiFID, which entered into force in 2007. The removal of the traditional stock exchanges' exclusive right to stock trading and the launch of alternative trading platforms have increased the need for central counterparties. This was also the case in the Danish stock market, where Nasdaq OMX introduced CCP clearing in autumn 2009.

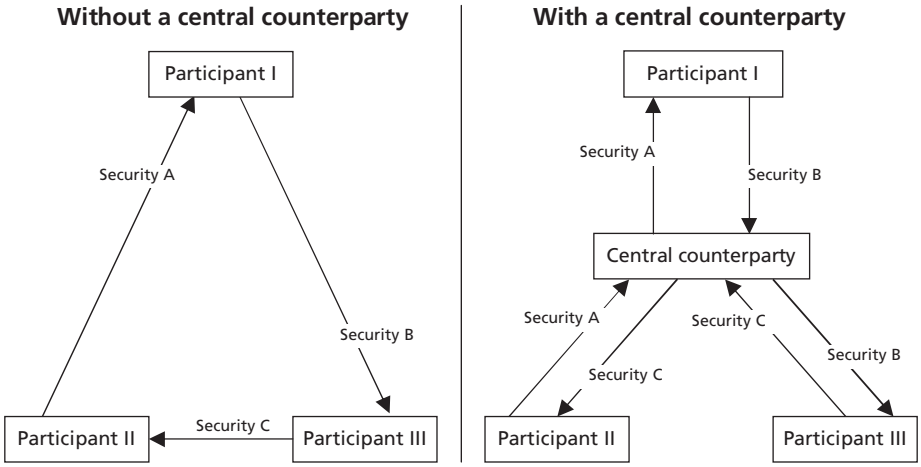
Moreover, interest in central counterparties has spread to other markets. The financial crisis demonstrated that the current procedures for derivatives trading were ripe for improvement and that CCP clearing is a potential solution. Against this background, it is the official aim of governments in the world's largest economies that all derivatives trading is cleared via central counterparties by 2012.

This is the first of two articles about central counterparties in this Monetary Review. It describes the functions and economic role of central counterparties and outlines the introduction of CCP clearing in the Danish stock market. The second article focuses on the derivatives markets, explaining how CCP clearing in these markets provides scope for reducing risks for the financial system.

FUNCTIONS AND ROLES OF CENTRAL COUNTERPARTIES

Securities transactions are either carried out via trading platforms operated by stock exchanges etc. or directly between counterparties, known

NOVATION WHEN A CCP ENTERS INTO SECURITIES TRANSACTIONS Chart 1



Note: The arrows indicate sale of securities. The chart illustrates a CCP's entry into three market participants' securities trades. By its entry into the original trades, illustrated in the first part of the chart, the market participants' purchase agreements are cancelled and are subsequently replaced by new purchase agreements – by way of novation – between the CCP and the market participants, cf. the second part of the chart.

as over-the-counter or OTC trades. Both approaches involve the risk of generating a loss in the period between conclusion of the transaction and final settlement if there is no guarantee that the counterparty will meet its obligations. This risk is called settlement or counterparty risk. Consequently, if a seller defaults, there is a risk that the buyer can only repurchase the securities at a higher price.

A central counterparty enters as counterparty of both the buyer and the seller in a trade. This process, illustrated in Chart 1, is called *novation*. The central counterparty guarantees the settlement towards both parties. Instead of assuming a settlement risk for each of these parties, a trader will only have a risk on the central counterparty, which is subject to a number of requirements to safeguard settlement.

A common feature of CCPs is the netting effect, reducing the participants' exposure to each other by netting opposite claims. While a CCP carries out bilateral netting with each participant in a system, the total effect is multilateral netting. A participant's net position vis-à-vis a CCP is thus an expression of the participant's total net position vis-à-vis the other participants.

The introduction of a CCP in a market will thus reduce the participants' gross liabilities, so that overall exposure in the market is curbed.[1] The reason is that netting in CCP clearing usually takes place on conclu-

[1] Concepts such as clearing and netting are described in detail in Danmarks Nationalbank (2005).

sion of the transactions, unlike netting in a central securities depository, which is not effected until the time of settlement.

In so far as a CCP applies efficient risk management, the market participants' counterparty risk will usually be practically eliminated. However, this is only the case if a CCP can handle the concentrated risks in CCP clearing. For this reason, CCPs are considered to be systemically important. They are monitored closely by financial supervisory authorities and central banks, and specific international standards apply to CCPs, cf. Box 1. These include recommendations on risk management.

Risk management in central counterparties

A central counterparty applies a number of risk management techniques and can e.g. demand that the participants are subject to financial supervision, meet minimum capital requirements, hold a certain credit rating, etc.

The most common way for a CCP to handle its counterparty risks is via margin requirements of the participants, who thus provide collateral to the CCP. The collateral is to hedge the counterparty risk under normal market conditions, allowing the CCP to maintain uninterrupted operations in case a participant defaults. The counterparty risk can be determined by the CCP compiling a daily total of all unsettled trades at the day's price. The result is the CCP's potential loss in case of the participants' default. This is hedged via liquid collateral, including cash deposits.

In addition to equity capital, the capital base of a CCP may comprise deposits in a clearing fund, guarantees from the participants, loss sharing agreements, insurance schemes, etc.

If a participant defaults on its obligations, the order in which the loss is covered is determined by a *default waterfall*. If a defaulting participant's own collateral – the margins – does not suffice, the loss will usually be covered by a clearing fund. The CCP will only have to resort to its capital if the clearing fund is inadequate.

Pros and cons of central counterparties

If a CCP has efficient risk management mechanisms, clearing through a CCP offers several advantages[1]. The advantages to the participants are obvious. They can save liquidity and need not worry about settlement risk. To the market as a whole, multilateral netting also means that total exposure – and hence risk – is reduced.

[1] Cechetti et al. (2010) includes a more detailed account of the advantages of CCP clearing.

INTERNATIONAL STANDARDS AND STRESS TESTS Box 1

In 2004, CPSS-IOSCO, which is a joint task force between central banks and supervisory authorities with a view to e.g. developing global standards for securities settlement systems, published a set of separate standards for CCPs. The standards comprise 15 recommendations, addressing the various risks characterising CCP operations and outlining how the structure of a CCP can take these into account.

A CCP must thus be able to withstand the collapse of the largest counterparty under *extreme but plausible* circumstances. For this reason, among others, the CCP must perform regular stress tests, and the supervisory authorities must decide on this. Table 1 illustrates a simplified example of such a stress test. It also shows how a *default waterfall* would work in practice.

In the example, the CCP has three clearing members: CM1, CM2 and CM3. If a CM defaults, the CCP must replace the member's securities positions and therefore risks having to reacquire the securities at a higher price. The CCP is assumed to have open positions with CM1, CM2 and CM3 of 1,400, 700 and 400, respectively. For each CM, the stress scenario is that the CM defaults, and the CCP subsequently takes over the positions, the value of which immediately declines by 25 per cent. The margins are assumed to be 12 per cent of the open positions, while each member contributes to an insurance pool or a clearing fund by 5 per cent of their open positions.

If the clearing member with the smallest position towards the CCP, CM3, defaults, the CCP's loss upfront will be 100. Part of this loss – 48 – is covered by the CM's own margin payment and another potion – 20 – by the CM's own contribution to the clearing fund. The remaining loss of 32 can be covered by the remaining clearing fund, and in this case, the CCP does not suffer a loss. If the clearing member with the largest position, CM1, defaults, margins and a clearing fund will not be sufficient, though, and the CCP will suffer a loss of 57.

STRESS TEST – AN EXAMPLE Table 1

	CM1	CM2	CM3
CCP's position towards CM	1,400	700	400
Loss (25 per cent value decline)	350	175	100
Margins	168	84	48
Loss after margins	*182*	*91*	*52*
Contribution to insurance pool	70	35	20
Loss after CM's insurance pool contribution	*112*	*56*	*32*
Cover from remaining insurance pool	55	56	32
Loss for cover of CCP's equity capital	*57*	*0*	*0*

[1] BIS/IOSCO (2004).

Another potential advantage is greater transparency. Collecting trades in a single unit provides an overview of each participant's net exposure. This is an advantage in the derivatives market in particular. As described in the following article, this could contribute to improving the pricing of risk.

Given the advantages, it would be natural to consider why central counterparties have emerged in some markets (e.g. options and futures), but not in others (e.g. other derivative instruments).

There are several reasons. The participants' advantages of central counterparties are most pronounced in markets with a significant settlement risk. This is the case for futures due to the time passing between the conclusion of a trade and final settlement.

The benefits should be weighed against the costs. There are direct costs related to the establishment and operation of a central counterparty. For the participants in the clearing, the required collateral could also imply costs. Providing collateral requires capital that could have been used for other purposes.

Moreover, a central counterparty is most efficient if the products cleared are liquid. Its ability to require margins, reflecting the risks associated with the cleared products, depends on both liquid prices and an insight into the product. Therefore, central counterparties are typically introduced in markets for standardised and relatively simple products.

BACKGROUND FOR INTRODUCING CCP CLEARING IN DENMARK

In autumn 2009, European Multilateral Clearing Facility, EMCF, which is a Dutch CCP, embarked on clearing of the most actively traded Danish stocks. Until then, Danish experience with CCP clearing had been limited to the company Futop, which acted as a central counterparty in the Danish futures and options markets for a number of years. In 2005, Futop relocated to Sweden after the merger of the Copenhagen Stock Exchange and the OMX Group.

Before the arrival of EMCF in the Danish market, the question of pros and cons of CCP clearing in Denmark was thoroughly analysed in several contexts, cf. Nielsen and Restelli-Nielsen (2007). The prevalent conclusion was that the advantages hardly compensated for the costs of establishing a CCP. The reason was that multilateral netting was already taking place in Danish securities settlement, both on the securities and the payments side. Also, the settlement risk seemed to be limited due to the relatively modest turnover.

However, the implementation of MiFID radically changed the framework conditions for securities trading in Europe. In practice, the stage was set for trading Danish securities on foreign trading platforms. This had not been possible previously when trading took place on Nasdaq OMX. About 10 per cent of trade in Danish stocks is now effected on the trading platform Chi-X, which is a Multilateral Trading Facility, MTF, and one of the largest market places in Europe. Chi-X uses EMCF as CCP.

Against this background, and because CCP clearing is practised in the European stock markets, Nasdaq OMX announced in October 2008 that it would introduce mandatory CCP clearing in the Nordic stock markets with EMCF as CCP.

Since October 2009, EMCF has acted as CCP in all Danish stock trades in Nasdaq OMX's Large Cap segment, which comprises the most actively traded stocks. As EMCF is CCP for both Nasdaq OMX and Chi-X, market participants' trades on both platforms can be included in the same clearing.

IMPLEMENTATION OF CCP CLEARING

The introduction of CCP clearing at short notice in the Danish market presented some challenges for the parties involved: the market participants, VP Securities, Nasdaq OMX and the regulatory authorities, including Danmarks Nationalbank. The implementation required decisions on various legal and business-related issues, including the risk approach. Finally, the project entailed a comprehensive restructuring of the participants' IT systems.

Changes in reporting of trades to VP Securities

The introduction of CCP clearing led to changes in the market participants' reporting of trades to VP. Previously, they had to report every single trade for settlement in VP. Today, they report total trading in each stock after clearing via the CCP. This means that they have to add up their trades in each stock and check the result against the CCP clearing before reporting to VP Securities.

