

# GLOBAL ECONOMIC OUTLOOK – AUGUST

Monetary and Statistics Department  
External Economic Relations Division

2011

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The August issue of the Global Economic Outlook presents recent and expected developments in selected countries from the point of view of standard indicators such as GDP, inflation, leading indicators, interest rates, exchange rates and commodity prices. The regular detailed analysis (Section VII – *Focus*) provides a brief overview of developments on *Eurodollar markets* (bank liabilities, bonds and implications for domestic monetary policy). In view of the extraordinarily dramatic developments, this issue also features Section VIII – *Current topic*, entitled *Increased uncertainty in euro area financial markets*.

The persisting budget and debt problems of some euro area countries are causing escalating uncertainty on the financial markets, which in turn is posing a threat to other countries in the monetary union. News from the United States is also amplifying concerns regarding future global economic developments. The United States is also dealing with budget problems, one result of which has been Standard & Poor's downgrading its rating on US government debt. Moreover, US GDP growth slowed considerably in 2011 H1. Concerns regarding future developments are also reflected by monetary policy in the euro area and the United States. The Fed is trying to calm the situation by committing to keep record-low rates until mid-2013, attributing the current slowdown to high energy and food prices and a temporary shortfall in Japan's output. If the unfavourable trends were to continue, it stands ready to reapply a broad range of non-standard monetary policy instruments. The ECB has already started to raise interest rates, but in its own assessment its policy remains accommodative. Following buoyant growth in 2011 Q1, a slowdown is also expected in the euro area. In August the ECB responded to the increased financial market tension by extending its non-standard liquidity provision regime. The fate of the world economy will thus depend mainly on developments in large emerging economies. So far they have maintained strong growth, although China has been trying to dampen high domestic demand and investment through monetary policy.

These uncertainties have resulted in a lower outlook for economic growth, which is so far visible mainly in forecasts updated at a higher frequency (CF). The revision is larger for the United States than for the euro area. The inflation outlook is broadly unchanged for advanced economies, but it is continuously increasing for China, which could lead to a stronger appreciation of its currency.

The monitored leading indicators (PMI) indicate a cooling of industrial production growth for all countries. The other indicators are not as unambiguous. The OECD's leading indicators expect a slowdown in euro area economic growth which, however, should not be very noticeable in Germany for now. According to the indicators, growth should continue at about the same pace in the United States.

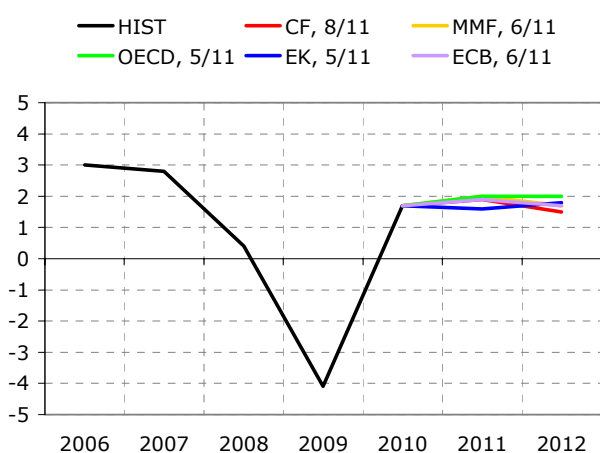
As regards interest rates, especially yields on long-term government bonds of the lowest risk countries (Germany, United States) have fallen significantly, as has their one-year outlook. In the euro area, the outlook for three-month and one-year interbank rates has also declined owing to the planned liquidity provision. These rates should even start to decrease from their current levels. By contrast, the outlook for the USD/EUR exchange rate is unchanged due to risks in both the euro area and the United States. However, "safe" currencies, such as the Swiss franc and the Japanese yen, have appreciated. Consensus Forecasts expects, however, that the appreciation of these currencies will be subject to a partial correction.

Commodity markets reflect the concerns of an expected decline in global demand as well as financial market turbulence. Prices of oil and industrial metals have fallen markedly, including forward price curves. Food commodity prices have recorded a much smaller decrease, with futures signalling continuing price growth for some items.

**II.1 GDP**

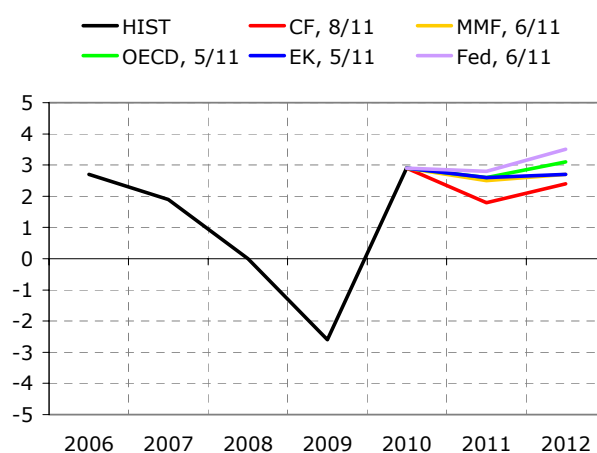
As a result of persisting debt problems in the euro area, their spread to other countries in the monetary union and related financial market uncertainty, CF decreased the outlook for GDP growth for 2011 and 2012 to 1.9% and 1.5%, respectively. In Germany, CF expects growth of 3.4% in 2011, despite a slowdown in global economic growth and the first signs of a potential weakening of domestic economic growth in H2. Growth in the largest euro area economy should slow to 1.9% next year. Unfavourable macroeconomic data from the United States, high government debt, the announcement that interest rates would be kept unchanged for an extended period, increased uncertainty regarding sustained financial stability and, last but not least, the downgrading of the US rating to AA+ by Standard & Poor's led to a significant revision of the outlooks for US economic growth in the two-year horizon. Consensus Forecasts expects growth to reach only 1.8% this year and accelerate to 2.4% next year. In China, GDP growth of 9.2% in 2011 and 8.8% in 2012 is expected.

**EURO AREA**



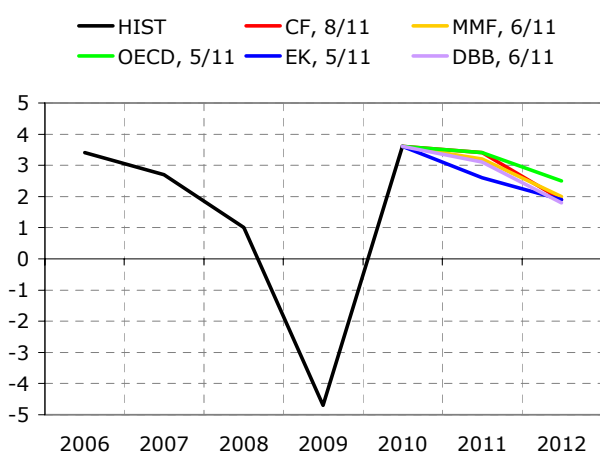
	HIST	CF	MMF	OECD	EK	ECB
2010	1.7					
2011		1.9	2.0	2.0	1.6	1.9
2012		1.5	1.7	2.0	1.8	1.7

**USA**



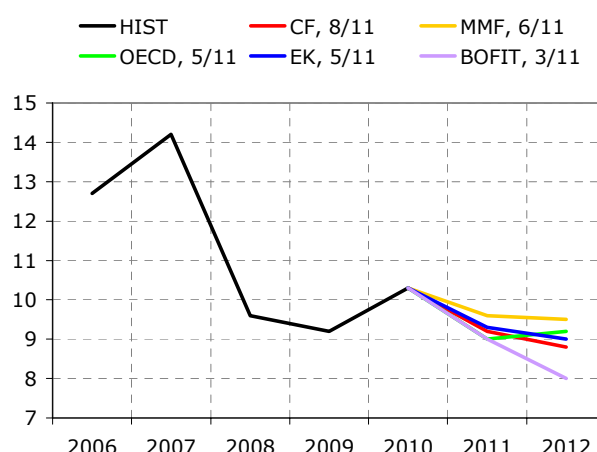
	HIST	CF	IMF	OECD	EC	Fed
2010	2.9					
2011		1.8	2.5	2.6	2.6	2.8
2012		2.4	2.7	3.1	2.7	3.5