Introduction of partial settlement in VP

To support the CCP clearing, VP has introduced *partial settlement*. This means that in the second last daily settlement block for Danish kroner, those of the participants' CCP-cleared trades that can be settled are run automatically. The market participants can subsequently distribute the securities for retail clients in the last settlement block. This procedure ensures that a CCP that does not wish to fund securities holdings between settlement days can have them settled in VP.

Clearing fund to cover losses

When CCP clearing was introduced in the Nordic markets, the market participants considered whether a new clearing fund in the form of a separate pool for covering losses among Nordic participants should be established. However, this would mean that Nordic trades should be

cleared separately by EMCF, which would undermine the netting efficiency across various trading platforms and thus lead to higher margin requirements for the participants. Moreover, e.g. a Danish participant who also wanted to trade Danish stocks with Chi-X would also have to contribute to EMCF's other clearing fund. It was therefore decided not to establish a separate Nordic clearing fund.

EMCF's cash settlement in VP Securities

Another issue that was analysed thoroughly in the implementation phase was EMCF's cash settlement of CCP-cleared transactions in VP. Settlement can be effected via a custodian bank or via accounts at Danmarks Nationalbank as is the case for other VP participants. International standards recommend settlement via accounts at central banks, known as central-bank money, but for a CCP that participates on cross-border basis, it could be easier to use a custodian bank. EMCF decided to settle in central-bank money via Danmarks Nationalbank and after similar considerations on the securities side, VP was chosen as the account controller.

Cooperation between authorities

Nordic supervisory authorities and central banks have initiated cooperation with the Dutch authorities regarding supervision and oversight of EMCF and its operations in the Nordic markets. An important goal is to ensure that international standards governing CCPs are met, cf. Box 1. The cooperation was formalised via a Memorandum of Understanding, MoU, according to which the Dutch authorities are the *lead overseer.*

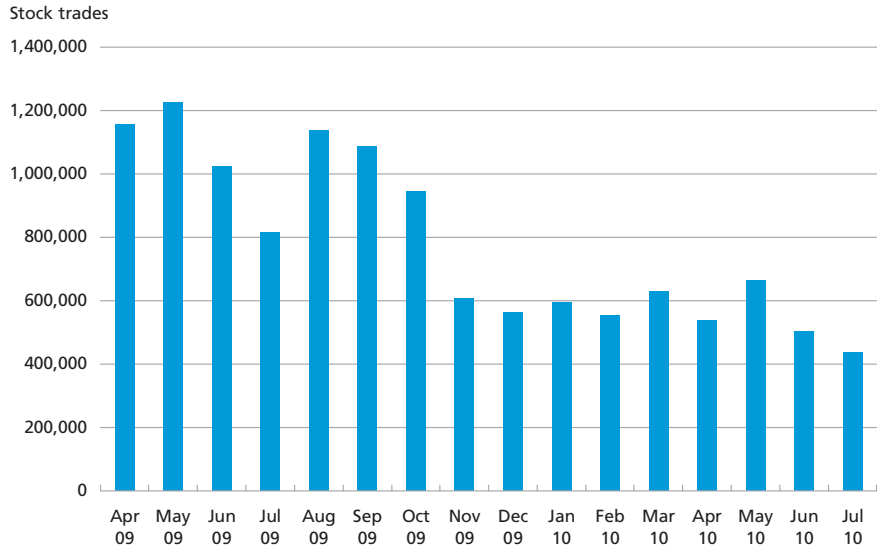
EVALUATION OF THE INTRODUCTION OF CCP CLEARING

The transition to CCP clearing of the most actively traded stocks on Nasdaq OMX proceeded without major problems despite the relatively short period from Nasdaq OMX's announcement to the establishment of CCP clearing in Denmark, Norway and Sweden.

The effect of EMCF taking over clearing of the most actively traded Danish stocks was that the number of trades cleared via VP fell sharply, cf. Chart 2.

Moreover, based on the subsequent evaluation, the conclusion is that CCP clearing in operational terms is functioning as intended. Settlement rates have not been satisfactory, though. The rate of timely settlements in VP on the agreed value date was about 96 per cent for stock settlement before the transition to CCP clearing. That is on the low side of the European benchmark.

NUMBER OF STOCK TRADES CLEARED IN VP SECURITIES Chart 2



Source: VP Securities.

After the transition to CCP clearing, the settlement rate in VP has been on a gentle uptrend. However, for trades cleared in EMCF, the average settlement rate was only 94 per cent from January to July 2010 compared with 95.7 per cent in July. A similar decline in settlement rates is seen in the other Nordic countries. The Nordic markets have therefore initiated investigations to determine the reasons. In the Danish market, this is carried out by an ad hoc working group, in which Danmarks Nationalbank participates. The results will be used in discussions with the Dutch authorities according to the MoU mentioned above.

COMPETITION, INTEROPERABILITY AND NEW INITIATIVES

Clearing via the same CCP offers obvious advantages for market participants. Despite the competition for a market, a natural monopoly may therefore often arise.

It is expensive for market participants to hold several CCP memberships, and netting becomes inefficient. If a market participant buys securities and sells them on immediately, and the purchase and sale are effected via trading platforms with different CCPs, the transactions cannot be netted. This means that the participant, even without any net exposure, may be asked to post margins on both transactions.

The solution is *interoperability*, implying that CCPs should be able to "communicate" across systems. Ideally, market participants should be

able to use their preferred CCP irrespective of where and with whom they enter into transactions.

For many years, interoperability has been an official goal for Europe's many CCPs. In practice, however, it has often posed a challenge, and there are currently only few examples of well-functioning agreements between CCPs. Among the reasons are the difficulties of handling different margin systems across CCPs. Furthermore, there is a risk of knock-on effects with the default of one CCP leading to the collapse of another CCP.

If the interoperability problems are solved, EMCF is likely to be faced with competition from EuroCCP and SIX x-clear in Denmark in 2011.

Other changes are expected in the financial infrastructure. In September 2010, Nasdaq OMX launches a new project in Sweden: repo clearing. This idea has previously been aired in the Danish market, cf. Nielsen and Restelli-Nielsen (2007).

A central counterparty for repos appears attractive to market participants in the Danish repo market, where the daily turnover is estimated at about kr. 60 billion. The reason is that CCP netting will reduce the significant and longer positions in the repo market[1]. At the same time, the market will become more efficient, as the CCP will take over the participants' individual position management and bilateral margin regulation. Today, the participants state the value of the repo transactions on a daily basis at the current price and receive or provide collateral to each other. Finally, the participants achieve capital and accounting benefits. By calculating risk-weighted assets according to the current Basel rules, the counterparty risk on a CCP is zero-weighted in connection with repo clearing, while this risk would otherwise be subject to capital adequacy requirements due to the long positions.

[1] Repo is short for repurchase agreement, covering buy and sell-back agreements as well as sell and buy-back transactions based on securities. Repos are e.g. used as collateral for money market loans and in connection with securities lending.

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Central Counterparties in the Derivatives Markets

Søren Korsgaard, Payment Systems

INTRODUCTION AND SUMMARY

The article "Clearing via Central Counterparties in Denmark" in this Monetary Review outlines how central counterparties, CCPs, work and describes the implementation of this type of clearing in the Danish stock market. This article focuses on the markets for derivatives, where central counterparties can reduce systemic risks, meaning risks to the financial system overall.

The interest in CCP clearing of derivatives should be viewed in light of the rapid growth in trading of these products up to the financial crisis. One particular type of derivative, credit default swaps, CDSs, attracted much attention. A CDS can function as insurance against credit loss for a buyer and can thereby be useful in risk management. However, CDSs are often seen as one of the culprits behind the financial crisis.

One of the conclusions in the wake of the financial crisis is that more appropriate clearing of derivatives could contribute to preventing similar crises. The G20 countries have therefore agreed that all standardised OTC derivative trades – outside authorised market places – should be cleared via a central counterparty by 2012.

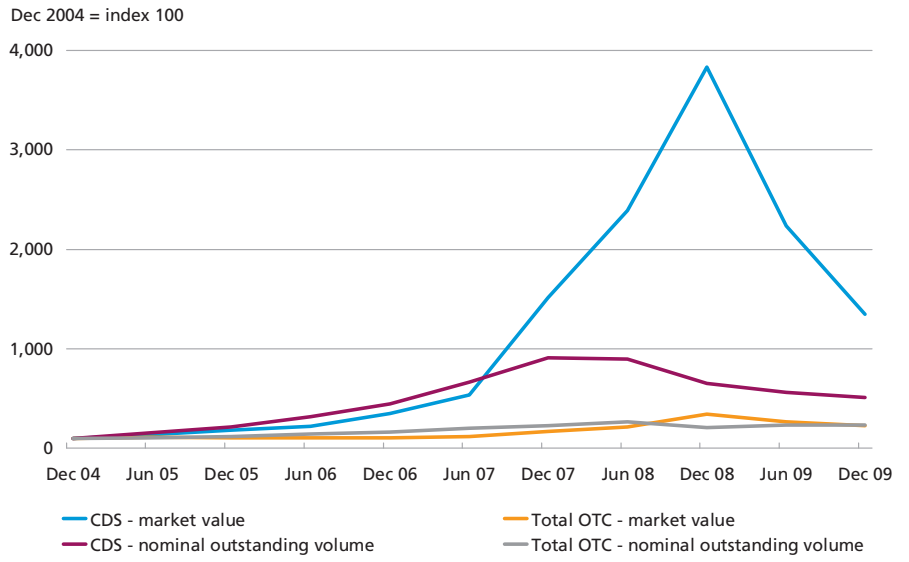
The article first describes how growth in OTC derivatives trading has increased systemic risks. This is followed by an explanation of how clearing of derivatives via central counterparties can reduce these risks by way of netting. Finally, the upcoming EU regulation in the area, intended to provide the framework conditions for CCP clearing in the EU, is outlined.

The conclusion is that CCPs reduce systemic risks only if certain conditions are met. Overall risks of securities trading depend, among other things, on the CCPs' scope for netting exposures. Another key issue is that CCPs have adequate capital resources.

OTC DERIVATIVES AND SYSTEMIC RISK

From 2004 to 2008, the market value of outstanding OTC derivatives more than trebled, cf. Chart 1. Growth in the value of CDS contracts

GROWTH IN DERIVATIVES MARKETS Chart 1



Source: Bank for International Settlements.
Note: The nominal value of CDSs is a measure of the total volume of credit insurance taken out, while the market value is a measure of the price of the insurance. The increase in market value is therefore attributable to a higher price of insurance, in part due to higher credit risks during the financial turmoil.

traded OTC was even higher. The market value of CDS contracts was thus more than 30 times higher towards end-2008 than four years earlier. In June 2008, CDSs accounted for about one sixth of the derivatives market, cf. Chart 2.

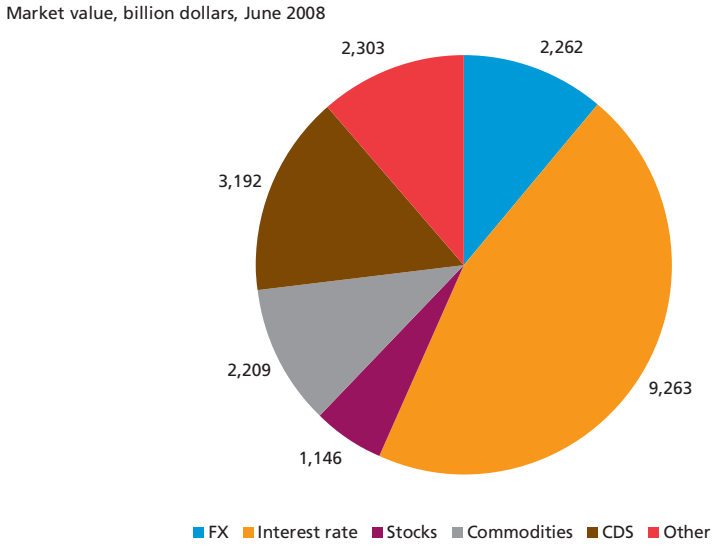
As mentioned, a CDS can be viewed as an insurance product for investors. A CDS buyer pays regular premiums to the seller, who in turn pays the nominal value of the CDS contract if a credit event occurs. This could be that the bond issuer, against which the CDS provides insurance, fails to pay interest or instalments.[1]

The financial crisis has led to stronger focus on the risks associated with CDSs. Most recently, it has been argued that CDSs have spread panic in government debt markets. The argument is that the CDS price may affect the price of the debt to be protected by CDSs. It could be problematic if the CDS price reflects other factors than the risk of default, e.g. illiquidity in the CDS market.

However, the greatest risk associated with CDSs, as well as many other derivatives, is the counterparty risk; the risk of suffering a loss because a counterparty defaults on its obligations after the conclusion of a trans

[1] See e.g. Jensen (2008) for a more detailed description of CDSs.

BREAKDOWN OF DERIVATIVES MARKET BY TYPE OF DERIVATIVE Chart 2



Source: Bank for International Settlements.

action. In case of a large counterparty with many loss-making positions, the losses may cause problems for other participants. Thus, the counterparty risk may ultimately threaten the entire financial system and pose a systemic risk, cf. Cont (2010).

In the autumn of 2008, the risk of such a process was illustrated by the US insurance company AIG, which, in the period up to the financial crisis, had built up exposure of almost 400 billion dollars by selling CDSs. When the crisis erupted, AIG's counterparties called for collateral, and AIG was unable to meet these demands. To avoid the spreading of AIG's problems to the financial system, the US authorities had to bail out the company.

CENTRAL COUNTERPARTIES AS A SOLUTION

The AIG event shows how traditional OTC derivatives trading with bilateral clearing by the participants can lead to systemic risks. One alternative would be to have a central counterparty in charge of the clearing, implying that the CCP acts as buyer for all sellers and seller for all buyers. Under certain conditions, such a market structure can contribute to reducing systemic risk.

Table 1 summarises some important differences between alternative market structures, including traditional OTC trading and OTC trading with CCP clearing. Three advantages of OTC trading with CCP clearing

CHARACTERISTICS OF VARIOUS MARKET STRUCTURES Table 1

Characteristics/ Form of transaction	Traditional OTC Bilateral	OTC with CCP Bilateral	Organised market Centralised
Asset types	Potentially all	Standardised and liquid	
Clearing	Bilateral	Central	
Collateral	Individual agreements	Established margin rules	
Risk buffer	Equity	Margins, insurance pool, CCP's equity, guarantees etc.	
Netting	Bilateral	Multilateral	
Transparency	Limited	Aggregated information about transactions; but not always available	
Participants	All	Typically major brokers	

Note: Adjusted relative to the source.
Source: Cechetti et al. (2009).

relative to traditional OTC trading are often emphasised: better risk management, increased netting efficiency and greater transparency[1]. These three factors support financial stability.

Clearing via a central counterparty may simplify risk management by reducing and concentrating the counterparty risk. The reason is the novation feature of CCP clearing, which replaces the risk on several counterparties by a risk on the CCP alone. Moreover, CCPs require collateral from their counterparties in the form of margins on an ongoing basis when the value of the counterparties' positions declines. In a market without a CCP, there is not necessarily any requirements for collateralisation. AIG faced problems because the company was suddenly required to provide collateral of several billion dollars by their counterparties after the company was downgraded.

The enhanced netting efficiency of CCP clearing is a natural consequence of concentrating clearing in one place, also known as multilateral netting. Netting means that each CCP participant's opposite claims are offset. Thus, the individual participant's – and hence overall – exposure and risk in a given market are reduced. Furthermore, high netting efficiency limits the need for, and thus the costs of, collateral in relation to derivatives trades.

The concentration of trades in a single unit is also the reason for the greater transparency of CCP clearing. In traditional OTC trading, the participants only know their bilateral positions and therefore have an incomplete picture of the counterparty risk, cf. Acharya and Bisin (2010). The central counterparty has an overview of all participants' positions, which can be reflected in e.g. margin requirements. A total overview of

[1] See also Thuesen (2004) for a general discussion of capital market transparency.

TRADE REPOSITORIES Box 1

Concurrently with the increased use of central counterparties, trade repositories also attract keen interest. A trade repository is a record, collecting data about the transaction within a certain asset class. Even with CCP clearing, trade repositories can be useful as not all transactions can be cleared via central counterparties.

The US central securities depository, DTCC, has established a trade record for credit default swaps. All major brokers report their trades regularly, which gives DTCC a relatively good overview of global CDS trading.

Part of DTCC's record is publicly accessible. This includes information about the institutions most frequently requiring insurance. As at 9 July 2010, the most popular reference entity – the entity with most CDS contracts written on it – was the Italian government with written CDS contracts at a nominal value of 231 billion dollars. The equivalent amount for the Danish government was 11 billion dollars.

However, the main purpose of the trade records is to provide authorities with special access to the relevant data. Thus, financial supervisory authorities can see the banks' positions within a given asset class in these records.

the participants' positions can be obtained by establishing trade repositories, cf. Box 1.

Problems with CCP clearing

In practice, CCP clearing does not always contribute to enhancing netting efficiency. The reason is that the CCP market is fragmented across national borders and asset classes, which limits the scope for netting, cf. Duffie and Zhu (2010). Thus, a bank may have two opposite exposures vis-à-vis another bank in two different derivatives markets. If the banks clear bilaterally, the exposures can be offset, but if a CCP is introduced in just one of the markets, this is not possible.[1]

Therefore, bilateral netting may be more efficient for brokers trading across asset classes. It appears from Goldman Sachs' most recent annual report that the bank has booked derivatives worth 706 billion dollars on the liabilities side. After netting, however, the amount is only 56 billion dollars. This corresponds to netting efficiency of more than 90 per cent.

Viewed in isolation, global CCP clearing across asset classes will be the most efficient solution from a netting perspective. Note that as long as there are derivatives that are not cleared via a central counterparty, perhaps because they are not sufficiently liquid, it is theoretically possible that CCP clearing erodes netting efficiency because it excludes bilateral netting between the participants.

Moreover, CCP clearing rarely takes place across asset classes with different risks. The main reason is that the participants are against

[1] See e.g. Pirrong (2009) for a more detailed description of the economic theory relating to CCPs.

having their traded products included in clearing with more risky products as they are ultimately liable for any losses incurred by the CCP.

From the authorities' point of view, it may also be inappropriate to force central counterparties to clear particularly risky products, cf. Hull (2010). This increases the risk that the central counterparty cannot meet its obligations with potentially serious systemic consequences. The problem is relevant for many CDSs which are characterised by substantial and sudden price fluctuations. This makes it difficult to make appropriate margin calls.

Finally, increased transition to CCP clearing from traditional OTC derivatives trading will imply significant collateral demands on the participants, and collateral is a scarce resource – particularly in a crisis. Thus, calculations by Singh (2010) show that market participants globally have to provide about 200 billion dollars of additional collateral if two thirds of all OTC derivatives are to be cleared via central counterparties in future.

At the same time, the potential problems of CCP clearing point to potential solutions. For instance, CCPs should only clear relatively liquid products, and it is essential that CCPs have a strong capital buffer. These are among the conditions that will be regulated in future, as described below.

REGULATION OF CENTRAL COUNTERPARTIES

As an offshoot of the financial crisis, several forums are currently discussing initiatives to make the financial system more robust. Regarding derivatives, the September 2010 G20 meeting in Pittsburgh agreed that all standardised OTC derivatives should be cleared via a central counterparty by end-2012.

This has subsequently been underpinned by various initiatives from regulators and market participants alike. In July 2010, the US Congress finalised a major reform, the Dodd-Frank Act, which, among other things, regulates the clearing of swaps, and some CDS contracts have since 2009 been cleared via central counterparties.

In a Danish context, the most interesting initiative is the upcoming European Market Infrastructure Regulation, EMIR, from the EU. A proposal is expected during the autumn, but the European Commission has already outlined its considerations in a consultation paper from June 2010.

Elements of EMIR

According to the European Commission, it is important that weak risk management does not become a competition parameter for CCPs. The

REQUIREMENTS FOR CENTRAL COUNTERPARTIES Box 2

In its consultation paper on the future CCP regulation, the European Commission suggests a number of requirements for central counterparties. A CCP should, among other things:

- design its pay policy so that it does not create incentives to weak risk management,
- set up a risk committee, which is independent of the management,
- maintain clear distinction between its risk management function and other functions,
- publish important information about risk management – this also applies to the preconditions used in the CCP's risk management models and stress tests,
- publish the prices used for margin calculations and the cleared transaction volume of each asset class,
- give other CCPs access to interoperability[1] with another CCP unless for significant risk reasons.

regulation will reflect this in its demands for governance and openness, cf. Box 2, as well as a number of more specific requirements regarding risk management by the CCP, including its capital.

The consultation paper initially discusses the future extent of clearing through central counterparties. It is emphasised that significantly more products are to be cleared via central counterparties in future with a view to avoiding situations of default by a market participant having systemic consequences. Moreover, it is underlined that clearing of particularly complex products will not be required as these will increase the risk that the CCP faces problems.

The Commission specifically proposes that market participants and the coming European supervisory authority, European Securities and Markets Authority, ESMA, will jointly determine the assets to be cleared via CCPs. ESMA must basically approve applications for clearing of asset classes, but will also be able to actively require such clearing.

The consultation paper does not mention a future supervisory authority for CCPs. Such supervision will, among other things, imply approval of CCP outsourcing agreement and its ownership structure. The authority will also have to be involved in CCP risk management and will, for instance, have to validate the models and parameters used by CCPs in its stress tests.

Demands for robust risk management

EMIR primarily focuses on risk management. As a minimum, a CCP must use all elements included in a default waterfall[2]. A CCP must thus hold

1 Interoperability is described in "Clearing via Central Counterparties in Denmark", p. 129.
2 A CCP's default waterfall is also discussed in the article on p. 129.

substantial equity, require margins on an intraday basis and set up an insurance pool and make other arrangements, such as guarantees.

If a counterparty defaults, the margins must cover the losses in 99 out of 100 days. Furthermore, a central counterparty must be able to withstand the simultaneous default of its three biggest counterparties in terms of exposure. This is a considerable tightening of existing international standards, according to which a CCP must only be able to withstand the default of its largest counterparty.

The collateral – the margins – required by the CCP must be very liquid securities, subject to a haircut. This is among the most controversial elements of EMIR, as a number of institutions do not usually have to pay margins on OTC derivative trades. This typically applies to governments, central banks and organisations with the highest credit ratings. Their costs of securities trading will therefore rise.

Effects of EMIR

EMIR's requirements for central counterparties' risk management will lead to more secure clearing through central counterparties. Today, relatively few OTC derivative transactions are cleared in this way. If the goal of the G20 countries is met, most OTC derivative trades will be cleared through CCPs in a few years. CCPs will thus become core building blocks of the financial infrastructure, and it is therefore paramount that the CCPs themselves are safe.