**GERMANY**



	HIST	CF	MMF	OECD	EK	DBB
2010	3.6					
2011		3.4	3.2	3.4	2.6	3.1
2012		1.9	2.0	2.5	1.9	1.8

**CHINA**



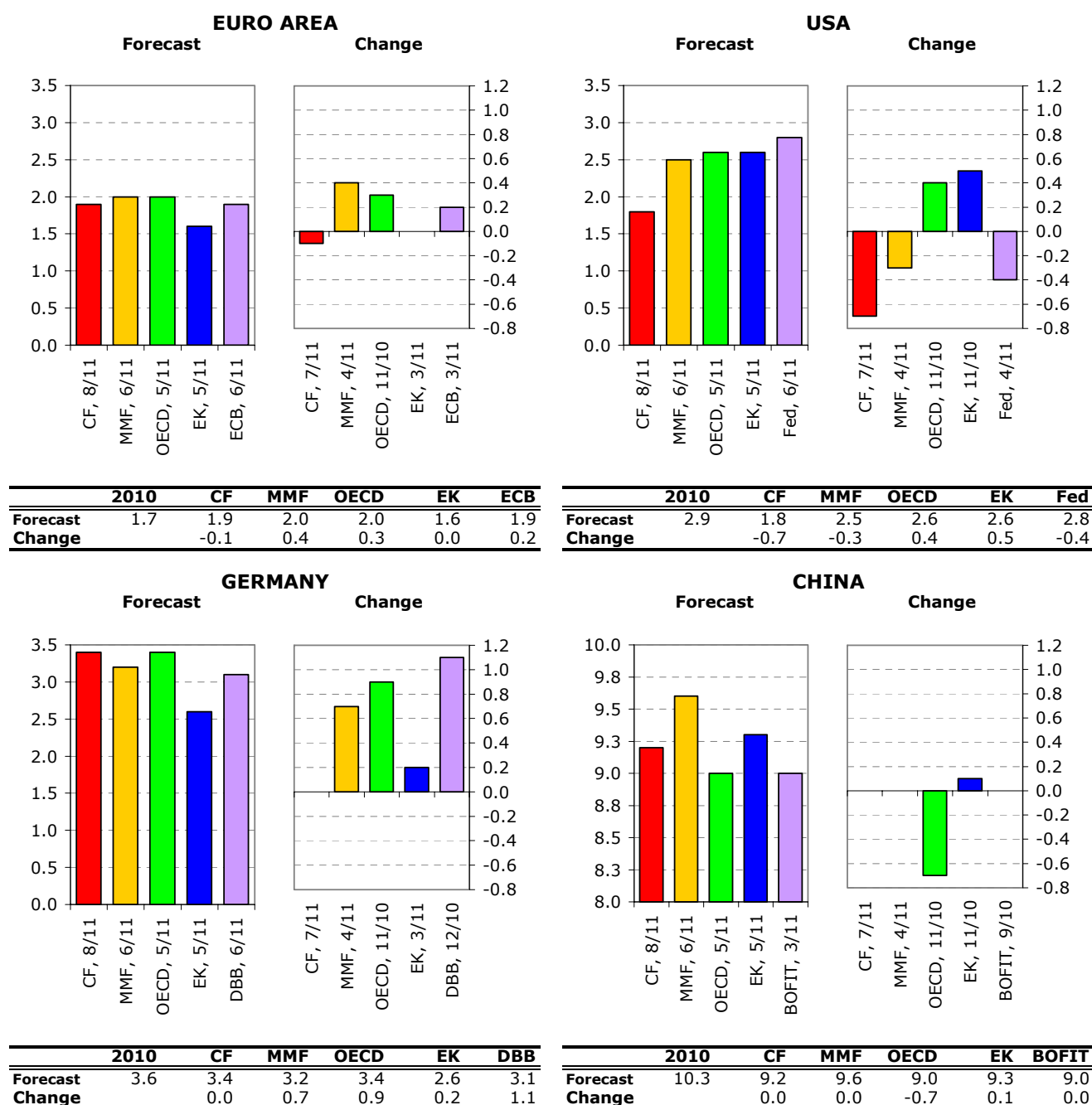
	HIST	CF	MMF	OECD	EK	BOFIT
2010	10.3					
2011		9.2	9.6	9.0	9.3	9.0
2012		8.8	9.5	9.2	9.0	8.0

Note: Legend shows latest forecast data in format "Source, month/year of forecast publication". HIST: historical value. ECB and Fed: midpoint of range. [Cut-off date for data: 12 August 2011]

Source: CNB calculation using Eurostat, CF, IMF, OECD, EC, ECB, Fed, DBB and BOFIT databases.

## II.2 Current GDP forecast and change from the previous forecast

The August CF revised the outlook for euro area GDP growth at the two-year horizon, down by 0.1 percentage point. The biggest change occurred for the United States, whose growth as expected by CF was decreased by 0.7 percentage point for this year and 0.6 percentage point for next year. Consensus Forecasts has not made such a sizeable revision of US economic activity since March 2009, when the GDP growth outlook for 2009 was reduced from -2.1% to -2.8%. The CF outlooks for Germany and China remained unchanged.



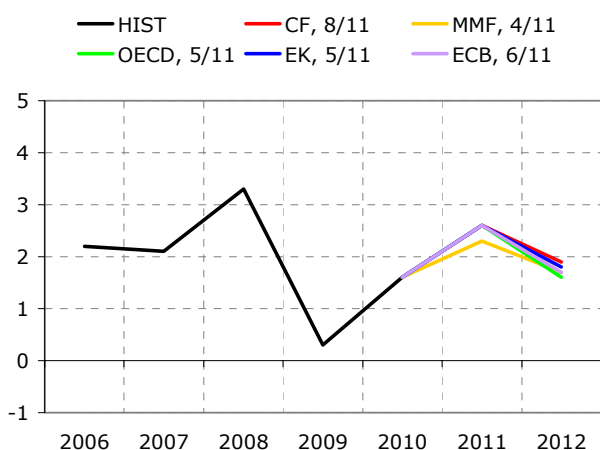
Note: Horizontal axis of left-hand (right-hand) chart shows latest (previous) forecast data in format "Source, month/year of forecast publication". HIST: historical value. ECB and Fed: midpoint of range. [Cut-off date for data: 12 August 2011]

Source: CNB calculation using Eurostat, CF, IMF, OECD, EC, ECB, Fed, DBB and BOFIT databases.

### II.3 Inflation

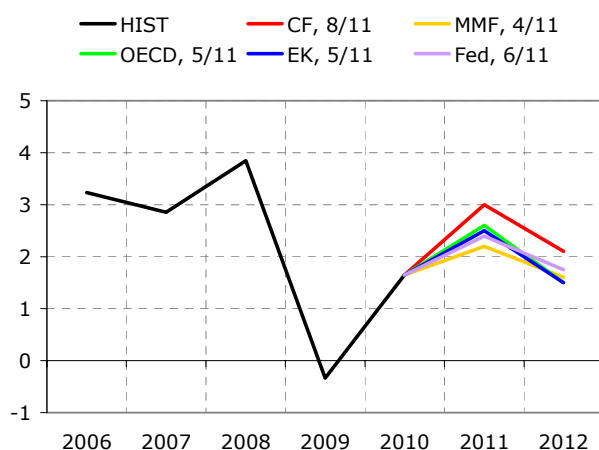
The CF outlook for inflation in the euro area remained at 2.6% in 2011 and 1.9% in 2012 for the third consecutive month. Inflation in Germany should reach 2.3% and 2.2% in the same periods. Inflation of 3% is expected in the United States for this year; next year it should slow to 2.1%. The outlook for inflation in China has been rising steadily since the end of 2010, standing at 5.3% for 2011 in August. Prices in China are expected to grow by 4.1% next year. Rising inflation is supporting internal pressures for a faster appreciation of the renminbi. However, China's policy continues to control inflation by dampening domestic consumption and investment, which according to CF increases concerns regarding future economic growth in China.

#### EURO AREA



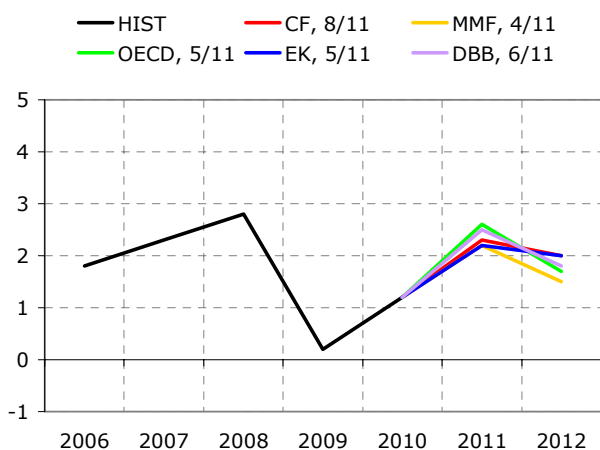
	HIST	CF	MMF	OECD	EK	ECB
2010	1.6					
2011		2.6	2.3	2.6	2.6	2.6
2012		1.9	1.7	1.6	1.8	1.7

#### USA



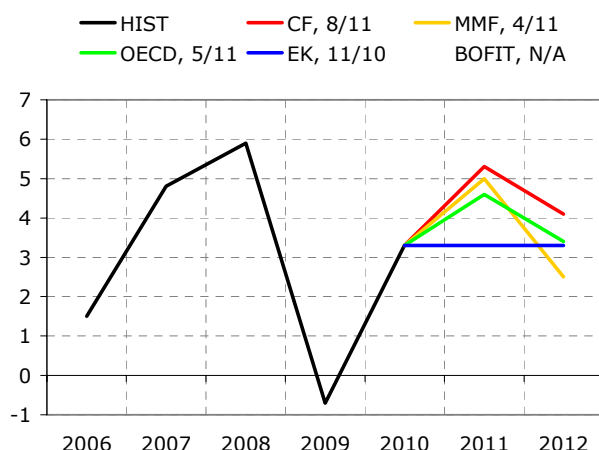
	HIST	CF	MMF	OECD	EK	Fed
2010	1.6					
2011		3.0	2.2	2.6	2.5	2.4
2012		2.1	1.6	1.5	1.5	1.8