However, better security comes at a price. Derivative trading will probably become more expensive. Central counterparties need more capital, and clearing members will face higher margin costs and contributions to CCP insurance pools.

Sector consolidation is also a possibility. With EMIR a type of European passport may be introduced for central counterparties. Today, central counterparties have different forms of legal status across EU member states, which constitutes a barrier to consolidation.

The new capital and governance requirements will also present challenges for small central counterparties, which also points to increased sector consolidation.

Finally, transparency will be improved. This is also among the goals of the G20 countries, and the European Commission's consultative document suggests that all future derivative trades should be reported to trade repositories.

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International Stress Tests

INTRODUCTION AND SUMMARY

On 23 July 2010, the Committee of European Banking Supervisors, CEBS, published the results of a stress test of the European banking sector. The test comprised the largest banks in the EU member states.

The purpose of the EU stress test was to assess the resilience of the European financial system against negative shocks to the economy and mitigate financial market uncertainties as to the state of the European banks. Therefore, the total report with aggregated results has been supplemented by the publication by national authorities of bank-specific results and exposures to European sovereign debt.

A total of 91 banks from 20 countries participated in the stress test. Three Danish banks, Danske Bank, Jyske Bank and Sydbank, were among them. At least 50 per cent of total assets in the individual member states' banking systems was to be covered by the stress test. The 91 banks represent 65 per cent of total assets in European banks.

Two scenarios were presented for the economic development, a benchmark scenario of continued recovery and an adverse economic scenario, under which the economy falls back into recession. The scenarios run until end-2011. Focus is primarily on credit and market risks, including risks associated with exposure to European sovereign debt.

Overall, the three Danish banks rank in the top 25 per cent in terms of tier 1 capital ratio, which is the central measure of banks' robustness in the stress test. Seven of the 91 banks failed to meet the 6 per cent threshold of the tier 1 capital adequacy. The threshold has been set by CEBS in accordance with the stress test of the US financial system by the Federal Reserve, published in May 2009.

STRESS TEST RESULTS

The stress test focused on credit and market risks, cf. Box 1. The banks' resilience against economic shocks was measured by the tier 1 capital ratio. In the stress test this should exceed 6 per cent during the entire period. This should not be confused with the statutory minimum requirement of 4 per cent. Liquidity risks were not part of the test, but are

ABOUT THE STRESS TEST Box 1

A stress test comprises a number of scenarios for economic developments, typically a benchmark scenario and one or more stress scenarios. Under the various scenarios, the banks' earnings, write-downs, profit/loss, risk-weighted asses and capitalisation in the stated period are estimated. The intention is to determine the resilience of the financial system when exposed to stress.

In the scenarios, the European Central Bank, ECB, has specified a number of macroeconomic variables for the individual EU member states and aggregates for the euro area and the other EU member states, the EEA countries, the USA and the rest of the world. The ECB has stated reference values regarding the probability of default on loans and the expected loss in case of default. Moreover, a number of country-specific capital losses are used in the scenario with increased risk on European sovereign debt.

A total of 91 European banks participated in the CEBS stress test.[1] The population was selected so that at least 50 per cent of total assets in the respective member states' banking systems was covered. Overall, the participating banks covered 65 per cent of total assets of the European banks. The calculations in the stress test were carried out at the highest possible consolidation level, which meant that seven of the 27 EU member states did not have any banks in the tests. The reason is that 50 per cent of the seven countries' banking systems is covered by foreign banks' subsidiaries. The banks from Denmark were Danske Bank, Jyske Bank and Sydbank. Nordea Bank Denmark participated via its Swedish parent company, Nordea Bank AB.

[1] For an overview of participating banks, see CEBS, *Aggregate outcome of the 2010 EU wide stress test exercise coordinated by CEBS in cooperation with the ECB*, at www.c-ebs.org.

obviously a factor that should be included in the overall assessment of the robustness of the financial system.

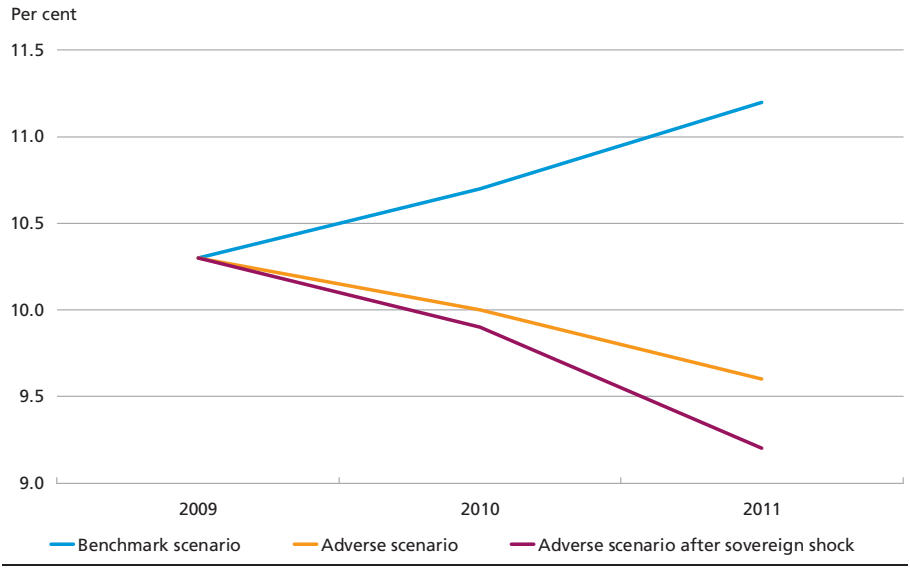
The stress test scenarios were created by the European Central Bank, ECB, and the European Commission. The benchmark scenario was based on the Commission's forecasts from November 2009 and February 2010, updated by the most recent macroeconomic data. The benchmark scenario assumes that the global economic recovery seen in early 2010 continues in 2010 and 2011.

In the adverse economic scenario, the European economy slips back into recession. To reflect the likelihood of a sovereign debt crisis, yield increases on European government bonds have been added with a subsequent decline in the value of the banks' holdings of government bonds.

In the benchmark scenario, the banks' total tier 1 ratio rises steadily over the period to 11.2 per cent at end-2011, cf. Chart 1. Core earnings decline slightly in 2010, but rise again in 2011 to above the level realised in 2009. Write-downs decline steadily during the period.

In the adverse economic scenario, however, the overall tier 1 ratio falls sharply to 9.6 per cent at end-2011, which is due to increased write-

DEVELOPMENT IN THE AGGREGATED TIER 1 RATIO Chart 1



Source: CEBS' stress test calculations.

downs on loans in particular. Moreover, during the entire period core earnings stand somewhat lower than the level seen in 2009.

When the adverse economic scenario is expanded by a European sovereign debt crisis in the form of higher government bond yields, the tier 1 ratio declines further to 9.2 per cent. This is attributable to capital losses on government bonds in the banks' trading portfolios and major write-downs on loans for households and the corporate sector.

Overall, seven of the 91 participating banks will be faced with tier 1 ratios below 6 per cent during the stress test. These are one German, one Greek and five Spanish banks.

Resilience against loss on sovereign debt

The adverse economic scenario incorporated a specific shock to the government bonds market, in part to reduce uncertainties in the financial markets over the banks' risk. The shock is modelled as a decline in prices of government bonds and thus a yield increase entailing capital losses on the banks' trading portfolios. In the stress test, the capital losses are set on the basis of previous price fluctuations. The capital losses on government bonds from Greece, Portugal and Ireland relative to the market price at end-2009 have been set at 23.1 per cent, 14.1 per cent and 12.8 percent, respectively, during the entire period. In addition to the direct effect on capital losses, the higher yields increase the write-downs on loans to households and the corporate sector.

MACROECONOMIC SCENARIOS FOR DENMARK — Table 1

	Benchmark scenario	Adverse scenario
2010		
GDP at constant prices, per cent, year-on-year	1.5	0.8
Unemployment, per cent	5.8	6.0
Short-term interest rates (3M Cibor, end-2010)	2.1	3.0
Long-term interest rates (10Y govt. yield, end-2010)	3.8	4.3
Commercial property prices, per cent, year-on-year	0.2	-7.0
Housing prices, per cent, year-on-year	0.2	-7.0
Further shocks to government bond yields		
Long-term interest rates (10Y govt. yield, end-2010)		4.4
2011		
GDP at constant prices, per cent, year-on-year	1.8	0.2
Unemployment, per cent	5.6	6.3
Short-term interest rates (3M Cibor, end-2011)	2.9	4.1
Long-term interest rates (10Y govt. yield, end-2011)	4.1	4.8
Commercial property prices, per cent, year-on-year	2.0	-1.6
Housing prices, per cent, year-on-year	2.0	-1.6
Further shocks to government bond yields		
Long-term interest rates (10Y govt. yield, end-2011)		5.1

Source: CEBS.

Danish banks

Macroeconomic developments in Denmark appear from Table 1.[1] In the benchmark scenario, the gross domestic product, GDP, is in line with Danmarks Nationalbank's most recent forecast. Unemployment in 2010 in the benchmark scenario more or less matches the current gross unemployment level.

In the EU stress test, all three Danish banks have a tier 1 ratio substantially above the 6 per cent threshold, cf. Table 2. The Danish banks already had a tier 1 ratio above average at the starting point. Furthermore, they do not have significant exposure towards the governments, which suffer the largest capital losses in the stress test – neither in their trading or own portfolios.

REACTIONS TO THE STRESS TEST

In the period around the publication, the market's assessment of the risks on the large European banks fell, measured by CDS spreads, cf. Chart 2. Moreover, market prices of European banking stocks outperformed general stock indices. The stress test probably contributed to this trend.

[1] For further specification of macro variables and country-specific capital losses, see CEBS, *Aggregate outcome of the 2010 EU wide stress test exercise coordinated by CEBS in cooperation with the ECB*, at www.c-ebs.org.

TIER 1 RATIO OF DANISH BANKS IN CEBS' STRESS TEST — Table 2

Tier 1 ratio	2009	Stress test result, end-2011		
		Benchmark scenario	Adverse scenario	Adverse scenario after sovereign shock
Danske Bank	11.7	11.7	10.8	10.0
Jyske Bank	13.5	14.1	12.8	12.5
Sydbank	13.1	14.8	13.4	13.2
Aggregate (all 91 banks)	10.3	11.2	9.6	9.2

Note: The calculation of Danske Bank's tier 1 ratio is affected by transition rules, which limit the reduction of the capital requirements on the transition from Basel I to Basel II. Without these transition rules, Danske Bank's tier 1 ratio would be 12.1 per cent by end-2011 in the adverse economic scenario after sovereign shock.

Source: Tables with detailed results for the Danish banks are available at www.nationalbanken.dk under Financial stability – Analyses of financial stability.

It played an important role that detailed information about the banks' profit/loss and exposures was published by the national authorities and the banks themselves in connection with the stress test. Particularly exposures to European sovereign debt attracted attention. The level of detail allowed analysts to prepare their own calculations with other scenarios and/or stress criteria. In Denmark, detailed information about the Danish banks was published on the websites of the banks involved, the Danish Financial Supervisory Authority and Danmarks Nationalbank.

CDS INDEX FOR BANKS — Chart 2

Note: Itraxx financials senior 5-year is applied. This is an index for 5-year CDS contracts on the senior debt of 25 European banks.

Source: Bloomberg.

The results of the EU stress test do not change Danmarks Nationalbank's view on financial stability in Denmark, nor do they give rise to the proposal of new initiatives. The stress test increases transparency. This provides for better analysis and assessment of the banks and decisions on a more informed basis, which only improves the discipline exerted on the banks by the capital markets.

Press Releases

23 JULY 2010: DANISH BANKS PASS EU STRESS TEST

Today the Danish Financial Supervisory Authority and Danmarks Nationalbank publish the results for the three Danish banks – Danske Bank, Jyske Bank and Sydbank – that have participated in the pan-European stress test. The purpose of the stress test has been to assess the resilience of the European banking sector to adverse economic developments in 2010 and 2011.

The results show that none of the three Danish banks need further capital injections during the period covered by the stress test under the adverse economic scenario.

Among other factors, the adverse economic scenario operates with Danish GDP growth of 0.8 and 0.2 per cent in 2010 and 2011, respectively. If – contrary to expectations – the economy develops in accordance with this scenario, and an additional sovereign shock materializes, the Tier 1 ratio, which is the key ratio in the test, will be 10.0 per cent for Danske Bank, 12.5 per cent for Jyske Bank and 13.2 per cent for Sydbank at end-2011.

Calculation of Danske Bank's Tier 1 ratio is still affected by transitional provisions that limit the bank's capital relief in connection with the transition from Basel I to Basel II. Without these transitional provisions, Danske Bank's Tier 1 ratio would be 12.1 per cent at end-2011 in the adverse economic scenario.

The stress test result also shows that none of the three Danish banks are significantly exposed to the rising yields on government bonds against which the banks are tested.

The Danish Financial Supervisory Authority and Danmarks Nationalbank welcome the EU stress test and find the results for the European banking sector overall positive.

The results do not change the perception of financial stability in Denmark, and hence no new initiatives are called for. The three Danish banks perform well in the test and the results have not prompted us to consider any new measures in terms of regular supervision of these banks.

Tables detailing the results for the three banks and the economic-scenarios for Denmark used in the stress test can be seen at

www.nationalbanken.dk under Financial Stability – Analyses of financial stability.

17 AUGUST 2010: NORDIC AND BALTIC MINISTRIES, CENTRAL BANKS AND SUPERVISORY AUTHORITIES SIGN AGREEMENT ON FINANCIAL STABILITY

A co-operation agreement on cross-border financial stability, crisis management and resolution between the finance ministries and other relevant ministries, central banks and financial supervisory authorities of Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway and Sweden has been signed. The agreement enhances preparedness to handle cross-border financial stability concerns in the financially integrated Nordic-Baltic region. It also establishes the first European cross-border stability group.

The financial integration between the Nordic and Baltic countries warrants deeper cooperation between public authorities in the area of financial stability. In response to this, an agreement has over the past year been designed to enhance cooperation in financial crisis prevention, management and resolution. By signing the agreement, the public authorities in the Nordic and Baltic countries increase their preparedness to handle problems in cross-border banks. These authorities are the first to implement the provisions of the EU-wide Memorandum of Understanding on cross-border financial stability of June 2008.

The legally non-binding agreement enhances cooperation by establishing routines and procedures for information sharing and coordination. The aim is to reduce the risk of a financial crisis spreading cross-border, and to enhance possibilities to reach an efficient crisis management. Financial problems of a purely domestic nature are not covered by the agreement.

A Nordic-Baltic Cross-Border Stability Group will be set up to implement the agreement. Chairmanship of the stability group will rotate among the Ministries. The Danish Ministry of Economic and Business Affairs in Denmark will be the first to chair the stability group.

1 SEPTEMBER 2010: SIZEABLE INCREASE IN TURNOVER IN THE DANISH FOREIGN EXCHANGE MARKET SINCE 2007

Turnover in the Danish foreign exchange market rose by 24 per cent from 2007 to 2010 according to a survey by Danmarks Nationalbank. Daily turnover in the foreign exchange market was 120 billion dollars in April 2010, compared with 97 billion dollars in April 2007. The Danish

foreign exchange market constitutes 2.4 per cent of the global market and is the 9th largest market in the world.

Turnover of interest rate derivatives rose by 64 per cent from 2007 to 2010. Daily turnover of interest-rate derivates was 16 billion dollars in April 2010.

USD is still the most heavily traded currency in the Danish foreign-exchange market; 36 per cent of all transactions have one leg in dollars. The euro's share has risen throughout the period since its introduction; 28 per cent of transactions now have one leg in euro.

These results are part of a triennial international survey coordinated by the Bank for International Settlements, BIS. The Danish figures have been collated from six banks that account for more than 95 per cent of the turnover covered by the Danish survey.

Further information about the survey can be found in a special report at Danmarks Nationalbank's website www.nationalbanken.dk under Statistics, Publications and data – Special reports.

The results of the global survey are published at:
http://www.bis.org/publ/rpfx10.htm

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 15 October 2010 and thus based on more recent information than the equivalent section of the Danish edition.

Danmarks Nationalbank is the source for Tables 1-14, 16-18 and 23-24, while the 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 15 and 19-22. The calculations in Tables 20 and 24 have been made by Danmarks Nationalbank on the basis of data from Statistics Denmark and OECD.

INTEREST RATES AND SHARE-PRICE INDEX — Table 1

Effective end-of-year/ from	Danmarks Nationalbank's interest rates: Discount rate	Lending	Certificates of deposit	The ECB's interest rate: Main refinancing operations, fixed rate[1]	End of period	Inter-bank interest rate, 3-months uncollateralized	Bond yields: 10-year central-government bond	30-year mortgage-credit bond	Share-price index OMXC20 (prev.KFX)
	Per cent per annum					Per cent per annum			3.7.89 =100
2005	2.25	2.40	2.40	2.25	2005	2.46	3.30	4.39	393.52
2006	3.50	3.75	3.75	3.50	2006	3.81	3.95	5.24	441.48
2007	4.00	4.25	4.25	4.00	2007	4.65	4.48	5.61	464.14
2008	3.50	3.75	3.75	2.50	2008	4.20	3.31	6.21	247.72
2009	1.00	1.20	0.95	1.00	2009	0.85	3.62	5.19	336.69
2010 15 Jan	0.75	1.05	0.80	1.00	Mar 10 ...	0.70	3.37	5.01	383.04
26 Mar	0.75	1.05	0.70	1.00	Apr 10 ...	0.70	3.21	4.98	411.50
20 May	0.75	1.05	0.60	1.00	May 10 ...	0.50	2.69	4.81	388.69
27 May	0.75	1.05	0.50	1.00	Jun 10 ...	0.50	2.68	4.80	393.02
	|	|	|	|	Jul 10 ...	0.55	2.76	4.79	410.83
	|	|	|	|	Aug 10 ...	0.62	2.16	4.09	396.38
15 Oct	0.75	1.05	0.60	1.00	Sep 10 ...	0.55	2.35	4.15	416.96

[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-credit institutes' net position with Danmarks Nationalbank			
				Certificates of deposit	Deposits (current account)	Loans	Total net position
	Kr. billion						
2005	212.3	56.2	56.4	207.6	12.8	135.3	85.1
2006	171.7	59.8	73.8	163.2	8.8	153.7	18.2
2007	168.8	61.6	89.9	200.5	9.4	216.8	-6.9
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
Apr 10	404.1	60.5	190.3	96.9	16.3	3.1	110.1
May 10	440.5	61.3	199.8	120.3	16.8	0.5	136.6
Jun 10	438.3	61.4	220.7	142.1	23.5	47.2	118.4
Jul 10	428.6	61.2	191.5	121.0	16.0	0.1	136.9
Aug 10	429.1	60.9	216.8	95.3	16.0	0.1	111.3
Sep 10	431.3	60.7	218.5	108.2	12.6	9.9	110.9

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

Table 3

	Central-government finance			Net purchase of foreign exchange by Danmarks Nationalbank					The banks' and the mortgage-credit institutes' net position with Danmarks Nationalbank	
	Domestic gross financing requirement	Sales of domestic central-government securities, etc.	Liquidity effect	Interventions to purchase foreign exchange, net	Other	Total	Net purchase of bonds by Danmarks Nationalbank	Other factors	Change in net position	End of period
	Kr. billion									
2005	39.5	30.9	8.6	-18.4	3.0	-15.4	-2.2	-0.5	-9.5	85.1
2006	-14.5	16.2	-30.6	-34.3	4.3	-30.0	-4.9	-1.2	-66.7	18.2
2007	-26.1	2.9	-29.1	-1.7	7.2	5.5	-0.4	-1.4	-25.3	-6.9
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
Apr 10	17.8	17.9	-0.1	0.0	0.3	0.3	0.9	-2.8	-1.8	110.1
May 10	4.4	15.1	-10.7	38.5	-0.7	37.8	1.0	-1.6	26.5	136.6
Jun 10	4.2	26.2	-22.0	0.0	-1.0	-1.0	0.2	4.7	-18.1	118.4
Jul 10	36.5	8.5	28.0	-8.4	0.0	-8.4	0.0	-1.2	18.5	136.9
Aug 10	-15.6	10.1	-25.7	0.0	0.9	0.9	-0.2	-0.7	-25.6	111.3
Sep 10	7.8	10.7	-2.9	3.4	0.1	3.5	-0.5	-0.5	-0.4	110.9

SELECTED ITEMS FROM THE CONSOLIDATED BALANCE SHEET OF THE MFI SECTOR

Table 4

End of period	Total balance	Assets				Liabilities		Foreign assets, net [1]
		Domestic lending		Domestic securities		Domestic deposits	Bonds, etc. issued	
		Public sector	Private sector	Bonds, etc.	Shares, etc.			
	Kr. billion							
2005	4,221.9	107.8	2,584.2	75.9	53.5	971.3	1,318.2	-172.9
2006	4,656.2	116.8	2,956.0	51.8	60.3	1,077.0	1,433.4	-223.0
2007	5,446.3	117.5	3,356.1	43.3	63.5	1,219.7	1,505.2	-304.5
2008	6,286.4	129.1	3,724.3	40.6	56.7	1,487.5	1,508.4	-407.9
2009	5,970.1	135.9	3,647.9	78.2	65.5	1,427.9	1,650.9	-417.6
Mar 10	6,143.5	135.3	3,660.2	77.1	69.2	1,419.4	1,713.2	-396.7
Apr 10	6,137.6	136.1	3,651.7	74.9	69.5	1,421.8	1,685.5	-396.3
May 10	6,435.3	136.8	3,679.3	66.3	70.3	1,428.2	1,718.9	-389.5
Jun 10	6,394.5	140.7	3,719.6	54.1	79.5	1,432.8	1,718.2	-396.4
Jul 10	6,398.7	143.7	3,694.1	46.5	80.9	1,443.1	1,719.9	-359.6
Aug 10	6,639.4	138.9	3,717.2	64.5	106.6	1,471.4	1,763.6	-334.1
	Change compared with previous year, per cent							
2005	...	10.6	15.0	-24.7	15.4	14.4	7.9	...
2006	...	8.3	14.4	-31.8	12.8	10.9	8.7	...
2007	...	0.6	13.5	-16.4	5.2	13.3	5.0	...
2008	...	9.8	11.0	-6.2	-10.7	22.0	0.2	...
2009	...	5.3	-2.1	92.4	15.5	-4.0	9.4	...
Mar 10	...	5.4	-1.8	54.3	26.1	-0.7	9.7	...
Apr 10	...	5.2	-1.5	33.6	23.2	-1.2	7.4	...
May 10	...	6.5	0.2	11.1	21.6	-0.3	8.8	...
Jun 10	...	5.4	0.2	-10.4	34.0	1.9	6.0	...
Jul 10	...	5.9	0.5	-26.8	38.5	-0.1	5.9	...
Aug 10	...	6.5	1.7	-4.1	81.0	3.4	9.1	...