#### GERMANY



	HIST	CF	MMF	OECD	EK	DBB
2010	1.2					
2011		2.3	2.2	2.6	2.2	2.5
2012		2.0	1.5	1.7	2.0	1.8

#### CHINA



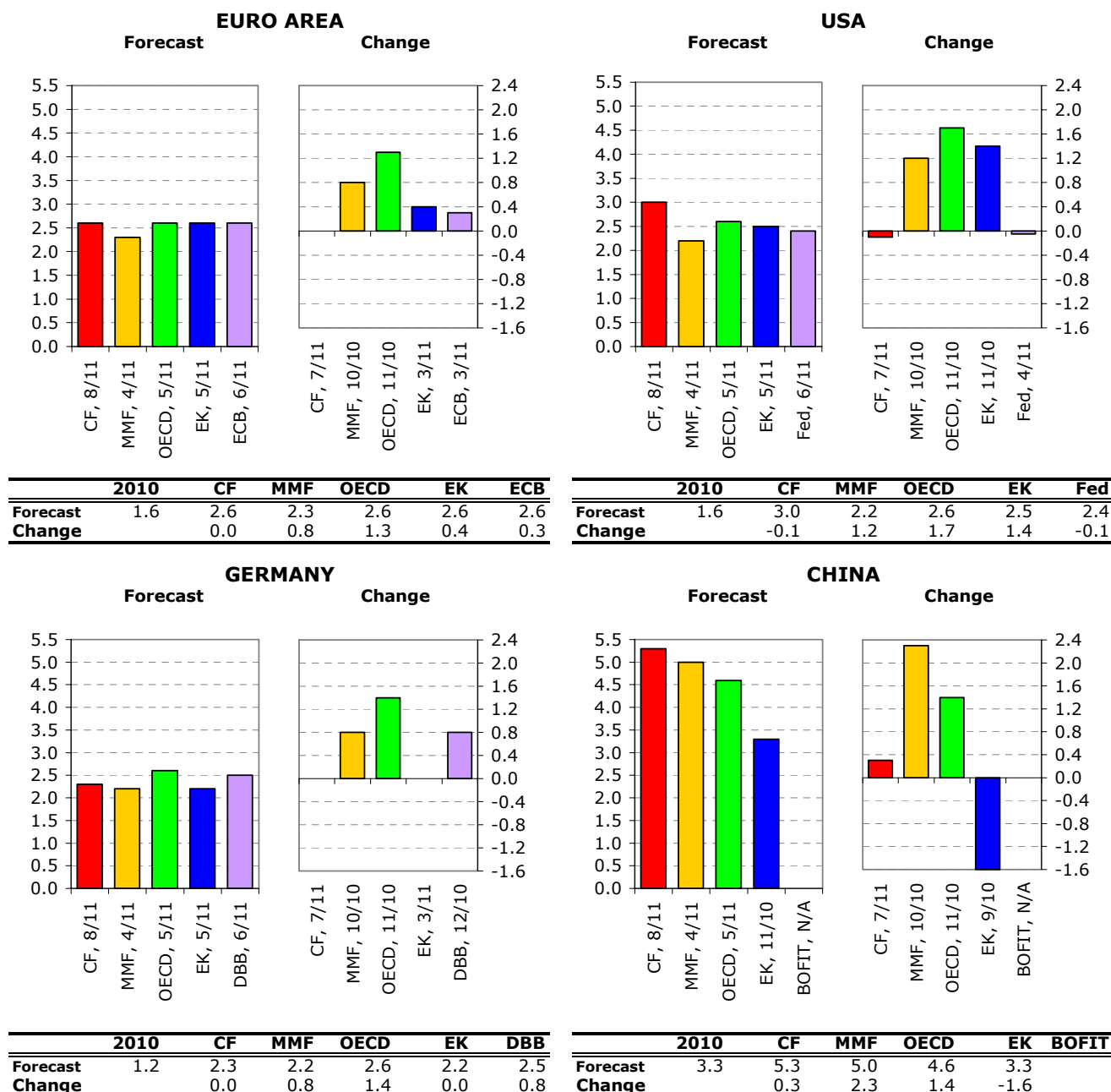
	HIST	CF	MMF	OECD	EK	BOFIT
2010	3.3					
2011		5.3	5.0	4.6	3.3	
2012		4.1	2.5	3.4	3.3	

Note: Legend shows latest forecast data in format "Source, month/year of forecast publication". HIST: historical value. ECB and Fed: midpoint of range. [Cut-off date for data: 12 August 2011]

Source: CNB calculation using Eurostat, CF, IMF, OECD, EC, ECB, Fed, DBB and BOFIT databases.

### II.4 Inflation forecast and change from the previous forecast

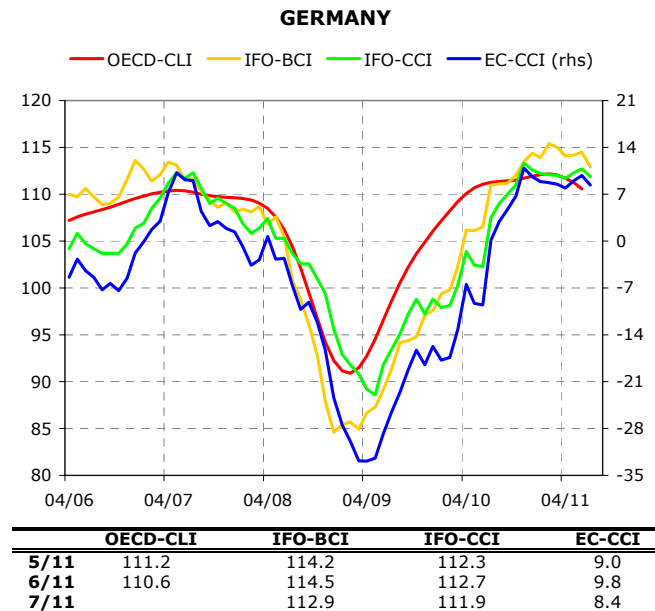
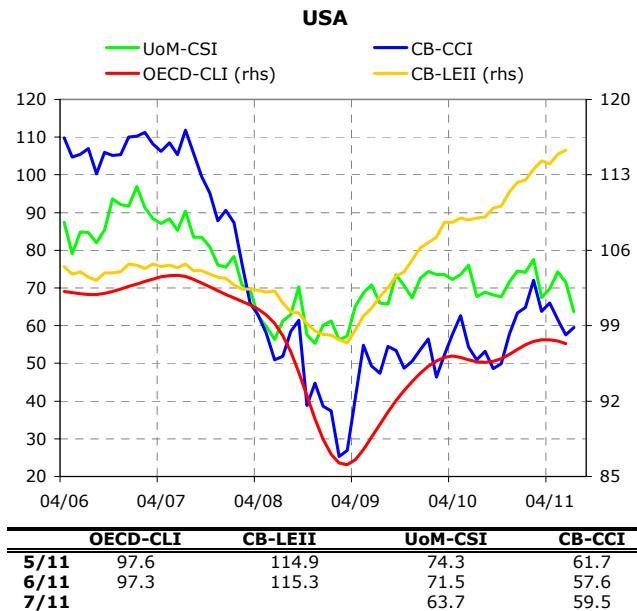
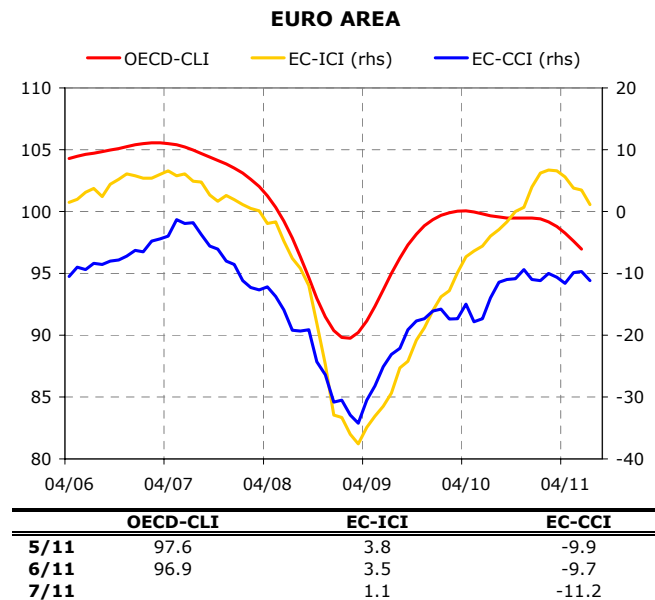
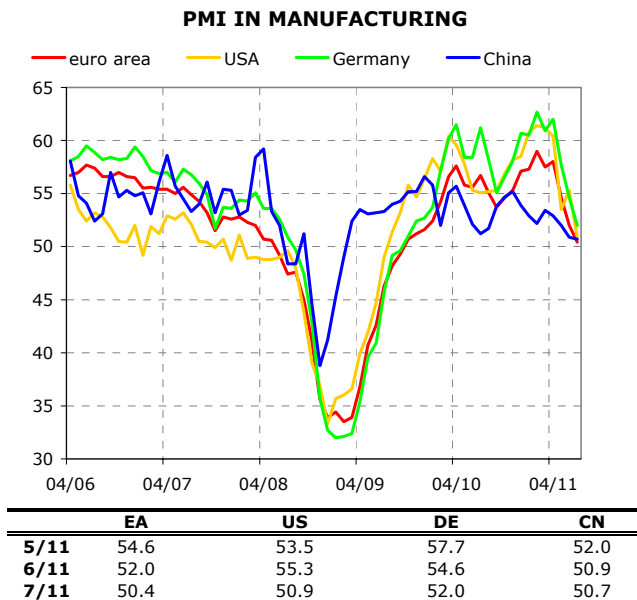
The outlook for inflation in the euro area and Germany saw no change in the August CF. Prices are expected to grow 0.1 percentage point slower in the United States this year. The forecast for next year is unchanged. In China, CF expects inflation to be 0.3 percentage point above the previous forecast; the inflation outlook for next year has been increased by 0.2 percentage point.



Note: Horizontal axis of left-hand (right-hand) chart shows latest (previous) forecast data in format "Source, month/year of forecast publication". HIST: historical value. ECB and Fed: midpoint of range. [Cut-off date for data: 12 August 2011]

Source: CNB calculation using Eurostat, CF, IMF, OECD, EC, ECB, Fed, DBB and BOFIT databases.

The global economic outlook for 2011 H2 deteriorated in August compared to July. The PMI (Purchasing Managers' Index) in industry continued to fall in all the countries and regions under review in August, thus confirming the negative outlook for H2. The outlook for the US economy is somewhat unclear. Besides the PMI, whose decline was dangerously close to 50 points, the threshold between future growth and contraction, some leading indicators signal a pick-up while others a slowdown in expected growth. The euro area and Germany saw a decline – in addition to the PMI, also in all the other leading indicators monitored. The estimates of future economic growth in Europe thus deteriorated markedly compared to the previous month.