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

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

MONEY STOCK — Table 5

End of period	Bank-notes and coin in circula-tion[1]	Deposits on demand	M1	Time deposits with original maturity =<2 years	Deposits at notice with original maturity =< 3 months	M2	Repur-chase agree-ments	Bonds, etc. issued with original maturity =< 2 years	M3
	Kr. billion								
2005	47.3	596.3	643.5	114.1	18.4	776.0	14.2	8.4	798.7
2006	50.7	648.6	699.3	143.0	17.9	860.2	8.0	21.3	889.5
2007	51.9	703.2	755.1	199.7	18.0	972.8	6.2	61.5	1,040.6
2008	50.4	704.8	755.2	286.4	18.4	1,060.0	4.0	57.0	1,121.1
2009	48.5	772.0	820.5	183.2	19.6	1,023.3	10.9	143.0	1,177.3
Mar 10	50.7	788.4	839.1	156.9	17.5	1,013.4	19.9	187.3	1,220.8
Apr 10	51.1	806.4	857.5	157.4	16.2	1,031.1	17.2	177.0	1,225.5
May 10	51.3	811.8	863.1	161.3	16.6	1,041.0	4.4	201.1	1,246.7
Jun 10	51.4	800.1	851.5	144.3	17.2	1,013.1	15.3	210.5	1,239.0
Jul 10	51.5	814.6	866.1	154.4	17.2	1,037.8	31.8	245.6	1,315.3
Aug 10	51.1	811.5	862.6	151.8	17.2	1,031.5	40.4	254.2	1,326.3
	Change compared with previous year, per cent								
2005	...	...	19.9	...	...	14.7	...	...	14.3
2006	...	...	8.7	...	...	10.8	...	...	11.4
2007	...	...	8.0	...	...	13.1	...	...	17.0
2008	...	...	0.0	...	...	9.0	...	...	7.7
2009	...	...	8.6	...	...	-3.5	...	...	5.0
Mar 10	...	...	9.1	...	...	-4.0	...	...	3.1
Apr 10	...	...	9.1	...	...	-2.5	...	...	3.0
May 10	...	...	7.9	...	...	-2.8	...	...	2.9
Jun 10	...	...	6.4	...	...	-3.1	...	...	3.8
Jul 10	...	...	6.7	...	...	-2.7	...	...	6.5
Aug 10	...	...	3.7	...	...	-3.5	...	...	8.6

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

SELECTED ITEMS FROM THE BALANCE SHEET OF THE BANKS Table 6

End of period	Total balance	Assets					Liabilities	
		Lending to MFIs	Domestic lending			Holdings of securities	Loans from MFIs	Deposits
			Total	of which:				
				Households, etc.	Non-financial companies			
	Kr. billion							
2005	2,860.9	652.0	920.1	396.6	370.0	862.1	975.7	1,065.6
2006	3,216.1	715.0	1,124.3	475.0	458.0	889.6	1,133.4	1,148.3
2007	3,940.0	924.3	1,333.6	557.4	551.8	1,065.8	1,441.8	1,345.6
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	1,186.0	1,410.2
Mar 10	4,293.0	949.6	1,347.2	566.5	532.3	1,241.8	1,264.5	1,417.4
Apr 10	4,226.3	916.4	1,333.6	560.0	528.0	1,189.8	1,149.0	1,440.4
May 10	4,485.0	958.3	1,352.7	558.9	527.0	1,216.5	1,180.2	1,456.0
Jun 10	4,485.9	917.9	1,388.3	569.5	531.6	1,275.3	1,204.8	1,421.3
Jul 10	4,437.4	935.8	1,361.4	563.1	510.8	1,243.5	1,152.5	1,490.6
Aug 10	4,611.6	965.2	1,371.0	563.7	518.6	1,221.8	1,165.3	1,541.6
	Change compared with previous year, per cent							
2005	...	31.7	21.9	22.1	19.5	10.5	18.5	17.3
2006	...	9.7	22.2	19.8	23.8	3.2	16.2	7.8
2007	...	29.3	18.6	17.4	20.5	19.8	27.2	17.2
2008	...	5.4	15.9	5.3	9.3	2.5	0.2	5.8
2009	...	-10.1	-12.1	-1.9	-12.2	10.2	-17.9	-1.0
Mar 10	...	0.8	-10.6	-2.0	-7.2	4.7	-11.0	1.1
Apr 10	...	-5.5	-9.5	-1.6	-7.0	-2.1	-20.9	1.7
May 10	...	9.2	-5.4	-0.8	-4.3	-8.6	-14.3	0.8
Jun 10	...	9.9	-5.0	-0.1	-4.4	-4.8	-12.9	1.2
Jul 10	...	12.9	-4.1	0.5	-4.7	-3.8	-6.8	3.8
Aug 10	...	20.3	-0.6	1.3	-2.3	-5.0	3.5	6.1

Note: Excluding Danish banks' units abroad.

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

Table 7

End of period	Total balance	Assets					Liabilities	
		Lending to MFIs	Domestic lending			Holdings of securities	Loans from MFIs	Bonds, etc. issued
			Total	of which:				
				House-holds, etc.	Non-financial compa-nies			
	Kr. billion							
2005	2,519.9	101.4	1,664.4	1,281.5	334.2	645.0	151.7	2,237.0
2006	2,699.9	245.1	1,834.8	1,420.2	358.2	574.1	226.5	2,297.9
2007	3,088.2	362.8	2,015.5	1,549.2	404.0	649.2	344.2	2,495.2
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
Mar 10	3,235.7	500.4	2,293.2	1,718.4	507.4	344.5	502.9	2,540.3
Apr 10	3,122.4	424.8	2,298.2	1,718.0	512.8	286.9	477.7	2,453.6
May 10	3,171.6	460.2	2,305.5	1,723.4	517.3	289.5	496.8	2,491.3
Jun 10	3,263.7	523.3	2,315.2	1,730.0	518.3	315.6	529.3	2,538.8
Jul 10	3,229.2	477.8	2,320.4	1,734.5	519.5	315.9	515.7	2,516.5
Aug 10	3,288.0	502.8	2,328.9	1,742.0	519.8	332.4	534.2	2,561.6
	Change compared with previous year, per cent							
2005	...	11.1	11.7	12.3	8.5	34.0	481.5	14.6
2006	...	141.7	10.2	10.8	7.2	-11.0	49.3	2.7
2007	...	48.0	9.9	9.1	12.8	13.1	52.0	8.6
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
Mar 10	...	36.1	4.1	3.9	5.8	32.1	20.4	11.2
Apr 10	...	12.5	3.7	3.4	5.7	19.7	12.3	6.9
May 10	...	18.0	3.6	3.2	6.2	21.7	17.8	7.3
Jun 10	...	16.5	3.5	3.2	5.8	20.1	20.0	6.8
Jul 10	...	22.3	3.2	3.0	5.2	18.9	20.7	6.2
Aug 10	...	25.0	3.1	3.0	4.2	10.7	19.3	6.1

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

End of period	Total lending			The banks' lending			The mortgage-credit institutes' lending		
	Total	House-holds, etc.	Business	Total	House-holds, etc.	Business	Total	House-holds, etc.	Business
	Kr. billion								
2005	2,614.5	1,678.0	852.2	950.2	396.6	510.4	1,664.4	1,281.5	341.7
2006	3,000.8	1,895.2	1,002.6	1,166.0	475.0	636.9	1,834.8	1,420.2	365.7
2007	3,387.8	2,106.7	1,173.0	1,372.3	557.4	760.5	2,015.5	1,549.2	412.4
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
Mar 10	3,680.4	2,285.0	1,289.5	1,387.1	566.5	769.6	2,293.2	1,718.4	519.9
Apr 10	3,661.2	2,278.0	1,276.6	1,363.0	560.0	751.7	2,298.2	1,718.0	524.9
May 10	3,687.6	2,282.3	1,300.0	1,382.1	558.9	771.0	2,305.5	1,723.4	529.0
Jun 10	3,732.9	2,299.5	1,324.5	1,417.7	569.5	794.8	2,315.2	1,730.0	529.7
Jul 10	3,711.1	2,297.6	1,302.5	1,390.8	563.1	771.5	2,320.4	1,734.5	531.1
Aug 10	3,729.2	2,305.7	1,317.2	1,400.3	563.7	785.9	2,328.9	1,742.0	531.3
	Change compared with previous year, per cent								
2005	14.9	14.5	15.0	20.9	22.1	19.6	11.7	12.3	8.8
2006	14.8	12.9	17.7	22.7	19.8	24.8	10.2	10.8	7.0
2007	12.9	11.2	17.0	17.7	17.4	19.4	9.9	9.1	12.8
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
Mar 10	-2.1	2.4	-8.9	-10.9	-2.0	-16.7	4.1	3.9	5.8
Apr 10	-2.3	2.1	-9.1	-10.9	-1.6	-17.0	3.7	3.4	5.1
May 10	-0.7	2.2	-5.1	-7.0	-0.8	-11.2	3.6	3.2	5.6
Jun 10	-0.6	2.4	-5.0	-6.6	-0.1	-10.7	3.5	3.2	5.0
Jul 10	0.0	2.4	-3.8	-5.0	0.5	-8.8	3.2	3.0	4.4
Aug 10	1.2	2.6	-0.8	-1.7	1.3	-3.5	3.1	3.0	3.5

Note: Including lending in Danish banks' units abroad.