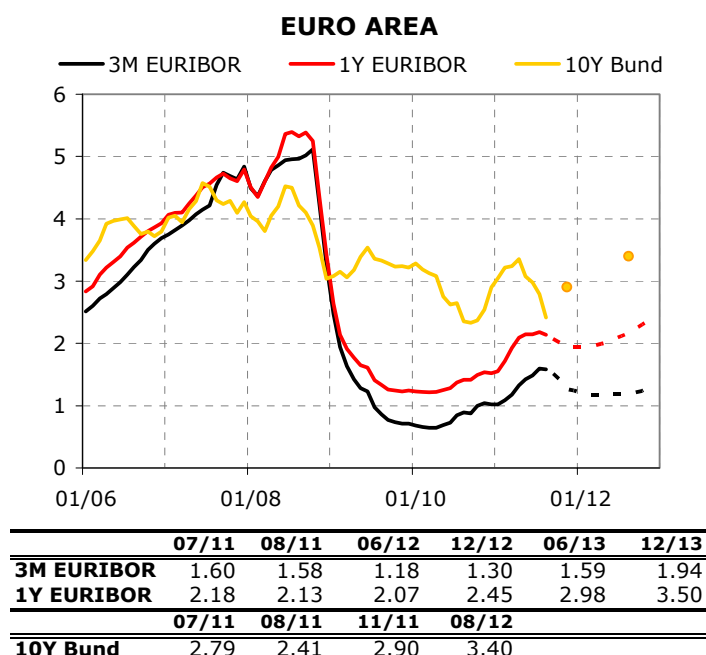
Note: OECD-CLI stands for OECD Composite Leading Indicator, EC-ICI (right-hand scale) for European Commission Industrial Confidence Indicator, EC-CCI (right-hand scale) for EC Consumer Confidence Indicator, CB-LEII for Conference Board Leading Economic Indicator Index, CB-CCI for CB Consumer Confidence Index, UoM-CSI for University of Michigan Consumer Sentiment Index, IFO-BCI for Institute for Economic Research – Business Climate Index, and IFO-CCI for IFO Consumer Confidence Index. [Cut-off date for data: 11 August 2011]

Source: CNB calculation using OECD, EC, IFO and UoM databases.



### IV.1 Outlook for short-term and long-term interest rates: Euro area

At its August meeting, the ECB left its key interest rate unchanged at 1.5%. However, 3M and 1Y EURIBOR rates fell by about 9 basis points in reaction to this meeting. At the same time, the outlooks for rates based on market contracts decreased as well. The 3M EURIBOR rate is thus currently expected to stand at 1.2% in March next year and rise slightly afterwards. The 1Y EURIBOR rate should be lowest in January 2012 (1.9%), and then also rise slightly. The 10Y German government bond yield was around 2.4% at the start of August and its outlook was unchanged from the previous month. The evolution of interest rates reflected increased uncertainty on euro area financial markets relating to possible problems with government debt financing in some countries in the southern periphery of the euro area. First, the ECB again extended six-month fixed-rate liquidity provision at its monetary policy meeting on 4 August. Then, in the second week of August, it started to buy Italian and Spanish government bonds.

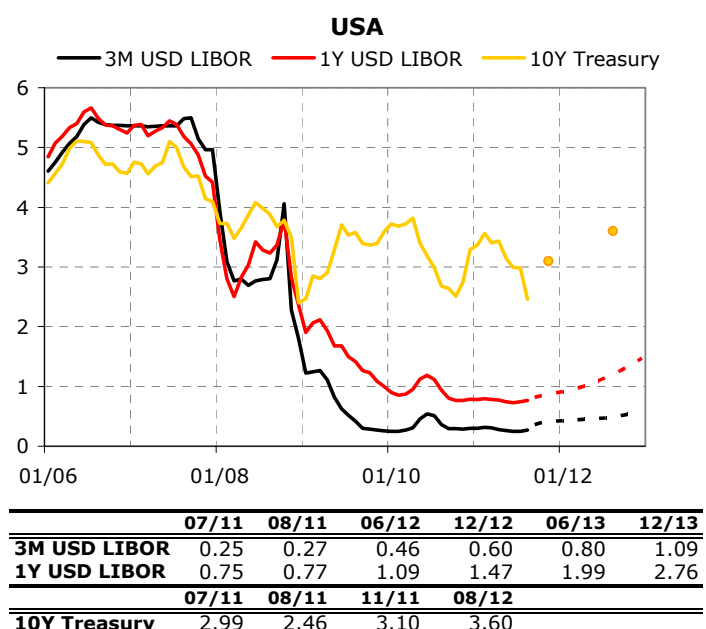


Note: Forecast for EURIBOR rates is based on rates implied by interbank market yield curve (FRA rates are used from 4M to 15M and adjusted IRS rates for longer horizon). Forecast for German government bond yield (10Y Bund) is derived from CF forecast. Dashed lines and points represent outlook. [Cut-off date for data: 8 August 2011]

Sources: Thomson Reuters (Datastream), Bloomberg, CNB calculations.

### IV.2 Outlook for short-term and long-term interest rates: USA

The Fed carried on with its record easy monetary policy in July and August, and so far there are no signs of a rise in monetary policy rates. By contrast, in connection with weakening economic growth, speculation has recently been rising about a potential further (third) wave of quantitative easing. At the start of August, 3M and 1Y money market rates were at 0.27% and 0.77% respectively, with a rising outlook. 3M rates are thus expected to reach 0.6% at the end of next year. The ten-year government bond yield has been decreasing since end-July. It grew slightly at the start of August owing to Standard & Poor's downgrade of the US debt rating, but then it continued to fall. At the one-year horizon it should rise to 3.6%, however.

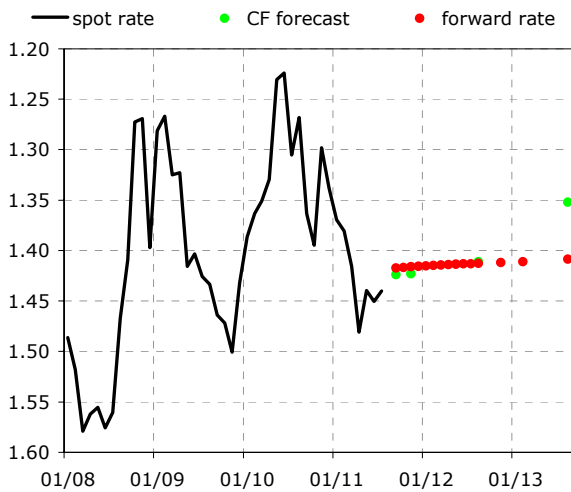


Note: Forecast for 3M and 1Y USD LIBOR rates is based on rates implied by London interbank market yield curve (USD LIBOR rates are used up to 3M, 3M FRA rates up to 15M, and adjusted IRS rates for longer horizon). Forecast for US government bond yield (10Y Treasury) is derived from CF forecast. Dashed lines and points represent outlook. [Cut-off date for data: 8 August 2011]

Sources: Thomson Reuters (Datastream), Bloomberg, CNB calculations.

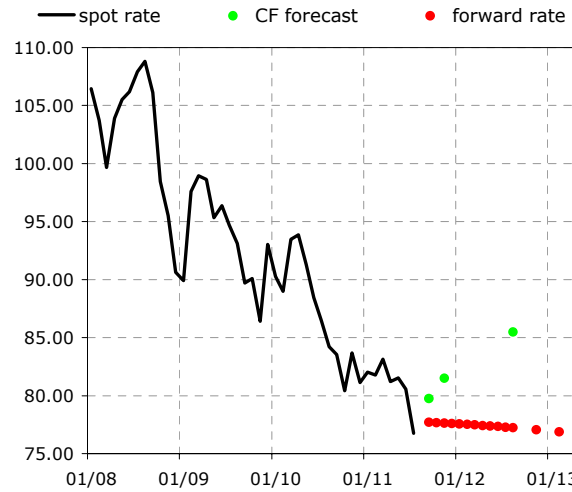
Increased uncertainty on financial markets (see Section VIII – *Current topic*) associated with problems in both the euro area and the United States affected the euro-dollar exchange rate. As risks are significant in both regions, the new forecast was virtually unchanged from the previous month. In the euro area, mainly Italian bonds came under pressure in July, and the United States published a downward revision of GDP growth data. August saw Standard & Poor’s downgrade the US rating (originally AAA), which strongly increased stock market volatility. New speculation also emerged about potential problems in France. The Swiss franc, as a safe asset, benefited from the rising uncertainty and the path of its expected exchange rate again shifted upwards. The Japanese yen also appreciated against the dollar, but its outlook was almost unchanged compared to July.

**US\$ per Euro**



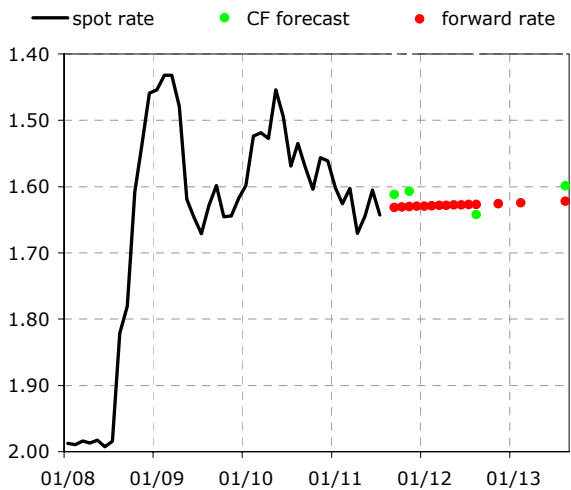
	8/8/11	09/11	11/11	08/12	08/13
spot rate	1.418				
CF forecast		1.424	1.423	1.411	1.352
forward rate		1.417	1.416	1.413	1.409

**Yen per US\$**



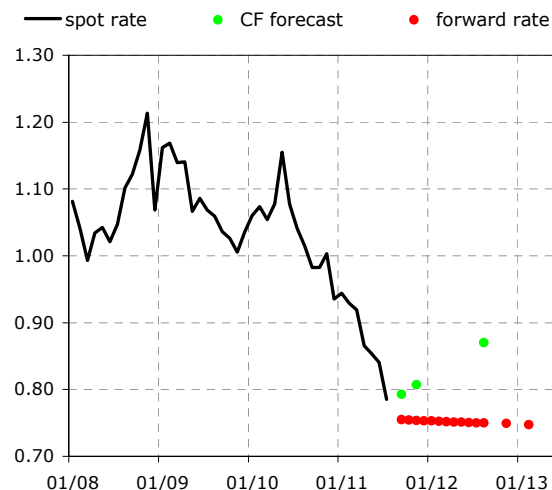
	8/8/11	09/11	11/11	08/12	08/13
spot rate	77.77				
CF forecast		79.74	81.49	85.48	90.23
forward rate		77.70	77.63	77.21	76.37

**US\$ per UK£**



	8/8/11	09/11	11/11	08/12	08/13
spot rate	1.632				
CF forecast		1.612	1.607	1.642	1.599
forward rate		1.631	1.630	1.627	1.622

**Swfr per US\$**



	8/8/11	09/11	11/11	08/12	08/13
spot rate	0.755				
CF forecast		0.793	0.807	0.870	0.975
forward rate		0.755	0.754	0.750	0.744

Note: Increase in currency pair represents appreciation of US dollar; data as of the last day of the month. Forward rate does not represent outlook; it is based on covered interest parity, i.e. currency of country with higher interest rate is depreciating. Forward rate represents current (as of cut-off date) possibilities for securing future exchange rate. [Cut-off date for data: 11 August 2011] Source: CNB calculation using Bloomberg and Consensus Forecasts databases.