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

End of period	Index-linked lending	Fixed-rate lending	Adjustable-rate lending		Total	of which:	
			Total	of which =<1 year		Lending in foreign currency	Instalment-free lending [1]
	Kr. billion						
2005	88.6	720.3	853.9	616.0	1,662.8	80.5	315.5
2006	83.5	797.5	951.7	720.5	1,832.7	85.7	432.2
2007	77.9	889.2	1,045.6	796.6	2,012.7	123.8	547.3
2008	72.4	903.9	1,189.1	900.3	2,165.4	155.3	626.4
2009	68.3	740.2	1,472.7	1,106.6	2,281.2	211.4	695.1
Mar 10	68.8	697.5	1,529.8	1,137.4	2,296.1	220.3	703.2
Apr 10	69.0	684.4	1,548.1	1,147.9	2,301.5	221.8	706.2
May 10	68.8	680.3	1,560.0	1,155.3	2,309.0	224.3	710.0
Jun 10	66.7	666.2	1,585.6	1,170.7	2,318.4	228.1	716.4
Jul 10	66.7	661.5	1,595.4	1,175.4	2,323.5	228.9	719.6
Aug 10	66.6	664.5	1,600.5	1,176.7	2,331.6	229.5	722.9

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

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

THE BANKS' EFFECTIVE INTEREST RATES — Table 10

	Lending				Deposits			
	All sectors	Households, etc.	Non-financial companies	Financial companies	All sectors	Households, etc.	Non-financial companies	Financial companies
	Per cent, per annum							
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	4.5	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
Mar 10	3.8	5.4	4.4	1.4	1.2	1.3	0.9	1.3
Apr 10	3.7	5.4	4.3	1.3	1.1	1.3	0.8	1.1
May 10	3.7	5.4	4.3	1.3	1.0	1.2	0.8	0.9
Jun 10	3.5	5.1	4.1	1.2	0.9	1.1	0.6	0.9
Jul 10	3.5	5.2	4.1	1.1	0.9	1.1	0.6	0.8
Aug 10	3.5	5.1	4.1	1.2	0.9	1.1	0.6	0.8

SELECTED ITEMS FROM THE BALANCE SHEET OF THE INVESTMENT ASSOCIATIONS

Table 11

End of period	Total balance	Assets		Liabilities			
		Holdings of securities		Certificates issued by investment associations by owner			
		Bonds, etc.	Shares, etc.	House-holds, etc.	Insurance compa-nies and pension funds	Other residents	Abroad
	Kr. billion						
2005	794.7	412.1	286.4	265.7	236.5	263.0	24.4
2006	924.8	431.8	385.4	294.3	289.6	305.0	29.0
2007	1,020.7	477.9	411.6	295.2	339.2	322.1	29.2
2008	772.2	425.3	222.5	211.4	266.9	238.2	14.7
2009	865.4	487.5	301.4	252.7	357.8	185.0	22.7
Mar 10	934.3	525.4	316.9	265.8	388.8	198.3	27.3
Apr 10	955.9	535.2	332.6	269.9	398.6	204.8	27.3
May 10	967.1	554.7	313.5	268.2	412.7	198.7	27.0
Jun 10	992.0	586.0	311.0	271.3	447.2	196.4	27.2
Jul 10	1,008.4	591.1	321.1	275.8	454.9	199.9	27.0
Aug 10	1,030.3	625.6	306.3	276.4	475.2	200.7	27.4

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

End of period	Bonds, etc.						Shares	
	Total		of which:					
			Central-government securities		Mortgage-credit bonds			
	Denmark	Abroad	Denmark	Abroad	Denmark	Abroad	Denmark	Abroad
	Market value, kr. billion							
2005	2,559.7	461.2	434.9	205.1	2,002.9	252.5	845.2	300.5
2006	2,541.3	464.7	380.1	172.6	2,034.9	285.9	989.4	361.8
2007	2,701.2	475.8	301.9	176.2	2,247.1	287.7	996.1	445.4
2008	2,981.5	405.0	363.1	158.5	2,419.2	227.4	529.9	244.4
2009	3,415.2	431.4	394.2	159.8	2,803.0	251.7	641.0	347.5
Mar 10	2,894.4	465.2	432.9	170.5	2,251.6	274.8	705.7	407.5
Apr 10	2,767.4	507.3	440.2	181.1	2,117.4	307.1	739.2	435.8
May 10	2,849.6	505.2	473.7	177.9	2,159.9	308.5	666.3	445.0
Jun 10	2,973.4	499.2	486.2	191.1	2,257.5	286.4	670.5	463.9
Jul 10	2,929.8	528.3	483.3	193.9	2,186.8	313.5	688.3	475.6
Aug 10	2,991.8	547.5	500.2	213.4	2,233.3	311.5	652.7	460.3

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

HOUSEHOLDS' FINANCIAL ASSETS AND LIABILITIES — Table 13

End of period	Assets					Liabilities		
	Currency and bank deposits, etc.	Bonds, etc.	Shares and certificates issued by investment associations, etc.	Life-insurance and pension-scheme savings, etc.	Total	Loans, etc.	Net financial assets	Total
	Kr. billion							
2005	785	173	1,121	1,617	3,696	1,891	1,805	3,696
2006	839	181	1,560	1,681	4,260	2,075	2,185	4,260
2007	902	188	1,445	1,723	4,258	2,272	1,986	4,258
2008	905	178	793	1,785	3,660	2,442	1,219	3,660
2009	924	171	910	1,926	3,931	2,560	1,370	3,931
Q2 09	917	176	816	1,794	3,703	2,505	1,197	3,703
Q3 09	911	174	905	1,876	3,866	2,531	1,336	3,866
Q4 09	924	171	910	1,926	3,931	2,560	1,370	3,931
Q1 10	941	168	1,023	2,014	4,146	2,626	1,520	4,146
Q2 10	952	156	994	2,105	4,207	2,657	1,550	4,207

COMPANIES' FINANCIAL ASSETS AND LIABILITIES — Table 14

End of period	Assets				Liabilities				
					Debt				
	Currency, bank deposits and granted credits, etc.	Bonds, etc.	Shares and certificates issued by investment associations, etc.	Total	Loans, etc.	Bonds, etc. issued	Shares, etc. issued	Net financial assets	Total
	Kr. billion								
2005	792	162	2,197	3,151	1,345	143	3,218	-1,554	3,151
2006	817	148	3,082	4,046	1,580	139	4,428	-2,101	4,046
2007	910	133	2,921	3,965	1,730	118	4,278	-2,160	3,965
2008	1,065	104	1,761	2,930	1,947	109	2,501	-1,627	2,930
2009	1,067	104	1,915	3,086	1,896	138	2,628	-1,576	3,086
Q2 09	1,072	113	1,820	3,005	1,950	119	2,475	-1,539	3,005
Q3 09	1,040	115	1,921	3,077	1,915	123	2,631	-1,592	3,077
Q4 09	1,067	104	1,915	3,086	1,896	138	2,628	-1,576	3,086
Q1 10	1,107	110	2,172	3,389	1,955	140	2,984	-1,690	3,389
Q2 10	1,139	105	2,107	3,352	1,977	129	2,919	-1,672	3,352

Note: Companies are defined as non-financial companies.

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

	Goods (fob)	Services	Goods and services	Wages and property income	Current transfers	Total current account
	Kr. billion					
2005	43.9	38.3	82.2	9.9	-25.0	67.1
2006	18.2	42.0	60.2	16.8	-28.4	48.6
2007	2.1	40.3	42.5	9.7	-29.2	23.0
2008	4.2	51.6	55.8	18.2	-27.8	46.2
2009	42.7	23.6	66.4	21.0	-28.4	59.0
Sep 08 - Aug 09	25.2	35.8	60.9	23.4	-28.6	55.8
Sep 09 - Aug 10	52.6	38.3	90.9	17.0	-29.8	78.1
Mar 10	9.0	2.0	11.0	-1.4	-3.1	6.5
Apr 10	4.4	5.2	9.6	1.1	-2.3	8.3
May 10	1.8	3.7	5.4	3.1	-2.4	6.1
Jun 10	3.7	4.4	8.1	1.9	-2.1	7.8
Jul 10	7.3	4.0	11.3	1.1	-2.3	10.0
Aug 10	2.1	6.4	8.5	1.1	-2.1	7.5

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

	Current account and capital account, etc., total	Capital import				Other[2]	Danmarks Nationalbank's transactions with abroad[3]
		Direct investments		Portfolio investments[1]	Other capital import		
		Danish abroad	Foreign in Denmark				
	Kr. billion						
2005	70.0	-97.1	77.2	-68.8	23.2	-16.2	-11.8
2006	48.6	-50.2	16.1	-103.3	83.4	-33.0	-38.3
2007	23.3	-112.3	64.3	-32.0	56.5	-1.0	-1.2
2008	46.6	-72.1	11.4	53.0	-66.7	-43.5	-71.4
2009	58.8	-36.9	15.9	74.3	195.4	-19.4	288.0
Sep 08 - Aug 09	55.5	-43.2	6.6	174.1	-6.9	-0.1	186.0
Sep 09 - Aug 10	78.7	-34.2	18.6	-29.9	122.7	-95.0	60.9
Mar 10	6.5	1.1	2.0	-39.5	33.1	-2.9	0.4
Apr 10	8.4	-8.3	5.4	44.4	-52.6	-11.1	-13.8
May 10	6.2	-2.3	14.1	4.7	23.6	-11.5	34.7
Jun 10	7.9	-4.9	-0.4	18.6	-22.1	-8.8	-9.7
Jul 10	10.1	-7.6	0.8	16.7	-1.2	-24.8	-6.0
Aug 10	7.5	-0.7	2.3	-11.9	1.3	4.8	3.3

[1] This item may differ from the total of the below Table 17, as portfolio investments are published 1-2 weeks earlier than the rest of the balance of payments.
[2] Including errors and omissions.
[3] 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 17

	Danish securities			Foreign securities		
	Krone-denominated bonds, etc.	Foreign currency denominated bonds, etc.	Shares	Bonds, etc.	Shares	Total[1]
	Kr. billion					
2005	20.8	122.5	-18.9	-108.2	-85.0	-68.8
2006	16.3	70.0	-34.4	-21.5	-133.8	-103.3
2007	26.2	73.4	15.0	-96.4	-50.1	-32.0
2008	-59.1	141.2	11.4	-91.1	50.7	53.0
2009	-5.6	162.6	43.1	-83.4	-42.4	74.3
Mar 10	-6.8	5.4	5.3	-36.9	-6.4	-39.5
Apr 10	28.6	16.3	2.3	0.4	-3.3	44.4
May 10	-13.4	-3.1	-1.2	23.2	-0.8	4.7
Jun 10	6.2	14.9	6.5	-7.3	-1.7	18.6
Jul 10	25.3	0.6	-3.3	0.6	-6.5	16.7
Aug 10	14.0	-37.2	1.1	6.6	3.6	-11.9

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

DENMARK'S EXTERNAL ASSETS AND LIABILITIES — Table 18

End of period	Direct investments		Portfolio investments		Financial derivatives, net	Other investments			Danmarks Nationalbank	Total
	Equity	Inter-company debt, etc.	Shares, etc.	Bonds, etc.		Trade credits	Loans and deposits	Other		
	Kr. billion									
Assets										
2005	566	254	558	685	85	37	720	19	217	3,141
2006	579	260	746	678	47	41	823	30	178	3,383
2007	651	287	794	733	0	47	1,035	32	176	3,755
2008	642	378	447	781	84	45	1,101	37	226	3,740
2009	718	375	607	924	23	38	927	32	400	4,044
Q2 09	728	364	492	880	40	44	994	36	336	3,913
Q3 09	721	370	566	889	33	41	956	33	400	4,008
Q4 09	718	375	607	924	23	38	927	32	400	4,044
Q1 10	779	388	652	1,014	41	43	987	34	423	4,361
Q2 10	823	405	648	1,031	70	46	968	32	483	4,506
Liabilities										
2005	504	230	310	1,019	...	27	967	21	3	3,081
2006	482	270	356	1,066	...	32	1,142	35	4	3,386
2007	543	276	422	1,123	...	36	1,409	37	5	3,851
2008	508	295	242	1,198	...	42	1,398	40	121	3,845
2009	478	302	348	1,361	...	35	1,402	38	5	3,969
Q2 09	483	295	293	1,356	...	40	1,429	37	38	3,971
Q3 09	480	306	337	1,427	...	34	1,366	38	8	3,997
Q4 09	478	302	348	1,361	...	35	1,402	38	5	3,969
Q1 10	486	300	411	1,410	...	30	1,576	42	2	4,257
Q2 10	519	309	431	1,510	...	34	1,496	39	42	4,379
Net assets										
2005	62	24	247	-333	85	11	-247	-2	214	61
2006	98	-11	390	-387	47	10	-319	-5	174	-3
2007	108	12	372	-390	0	11	-374	-5	171	-96
2008	134	83	205	-417	84	3	-298	-3	105	-104
2009	240	73	259	-437	23	3	-476	-6	395	74
Q2 09	246	69	199	-476	40	4	-434	-2	298	-57
Q3 09	241	63	229	-538	33	6	-410	-6	392	10
Q4 09	240	73	259	-437	23	3	-476	-6	395	74
Q1 10	292	88	242	-396	41	13	-589	-8	421	105
Q2 10	304	96	217	-478	70	12	-527	-7	441	128