### VI.1 Oil and natural gas

After surging in the first week of July, the price of Brent oil fluctuated within a narrow range of USD 116–118 a barrel in the rest of the month. In early August, however, negative sentiment from stock markets also spread to commodity markets, as the euro area and US debt problems were topped up by bad news from the real economy (US GDP, ISM leading indicators, industrial production in Germany). This was followed by a wave of sell-offs, reinforced by the downgrading of the US government debt. The price of Brent oil fell just above USD 100 a barrel over five trading days. The sell-offs stopped on 9 August and oil prices slightly corrected the previous decrease. The calming was due both to the Fed's commitment to keep rates low and the strong fall in inventories in the United States. Based on market data, the August outlook proceeds from current prices and is thus much lower compared to the previous month's forecast. However, the slope of the forward price curve remained almost unchanged and is still just slightly falling.

Note: Oil prices in USD/barrel are taken from listings on London-based ICE Futures Europe international exchange. Prices of Russian natural gas at border with Germany in USD/1000 cubic m are calculated using IMF data. Future oil prices are derived from oil futures. Dashed line represents outlook. [Cut-off date for data: 9 August 2011].

Source: Bloomberg, IMF, CNB calculations.

### VI.2 Other commodities

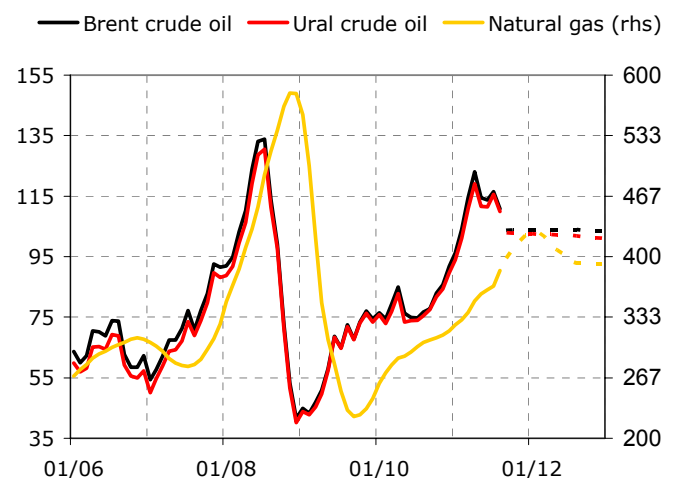
Concerns about future global economic development led also to a drop in the industrial metal price index (down by 10.5% – measured by monthly averages, i.e. only about 2 percentage points less than the price of Brent oil). The forecast shifted to the same extent. By contrast, the food commodity price index declined much less and is still expected to rise slightly by mid-2012.

Although most agricultural commodities (except meat and rice) were affected by the sell-offs on the commodity markets, price decreases were mostly relatively small in view of the previous volatility. The pronounced fall in cotton prices in early July is thus the only area worthy of note. The forecast remains slightly rising for wheat, rice and beef, while prices of corn, soya and sugar are expected to fall. The declines in prices of industrial metals were strong overall. Modest future growth is expected only for the price of aluminium.

Note: Chart shows indices, year 2005 = 100. Dashed line represents outlook. [Cut-off date for data: 9 August 2011].

Source: Bloomberg, outlooks based on futures.

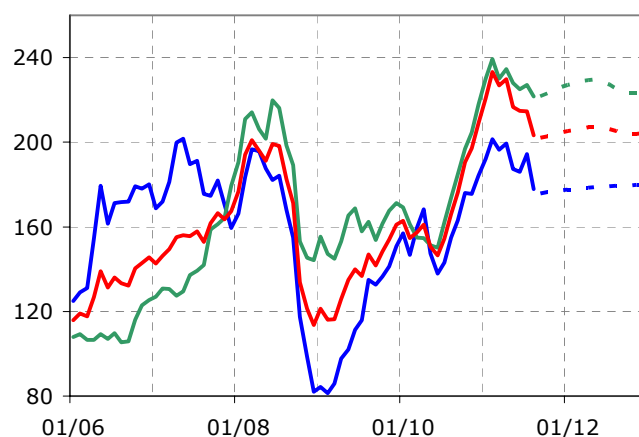
#### OUTLOOK FOR PRICES OF OIL AND NATURAL GAS



	08/11	06/12	12/12	06/13	12/13
<b>Brent crude oil</b>	110.9	104.0	103.5	102.7	101.7
<b>Ural crude oil</b>	109.8	102.1	101.1	99.9	98.6
<b>Natural gas</b>	384.8	402.3	392.3	389.5	384.5

#### OUTLOOK FOR OTHER COMMODITY PRICES

— Industrial metals — Agricultural commodities  
— Overall commodity basket



	08/11	06/12	12/12	06/13	12/13
<b>Industrial metals</b>	177.9	179.0	179.9	180.1	179.1
<b>Agricultural commodities</b>	221.6	229.0	223.7	224.6	217.4
<b>Overall commodity basket</b>	203.3	206.8	204.4	205.1	201.6

## EURODOLLAR MARKETS<sup>1</sup>

*This note provides a brief overview of Eurodollar markets. Long-term developments in the market for US dollar-denominated bank liabilities of banks located outside the US – the formal definition of the Eurodollar market – are reviewed based on data provided by the Bank for International Settlements. A brief description of the Eurodollar bond market is provided in the sequel. The note ends with a brief account of the implications of Eurocurrency markets for domestic monetary policy and financial stability.*

### 1. Eurodollar market – definition and overall development

The international use of major currencies has grown dramatically over the latest half a century, driven by growth in international trade, investment and foreign exchange reserve accumulation. The US dollar (USD) has maintained a key position in intermediating financial resources and its role has hardly been challenged at all by other currencies. A priori, one might expect the transactions required for international financing, especially outside the US, to be supplied through the branches and subsidiaries of US banks. In fact however, a crucial role in setting off and developing the market for USD-denominated financial resources outside the US has been played by British banks. Thus, at the early stages of USD internationalisation, London came close to what would later become known as an offshore centre<sup>2</sup> for this currency. The market for US dollars outside the US has steadily grown to give rise to the so-called Eurodollar market.

Originally, the term Eurodollar referred to bank deposits denominated in US dollars and placed with banks outside the US. It typically referred to one, three or six-month time deposits and to certificates of deposit. Apart from the fact that the transaction had to be recorded with a bank outside the US, the national affiliation of neither the bank nor the depositor involved in the transaction was essential for defining the Eurodollar market. The demand deposit/time deposit distinction has gradually been overcome. At least some studies today include all bank liabilities with the required attributes when analysing the Eurodollar market. It should also be mentioned that the prefix “Euro” has no connection with the euro area currency. It only means that the given currency is used outside the area where it was issued as a legal tender. In this sense one can talk in more general terms of Eurodollar, Euroeuro, Euroyen and any other Euro-currency combination. The term “Euro” was coined because it originally referred to US dollars deposited at European banks. By extension, the label Eurodollar may also apply to instruments traded in offshore markets of the US, such as Eurodollar bonds, notes, equities, futures and options.

To give a glimpse into the evolution of some of the main Eurocurrency markets, Figure VII-1 depicts the volume of international bank liabilities denominated in five currencies over the 1977–2010 period. The data were collected from the Bank for International Settlements’ (BIS) Locational Banking Statistics and have a quarterly frequency. BIS Locational Statistics are provided by an array of reporting financial institutions taking

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<sup>1</sup> Written by Narcisa Kadlčáková ([Narcisa.Kadlcakova@cnb.cz](mailto:Narcisa.Kadlcakova@cnb.cz)). The opinions expressed in this issue are those of the author and do not necessarily reflect the official position of the Czech National Bank.

<sup>2</sup> The BIS’s formal definition of an offshore centre is that of a banking/financial centre conducting financial transactions with non-residents or in a foreign currency well in excess of that of its domestic counterpart. Obviously, according to this definition, the claim that London represented an offshore centre for USD is greatly exaggerated. Rather, the geographical connotation of the word offshore is emphasised here. This means that the USD receipts from international trade and foreign investment available in London were not automatically placed as official reserves or exchanged for sterling in foreign exchange markets. They served the financing needs of local businesses through loans denominated in USD, thus creating a market of their own.

deposits or close substitutes of deposits (thus not strictly commercial banks) currently located in 43 countries. The list of reporting institutions is electronically available on the BIS website (see Table II-1 in the *Guidelines to the International Locational Banking Statistics* at <http://www.bis.org/statistics/locbankstatsguide.pdf>). Although structural breaks are present in the data (due to changes in the reporting/accounting methodology, changes in the country/institution sample, etc.), the data over the entire time sample are presented here. This is to emphasise the solid growth that these markets experienced over the 1977–2010 period.

The time series were constructed as the sum of the reporting banks' cross-border and local liabilities<sup>3</sup> in foreign currencies vis-à-vis all sectors. For example, the USD series shows the USD liabilities of banks located outside the US (but only in the represented countries) vis-à-vis both non-residents (cross-border liabilities) and residents (local liabilities). Branches and subsidiaries of US banks abroad are included in the sample and their USD liabilities are considered to bear a foreign currency denomination. To facilitate the comparison, the data is reported in billions of USD for all Eurocurrencies displayed in Figure VII-1.<sup>4</sup>

**Figure VII-1: Size of different Eurocurrency markets**

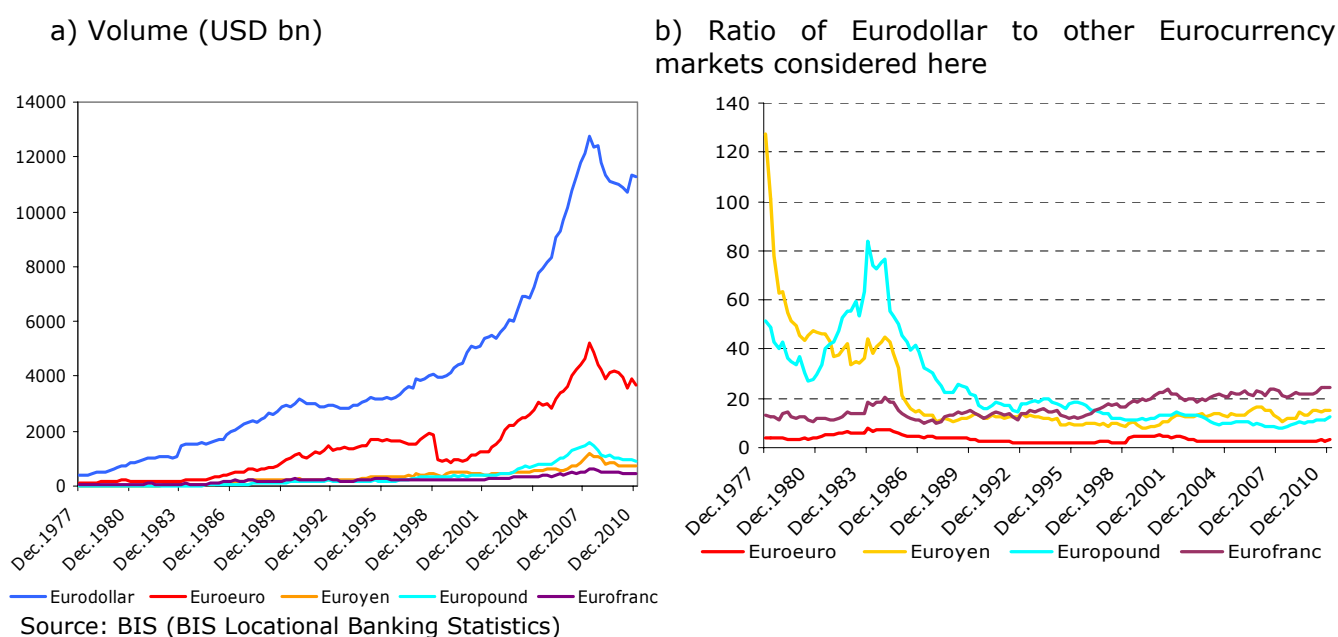


Figure VII-1 highlights the undeniable leading role of USD as an international bank deposit currency during the period considered. The period 2000–2007 witnessed particularly rapid growth of the Eurodollar market. It almost tripled in size from slightly less than USD 5,000 billion in December 2000 to USD 12,750 billion in March 2008, when the peak value was attained. Following the recent financial crisis, the Eurodollar market lost roughly USD 2,000 billion between March 2008–June 2010, only to recover slightly afterwards. All the other Eurocurrency markets show similar behaviour, reaching

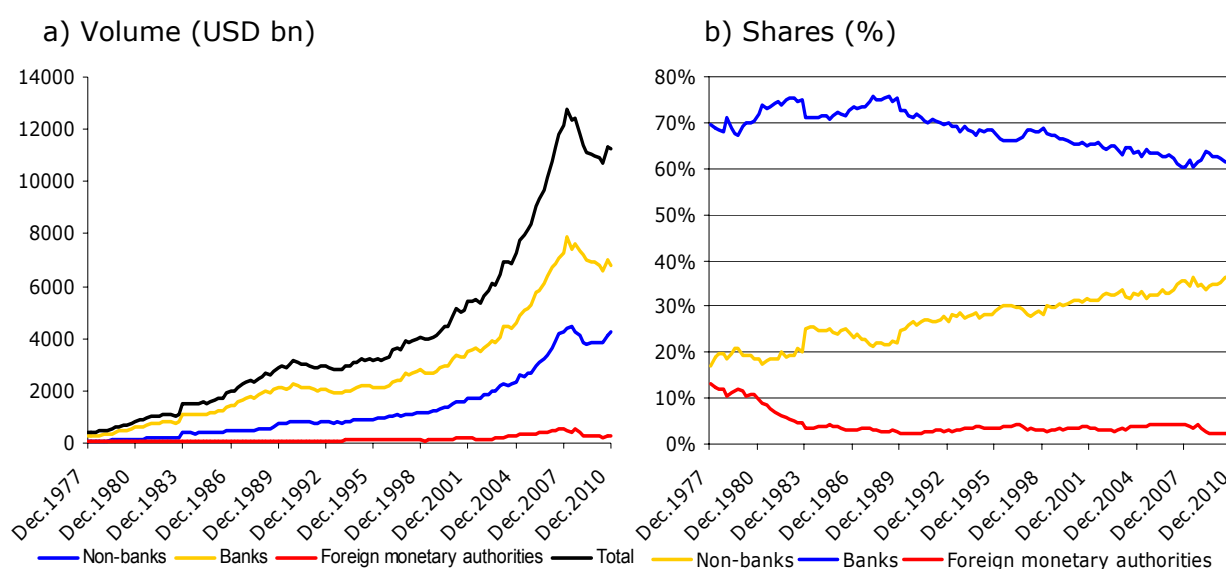
<sup>3</sup> The main items on the liability side of the banks reporting to the BIS are deposits and loans received from banks and non-banks. Additionally, these banks have to report their own issues of securities in international markets and funds received and invested on a trust basis in their own name. They do not report traded securities.

<sup>4</sup> In fact, the data are directly reported by the BIS in USD. To do this, stocks denominated in the original currencies are converted into USD using the pair-wise exchange rates at the end of each quarter. It is obvious that exchange rate movements affect the final liability stock values. It is also worth mentioning that a description of how euro-denominated liabilities were defined before the launch of the euro in 1999 is not available in the accompanying technical documents.

their maxima in March 2008 and decreasing in size afterwards. It is also worth mentioning that over the last decade the Eurodollar market stabilised by comparison to the other Eurocurrency markets considered here. Its volume has been roughly three times that of the Euroeuro market, 13 times that of the Euroyen market, 10 times that of the Europound market and 21 times that of the Swiss franc market.

The BIS data allow a sectoral decomposition of the USD liabilities of the reporting banks along three dimensions: bank, non-bank and foreign monetary authorities (basically foreign central banks). According to this classification one can identify who the main bank depositors have been and if any sectoral shifts have taken place. As Figure VII-2 shows, it is clear that the lion's share of the Eurodollar market has been supplied through interbank funding.<sup>5</sup> Over the period considered, 60%–75% of banks' funding needs were supplied by other banks. A sectoral shift took place in the early 1990s. The share of interbank liabilities decreased gradually from 70%–75% during 1980–1990 to 60% in December 2010. The decline in bank liabilities was offset by a rise in non-bank liabilities, whose share increased from 25% in December 1989 to 38% in December 2010. The share of USD deposits from foreign central banks fluctuated between 2% and 4% from the 1980s onwards.

**Figure VII-2:** Sectoral decomposition of the Eurodollar market



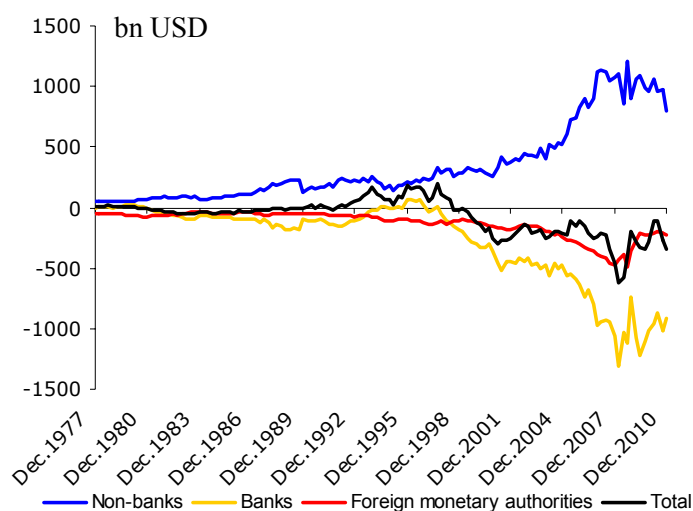
Source: BIS (BIS Locational Banking Statistics)

In a similar manner it is possible to estimate banks' asset side (claims, in BIS terminology) denominated in USD. The net positions (assets minus liabilities) offer a view of how banks outside the US managed their USD asset-liabilities balance at the sector level. From Figure VII-3 it is clear that offshore banks maintained an increasing negative net position in USD transactions vis-à-vis all sectors, reaching a record level of USD 629 billion in March 2008. However, it is interesting to note the asymmetric way in which this negative net position has been accumulated. Over the entire period 1990–2010, banks maintained a long position (lending more than the liabilities received) vis-à-vis non-bank borrowers and a short position vis-à-vis bank borrowers and foreign monetary authorities. In other words, banks transferred less and less USD funds

<sup>5</sup> Bank deposits in USD by domestic central banks are also included here. Therefore, they reflect the share of USD currency reserves maintained with the reporting banks by their central banks.

collected in the interbank market back into the interbank market, preferring to channel them to the non-bank sector.

**Figure VII-3:** Reporting of banks' net USD positions by sector



Source: BIS (BIS Locational Banking Statistics)

An investigation into how banks diversified funds deposited in the Eurodollar markets away from bank to non-bank clients is not possible based on our data sources. However, other studies have shed some light on this question. McGuire (2004), for example, emphasised that London increasingly transferred USD funds from the interbank market to the non-bank sector starting in the second half of the 1990s. This reflected increasing business ties between London-based banks and non-bank financial institutions such as hedge funds and securities trading firms (especially in the US) aimed at leveraging fixed income securities portfolios. It is reasonable to assume that banks followed a similar strategy vis-à-vis non-bank financial institutions in the Eurodollar market.