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

GDP BY TYPE OF EXPENDITURE Table 19

	GDP	Final domestic demand					Exports of goods and services	Imports of goods and services
		Private consumption	General-government consumption	Gross fixed capital formation	Change in inventories	Total		
	Kr. billion							
2005	1,545.3	745.1	402.5	303.9	17.9	1,469.5	757.0	681.2
2006	1,631.7	786.6	422.6	356.0	14.6	1,579.8	849.6	797.7
2007	1,691.5	821.7	439.1	379.6	9.8	1,650.2	886.4	845.1
2008	1,737.4	845.5	463.8	365.7	15.7	1,690.7	955.9	909.2
2009	1,662.4	817.6	496.4	308.5	-18.8	1,603.7	785.2	726.5
Q2 09	411.3	203.9	123.3	76.5	-5.8	397.8	191.6	178.1
Q3 09	414.5	200.4	124.6	73.4	-4.2	394.3	198.2	177.9
Q4 09	430.9	213.9	129.3	77.0	-5.4	414.8	201.4	185.3
Q1 10	419.2	211.4	126.2	66.4	-2.6	401.4	197.4	179.6
Q2 10	442.6	213.8	129.7	74.3	1.4	419.1	222.2	198.8
	Real growth compared with previous year, per cent							
2005	2.4	3.8	1.3	4.7	...	3.4	8.0	11.1
2006	3.4	3.6	2.8	14.2	...	5.2	9.0	13.4
2007	1.7	2.4	1.3	2.9	...	1.9	2.2	2.6
2008	-0.9	-0.2	1.6	-4.7	...	-0.5	2.4	3.3
2009	-4.7	-4.6	3.4	-13.0	...	-6.2	-10.2	-13.2
Q2 09	-7.0	-7.0	3.2	-17.3	...	-8.6	-13.5	-16.8
Q3 09	-5.1	-4.4	3.6	-15.0	...	-6.2	-11.2	-13.6
Q4 09	-3.1	-1.0	3.0	-14.3	...	-4.5	-8.3	-11.3
Q1 10	-0.2	3.6	2.5	-18.6	...	-0.8	-2.3	-3.6
Q2 10	3.7	2.4	2.9	0.0	...	4.1	5.4	6.4
	Real growth compared with previous quarter (seasonally adjusted), per cent							
Q2 09	-2.4	-0.1	0.6	-12.4	...	-2.3	-4.5	-4.6
Q3 09	1.1	0.4	1.1	0.9	...	1.5	0.9	1.7
Q4 09	0.2	0.5	0.3	-3.6	...	0.0	-0.1	-0.6
Q1 10	0.7	1.9	0.5	-4.5	...	0.1	1.4	0.2
Q2 10	1.7	0.4	0.9	8.1	...	2.6	3.1	5.1

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

	HICP							Index of net retail prices[1]		
		Subcomponents:								
					Administered prices		HICP excl. energy, food and administered prices[3]	Index of net retail prices excl. energy, food and administered prices[3]	Split into[4]:	
	Total	Energy	Food	Core inflation[2]	Rent	Public services			Import content[5]	IMI[6]
	Weights, per cent									
	100	10.4	17.4	72.2	7.4	3.9	60.9	53.2	16.8	36.4
	Year-on-year growth, per cent									
2005	1.7	7.6	1.0	1.0	2.4	3.2	0.6	0.7	3.4	-0.6
2006	1.9	5.3	2.2	1.2	2.1	0.9	1.1	1.3	3.1	0.4
2007	1.7	0.3	3.7	1.3	2.1	0.6	1.2	1.4	1.4	1.4
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
Q1 07	1.9	1.1	4.1	1.3	2.0	0.3	1.3	1.3	1.7	1.1
Q2 07	1.5	-1.7	3.6	1.5	2.1	0.2	1.5	1.4	0.9	1.7
Q3 07	1.0	-1.4	2.0	1.2	2.2	0.8	1.0	1.2	0.9	1.4
Q4 07	2.2	3.3	5.2	1.2	2.0	1.0	1.2	1.6	2.0	1.4
Q1 08	3.2	7.5	6.0	1.7	2.2	2.4	1.6	2.0	3.6	1.2
Q2 08	3.7	9.7	7.4	1.7	2.6	4.0	1.4	1.8	4.2	0.6
Q3 08	4.6	10.4	8.6	2.5	3.9	3.7	2.2	2.2	5.0	0.9
Q4 08	3.0	3.1	5.0	2.4	2.4	3.8	2.3	2.3	3.2	1.8
Q1 09	1.7	-4.6	3.2	2.2	2.7	4.2	2.0	2.3	-1.9	4.4
Q2 09	1.1	-5.5	0.7	2.2	3.1	5.0	1.9	2.1	-4.2	5.2
Q3 09	0.6	-5.9	-0.5	2.0	3.5	5.1	1.6	1.9	-6.0	6.0
Q4 09	0.9	0.3	-1.5	1.6	2.9	4.9	1.2	1.6	-5.0	4.9
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

Note: The weights reflect the weighting basis as of January 2009.

[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 60.9 per cent of HICP's weight basis and 53.2 per cent of the index of net retail prices. The difference reflects that the same goods and services do not count equally in the two indices, and does not express the indirect taxation content of the consumer prices.

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

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

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

SELECTED MONTHLY ECONOMIC INDICATORS — Table 21

	Unemployment	Quantity index		Forced sales of real property	New passenger car registrations	Consumer confidence indicator	Composite cyclical indicator for		
		Manufacturing industry [1]	Retail trade				Manufacturing industry	Building and construction	Service
	Per cent of labour force	2005=100	2005=100	Number		Balance per cent			
2005	5.1	100.0	100.2	1,874	148,578	9	0	7	20
2006	3.9	105.7	103.5	1,231	156,719	10	9	21	24
2007	2.8	107.0	104.9	1,392	162,481	7	5	9	20
2008	1.9	106.7	101.7	2,840	150,663	-8	-7	-16	3
2009	3.6	88.2	97.0	4,140	112,249	-5	-17	-44	-13
				Seasonally adjusted					
Apr 10	4.2	86.7	93.9	375	11,716	3	5	-32	1
May 10	4.1	90.6	97.5	451	12,826	2	8	-31	6
Jun 10	4.2	94.9	95.8	443	12,363	-2	6	-33	7
Jul 10	4.1	94.6	96.1	439	12,078	4	5	-32	4
Aug 10	4.1	88.4	96.4	384	12,552	5	4	-31	3
Sep 10	...	...	...	422	...	2	5	-28	4

[1] Excluding shipbuilding.

SELECTED QUARTERLY ECONOMIC INDICATORS — Table 22

	Employment		Hourly earnings			Property prices (purchase sum, one-family dwellings)
	Total	Private	All sectors in Denmark, total	Manufacturing industry in Denmark	Manufacturing industry abroad	As a percentage of property value 2006
	1,000 persons		1996=100			
2005	2,767	1,924	141.4	141.7	130.7	82.3
2006	2,825	1,980	145.7	146.1	134.2	100.0
2007	2,908	2,066	151.4	152.1	138.4	104.9
2008	2,964	2,126	158.0	158.5	143.0	101.1
2009	2,864	2,015	162.9	163.1	145.5	87.1
			Seasonally adjusted			
Q2 09	2,883	2,033	162.4	162.5	145.0	86.8
Q3 09	2,841	1,989	163.4	164.0	145.9	86.9
Q4 09	2,806	1,955	164.1	164.9	146.7	86.5
Q1 10	2,809	1,948	165.6	166.7	148.8	86.4
Q2 10	2,815	1,950	165.9	166.6	148.4	...
			Change compared with previous year, per cent			
2005	1.0	1.4	2.9	2.7	2.5	17.4
2006	2.1	2.9	3.1	3.1	2.7	21.5
2007	2.9	4.4	3.8	4.0	3.2	4.9
2008	1.9	2.9	4.4	4.2	3.3	-3.6
2009	-3.4	-5.2	3.1	2.9	1.8	-13.8
Q2 09	-2.5	-4.1	3.1	2.7	1.7	-16.3
Q3 09	-4.3	-6.8	2.8	2.7	1.7	-13.9
Q4 09	-5.5	-8.2	2.3	2.5	1.9	-7.0
Q1 10	-4.0	-6.4	2.5	2.8	3.0	-1.3
Q2 10	-2.4	-4.1	2.2	2.6	2.4	...

EXCHANGE RATES — Table 23

	EUR	USD	GBP	SEK	NOK	CHF	JPY
	Kroner per 100 units						
	Average						
2005	745.19	600.34	1,090.02	80.29	93.11	481.30	5.4473
2006	745.91	594.70	1,094.32	80.62	92.71	474.22	5.1123
2007	745.06	544.56	1,089.81	80.57	92.99	453.66	4.6247
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
Apr 10	744.27	555.17	851.40	77.05	93.83	518.83	5.9429
May 10	744.16	591.90	868.22	76.97	94.26	524.43	6.4246
Jun 10	744.09	609.55	899.03	77.74	94.12	540.65	6.7050
Jul 10	745.22	583.72	891.83	78.49	92.92	553.71	6.6710
Aug 10	744.95	577.90	904.51	79.07	93.91	555.68	6.7733
Sep 10	744.76	570.26	886.92	80.74	94.09	569.07	6.7591

EFFECTIVE KRONE RATE — Table 24

Average	Nominal effective krone rate	Consumer-price indices		Real effective krone rate based on consumer prices	Real effective krone rate based on hourly earnings	Consumer-price index in the euro area
		Denmark	Abroad			
	1980=100					2005=100
2005	101.6	241.7	228.5	107.5	109.6	100.0
2006	101.6	246.2	233.4	107.3	110.3	102.2
2007	103.2	250.5	238.7	108.3	112.7	104.4
2008	105.8	259.0	246.9	111.1	116.7	107.8
2009	107.8	262.4	247.3	114.9	120.7	108.1
Apr 10	104.8	268.6	251.3	112.5	...	109.9
May 10	103.3	268.6	251.7	111.3	...	110.0
Jun 10	102.2	268.2	251.7	110.1	116.3	110.0
Jul 10	102.9	268.2	251.5	110.7	...	109.7
Aug 10	102.8	269.0	...	...	...	109.9
Sep 10	102.8	270.1	...	...	...	...
	Change compared with previous year, per cent					
2005	-0.6	1.8	2.0	-0.7	-0.2	2.2
2006	0.0	1.9	2.1	-0.1	0.6	2.2
2007	1.6	1.7	2.3	0.9	2.2	2.2
2008	2.5	3.4	3.4	2.6	3.5	3.3
2009	1.9	1.3	0.2	3.4	3.4	0.3
Apr 10	-2.4	2.4	1.8	-2.1	...	1.5
May 10	-3.9	2.2	1.8	-3.2	...	1.6
Jun 10	-5.4	1.7	1.6	-4.5	-3.4	1.4
Jul 10	-4.6	2.3	1.8	-3.7	...	1.7
Aug 10	-4.3	2.3	...	...	...	1.6
Sep 10	-4.8	2.6	...	...	...	...

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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