However, these widening asset-liability and maturity mismatches in USD positions were probably at the core of the bank vulnerabilities uncovered during the recent crisis. McGuire (2009) provides an in depth account of how these balance sheet exposures made European banks vulnerable to the recently experienced USD liquidity shock. Prior to the crisis, European banks met their international funding needs not covered by interbank and central bank funding through forex swaps. Japanese banks borrowed in yen from residents and American banks reported borrowings from mutual funds and other non-bank firms in the US through Caribbean offshore centres. As the crisis developed, all USD funding sources of European banks were suddenly affected by a liquidity shock. The interbank market went through a crisis of confidence caused by the bankruptcy of major banks in the US, the forex swap market was overwhelmed by increased demand for dollars, some foreign central banks withdrew liquidity in support of their domestic financial systems, and money market funds reduced their holdings of bank-issued commercial paper. European banks also faced big problems in reducing their USD-denominated asset volumes (especially asset-backed securities) and suffered losses by selling in declining markets. Managing these unbalanced positions during a period of financial stress in the end required massive official support.

## 2. Eurodollar bond market

A related topic is the Eurobond market. Eurobonds are bonds sold outside the country issuing the currency of denomination of the bond. Eurodollar bonds are USD-denominated bonds issued outside the US. There are several features that make Eurodollar bonds attractive to investors and obligors alike. Firstly, by being traded outside the area under the control of the US jurisdiction they do not obey Securities and Exchange Commission (SEC) regulations and other disclosure requirements. This makes them more attractive to investors and probably adds to the liquidity of the market. Secondly, since they are bearer bonds, the identity of the holder is not known and coupon and/or capital gains are not necessarily taxed.<sup>6</sup> Thirdly, a larger base of investors can be reached internationally, which is an advantage for US firms operating abroad. Not least, Eurodollar bonds can be used as hedging tools for managing the exchange rate risk of portfolios and are thus advantageous for institutional investors with large exposures to USD.

Data about the size of the Eurodollar bond market can be obtained by combining BIS and Department of the Treasury, Federal Reserve Bank of New York and Board of Governors of the Federal Reserve System statistics. BIS provides quarterly statistics on the stock of international debt securities. They are defined as securities satisfying any of the following three criteria: (i) foreign currency-denominated securities issued by both residents and non-residents in a given country, (ii) domestic currency securities issued in the domestic country by foreigners and (iii) domestic currency securities issued in the domestic country by residents but held by non-residents. The BIS data are an aggregate of these three categories. However, only point (i) is consistent with the definition of a Eurobond. Fortunately, data related to categories (ii) and (iii) are made available by the US government agencies mentioned above. Here, data for (ii) are estimated as the stock of US portfolio holdings of foreign securities and data for (iii) by the stock of foreign portfolio holdings of US securities. These statistics are provided on a yearly basis, as of December each year in the first case and as of June each year in the second case. To get the size of the Eurodollar bond market, the two US data components are subtracted from the BIS data. Only USD-denominated bonds and only long-term notes and bonds (maturity longer than one year) are considered. Figure VII-4 shows the evolution of the three segments of the US bond market just mentioned. To put the Eurodollar bond market into a comparative perspective, the stock of domestic US long-term bonds and notes sold to residents is also depicted there.

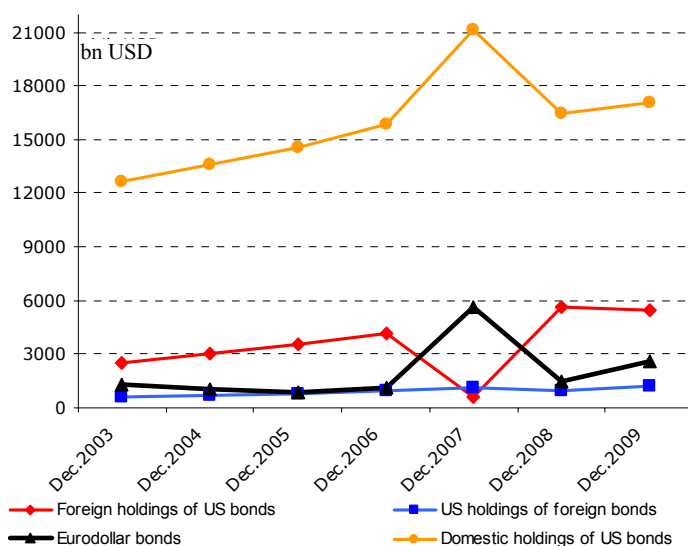
As seen in Figure VII-4, except for 2007, the period 2003–2009 witnessed modest growth in all segments of the USD bond market considered here. The financial crisis of 2007 had a fast and major impact on bond markets in the US. The stock of domestic bonds sold to residents grew by 33%, i.e. from USD 16 trillion in December 2006 to USD 21 trillion in December 2007. It is likely that problems in the banking system induced investors to search for safe havens (government bonds) and US firms to search for alternative non-bank financing (bond issuing). It is also worth noting that foreign investors switched from the domestic US market to the Eurodollar bond market during 2007. Foreign holdings of USD-denominated bonds issued in the US dropped markedly by USD 3.5 trillion during that year. This reduction was more than offset by trading in the Eurodollar bond markets (USD 4.5 trillion).

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<sup>6</sup> As argued in the literature, the withholding tax applied in the US until 1984 on foreigners' purchases of corporate bonds and on interest income gave an additional impetus to the Eurodollar bond market.



**Figure VII-4:** Eurodollar bond market together with the other three segments of the US bond market



Source: BIS (BIS securities statistics and syndicated loans), Department of the Treasury, Federal Reserve Bank of New York and Board of Governors of the Federal Reserve System (Report on US portfolio holdings of foreign securities as of December 31; Report on foreign portfolio holdings of US securities as of June 30)

Eurodollar derivative instruments – derivative contracts using Eurodollar instruments as the underlying asset – have been traded on exchanges around the world (CME, LIFFE, SIMEX, TIFFE). Given the diversity of these instruments and the difficulty of collecting data, a closer description will not be provided here.

### 3. Eurodollar markets – monetary policy and financial stability issues

Eurocurrency markets are not isolated from the rest of the financial system and their impact on other sectors may become a policy concern in certain cases. One such policy concern is the fact that agents in Eurocurrency markets do not operate under the jurisdiction of the domestic country (however, they have to observe that of the host country) and thus unilateral measures to control and regulate Eurocurrency markets may not be far-reaching enough. It is useful to outline potential risks posed by these markets and to highlight policy responses adopted by certain countries in the past. The issues examined here are discussed in more detail in Dong and McCauley (2010).

In terms of monetary policy, an offshore market may have an impact on the transmission of monetary policy. For central banks whose policy instrument is some short-term interest rate, the transmission of monetary policy may be undermined if substantial feedback exists among offshore and onshore (money) markets. For example, Yang et al. (2007) found a significant causal relationship between onshore (Certificate of Deposit yields) and offshore (USD Libor) money market rates in the US, with the causality running from the offshore to the onshore rates in certain periods. A well-developed Eurobond market may affect the yield curve in a similar way but at longer-term maturities. As an example, Dong and McCauley (2010) provided evidence that a monetary tightening in New Zealand was not transmitted to the longer-term side of the yield curve due to heavy Japanese purchases of New Zealand bonds in offshore markets. It appears, therefore, that central banks in countries with significant offshore use of their domestic currency should factor in information from these markets when conducting monetary policy. In monetary regimes that target a monetary aggregate, the

existence of an offshore market may complicate the measurement of the money supply and credit growth. Prior to the switch to federal funds rate targeting in the US, policy makers advocated the imposition of reserve requirements on offshore deposits or similar measures to control domestic bank credit from offshore markets. However, these proposals were judged to put US banks in a disadvantageous competitive position as compared to foreign banks active in the US (for which these measures were not compulsory) and were later abandoned. Looking back, however, some argue that the high inflation in the US during the 1970s might have had its roots in lax credit standards in the Eurodollar markets. To the same extent some argue that the debt crisis in Latin America was fuelled by easy credit made available by Eurodollar markets. All these examples indicate that monetary policy is not completely independent of developments in offshore markets, so these markets need to be closely monitored by policy makers.

From the financial stability point of view, the risks posed by the Eurodollar market are similar to those posed by bank lending in foreign currencies in general. As Figure VII-3 emphasises, the Eurodollar market was at the core of some of the bank vulnerabilities exposed during the recent crisis. In fact, one of the most important lessons that the recent crisis has taught us is how easily banks' foreign currency exposure (part of it accumulated through Eurocurrency markets) can endanger the financial system as a whole. The European banks' experience in this sense is highly relevant. Their high USD asset-liability mismatch and exposure to toxic US assets represented a serious drag on these banks' balance sheets and in certain cases ended up in bank failure. However, things did not stop there. Central banks and other international organisations had to step in to provide the necessary USD liquidity that banks were unable to access in the market. This in turn affected central banks' foreign exchange reserves and their balance sheets. Without massive involvement of the Fed in providing liquidity to European banks, both directly and through swaps arranged with European central banks, the shock would have probably been very harmful for the central banks concerned. The situation also had implications for the euro as a currency. As banks struggled to buy dollars in the market, the euro depreciated. However, it is more likely that the high volatility of the exchange rate had more deleterious consequences during this period.

Another important lesson for financial stability closely linked with Eurocurrency markets is that bank lending in foreign currencies supported by these markets can fuel asset bubbles. A recent example is provided by the problems associated with the real estate sector in some Central European countries, where the Swiss franc served as the funding currency. It is likely that banks there did not have a sound deposit base denominated in Swiss franc, or, in the face of the approaching crisis, they experienced a run on Swiss franc-denominated deposits. In any case, concerns about the proper management of exchange rate exposures by the banks concerned have been raised in the aftermath of the crisis.

## **Conclusion**

This note provides a brief overview of the Eurodollar markets. The long-term development of this market shows that the USD has maintained a leading position compared to other currencies in meeting the funding needs of their offshore markets. At the same time, a more detailed sectoral breakdown emphasises that risky exposures started to build up after 2000 in the Eurodollar market. More precisely, offshore banks increasingly directed USD funds to non-bank clients and the gap compared to the deposits received from these clients went up almost exponentially until the outbreak of the crisis. The asset-liability mismatch with respect to the non-bank sector probably represented a serious funding risk that offshore banks took on board.

The Eurodollar bond market has maintained a rather minor position compared to other segments of the US bond market. However, it grew significantly in 2007, reflecting international investors' switch in preference from USD bonds issued in the US towards USD bonds issued offshore.

Eurocurrency markets interact with other sectors of the economy and they probably deserve attentive monitoring by policy makers in both the domestic and the host country. Complications may in general arise given that these markets fall under different jurisdictions. From the monetary policy point of view, Eurocurrency markets can affect the transmission of monetary policy in the domestic country due to the causal relationship that in general develops between onshore and offshore interest rates. Additionally, the measurement of the money supply and credit growth can be impeded by the existence of an offshore market for the domestic currency. Issues related to financial stability can also be raised. On the one hand, it is the management of banks' foreign exchange exposures that regulators probably have to monitor closely in the presence of an offshore market. More generally, exposures to and by offshore banks as such should also be monitored more closely. On the other hand, the increase in credit supply associated with bank lending in different currencies may impact on asset prices and give rise to boom and bust episodes in the economy.

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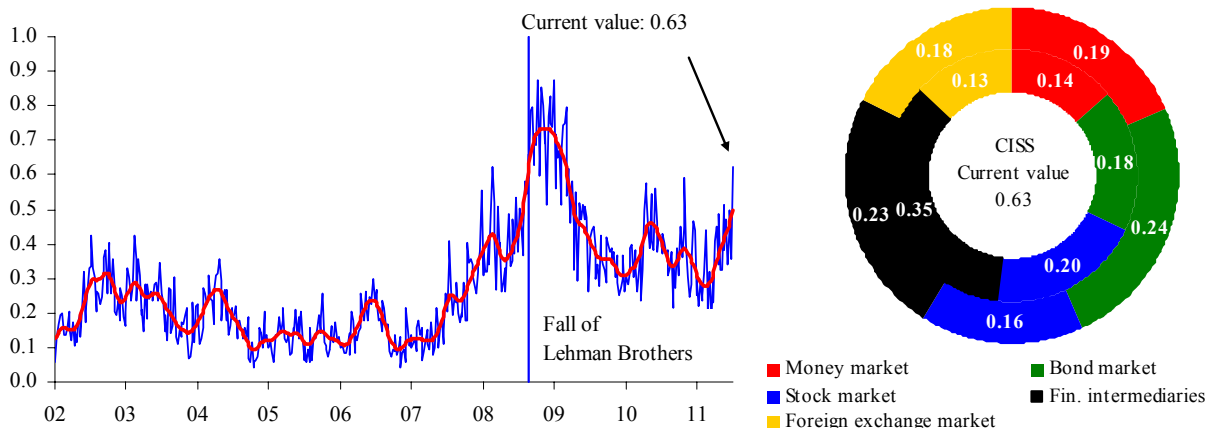
## INCREASED UNCERTAINTY IN EURO AREA FINANCIAL MARKETS<sup>1</sup>

*A month ago it might have seemed that the euro area debt crisis had already reached its peak after the situation in Greece had been temporarily resolved using measures approved at the euro area summit. However, a growing lack of confidence in Spanish and above all Italian bonds and protracted disputes on raising the US debt ceiling in late July triggered a new global wave of uncertainty in the financial markets. Moreover, Standard & Poor's lowered the US credit rating on 6 August. Is this a recurrence of the situation the euro area markets went through when Lehman Brothers collapsed?*

To measure stress in the financial system (concurrent instability on more than one market), the Composite Indicator of Systemic Stress (CISS) can be used,<sup>2</sup> capturing the degree of instability in the financial sector in a single number. The CISS indicator for the euro area is based on inputs from the five most important financial system segments – the money, stock, bond, financial intermediaries and foreign exchange markets. Each segment is characterised by three partial indicators which provide various information on financial market stress, especially volatility, sentiment or maximum cumulative loss. These indicators are then normalised so that their values are mutually comparable. The five sub-indices can then be combined into a final CISS index using the portfolio approach. Therefore, the resulting index is not a mere average of the sub-indices but the correlations among the sub-indices are crucial. The CISS index thus takes the highest values when the values of the sub-indices are high and the correlations among them are high as well. This reflects the requirement that the index value should be highest at a time when financial market stress is of a systemic nature.

The recent evolution of the CISS indicator suggests a sharp rise in financial market uncertainty over the past month. In the first week of August, it approached the values reported in September 2008, when Lehman Brothers collapsed (0.66, see Figure VIII-1), thus reaching its highest value since March 2009.

**Figure VIII-1:** CISS indicator – evolution and structure in the first week of August



Note: Weekly averages, with the red line representing values smoothed by HP filter. The structure is shown for the first week of August (1–5 August 2011) and reflects the contributions of the individual market to the overall index. Inner section of the chart: simple aggregation – index based on the weighted average; outer section of the chart: aggregation based on the portfolio approach

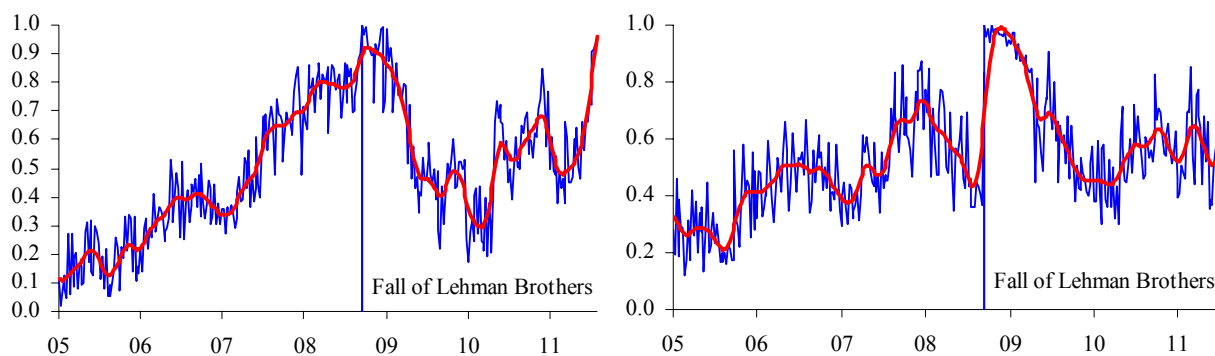
<sup>1</sup> Written by Soňa Benecká ([Sona.Benecka@cnb.cz](mailto:Sona.Benecka@cnb.cz)) and Tomáš Adam ([Tomas.Adam@cnb.cz](mailto:Tomas.Adam@cnb.cz)). The views expressed in this article are those of the authors and do not necessarily reflect the official position of the Czech National Bank.

<sup>2</sup> Several possible systemic risk indicators are described in the literature; in this article we use the CISS from Hollo, Kremer and Lo Duca: "CISS – A composite indicator of systemic stress in the financial system", ECB Working Paper Series, forthcoming. Unlike other indicators, it captures very precisely the stress factors in the euro area, including special liquidity instruments such as the marginal lending facility.

Source: CNB calculation based on Datastream and Bloomberg data

The sub-indices for the bond and financial intermediaries even approached their peak values corresponding to the developments before the onset of the global financial crisis. In contrast, the other markets have not shown signs of such high stress so far.

**Figure VIII-2:** Evolution of bond (left) and money market (right) sub-indices



Note: Weekly averages, with the red line representing values smoothed by HP filter

Source: CNB calculation based on Datastream and Bloomberg data

In addition, the second week in August brought increased stress on the stock market, with European exchanges reporting major declines. The VIX index (measuring implied volatility of S&P 500 index options) doubled to the level observed in early 2009. In an effort to stabilise the situation, the European Central Bank began to purchase Spanish and Italian bonds on the European bond market. To increase money market liquidity, the ECB had earlier re-introduced six-month fixed-rate liquidity provision at its latest monetary policy meeting on 4 August. A short-term calming of the stock markets was fostered by the Fed's statement that it would keep interest rates at a record low level for at least two years due to the weak economy.

To sum up, the level of financial system stress has increased significantly, but we cannot draw the conclusion from this that another global financial crisis has begun. So far the stress has been concentrated in a few markets, and the central banks' efforts to stabilise the market have been acting against this stress. Moreover, the stress primarily concerns the euro area and the indicators for the United States do not suggest a large increase in stress in July.<sup>3</sup>

<sup>3</sup> The monthly Kansas City Financial Stress Index for the United States is published at <http://www.kansascityfed.org/research/indicatorsdata/kcfsi/>. The latest available data are for July 2011.

BOFIT	Bank of Finland Institute for Economies in Transition
CB-CCI	Conference Board Consumer Confidence Index
CB-LEII	Conference Board Leading Economic Indicator Index
CBOT	Chicago Board of Trade
CF	Consensus Forecasts
CN	China
CNB	Czech National Bank
DBB	Deutsche Bundesbank
DE	Germany
EA	euro area
EC	European Commission
ECB	European Central Bank
EC-CCI	European Commission Consumer Confidence Indicator
EC-ICI	European Commission Industrial Confidence Indicator
EIU	The Economist Intelligence Unit database
EU	European Union
EUR	euro
EURIBOR	Euro Interbank Offered Rate
Fed	Federal Reserve System (the US central bank)
FRA	forward rate agreement
GBP	pound sterling
GDP	gross domestic product
CHF	Swiss franc
IFO	Institute for Economic Research
IFO-BCI	IFO – Business Climate Index
IFO-CCI	IFO – Consumer Confidence Index
IMF	International Monetary Fund
IRS	Interest rate swap
JPY	Japanese yen
LIBOR	London Interbank Offered Rate
N/A	not available
OECD	Organisation for Economic Co-operation and Development
OECD-CLI	OECD Composite Leading Indicator
UoM	University of Michigan
UoM-CSI	University of Michigan Consumer Sentiment Index
US	United States
USD	US dollar

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