GLOBAL ECONOMIC OUTLOOK - MARCH

2016

Monetary Department
External Economic Relations Division

CNB CZECH NATIONAL BANK

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Cut-off date for data
11 March 2016

CF survey date
7 March 2016

GEO publication date
18 March 2016

Notes to charts
ECB and Fed: midpoint of the range of forecasts.
The arrows in the GDP and inflation outlooks indicate the direction of revisions compared to the last GEO. If no arrow is shown, no new forecast is available. Asterisks indicate first published forecasts for given year. Historical data are taken from CF.
Forecasts for EURIBOR and LIBOR rates are based on implied rates from interbank market yield curve (FRA rates are used from 4M to 15M and adjusted IRS rates for longer horizons). Forecasts for German and US government bond yields (10Y Bund and 10Y Treasury) are taken from CF.

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I. SUMMARY

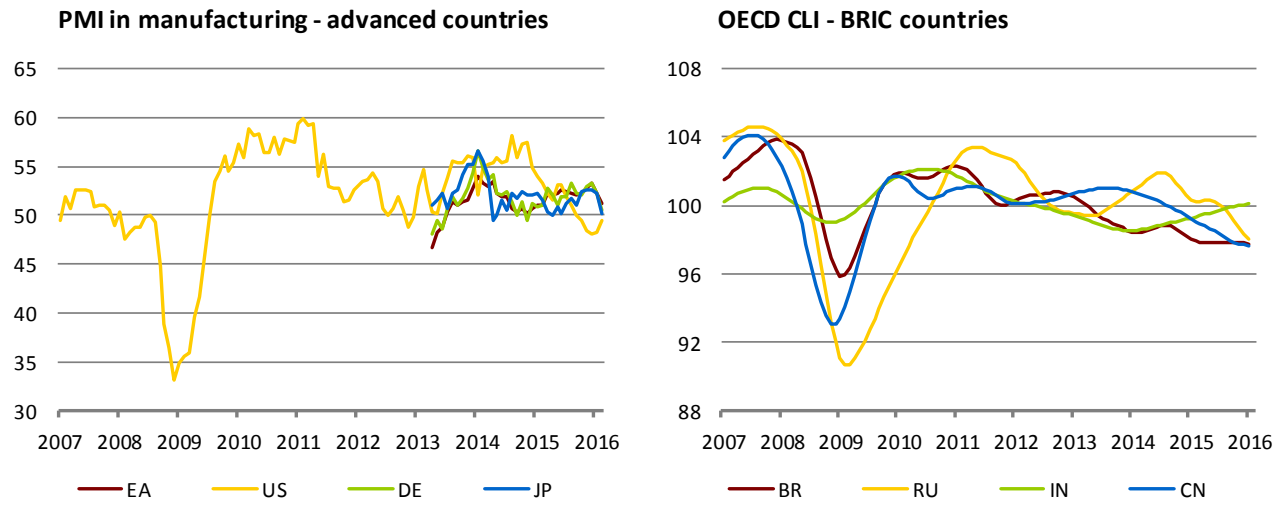
The March issue of Global Economic Outlook presents the regular monthly overview of recent and expected developments in selected territories, focusing on key economic variables: inflation, GDP growth, leading indicators, interest rates, exchange rates and commodity prices. In this issue we also consider how and whether the Europe 2020 strategy will be fulfilled. Europe 2020 is the EU's second economic strategy (after the Lisbon Strategy) aimed at stimulating the international competitiveness of the EU as a whole, primarily in relation to the United States.

The economic growth outlooks for the main world economies declined to varying extents again in March, especially for this year. Despite these continued adjustments, the USA should maintain its position as the fastest-growing economy. The March data also confirm that economic growth in the euro area is no longer being driven by Germany, which in fact should record the same rate of growth as the euro area this year. Economic growth in the euro area is thus lagging behind that in the USA by more than 0.5 pp. Japan is expecting growth of just over 0.5% this year, with slightly declining outlooks. New data on inflation in the main global economies saw downward revisions compared to February. For the euro area and especially Japan, consumer price inflation should remain only just at non-negative levels. Adverse price developments in the euro area were the main factor of a further ramping-up of the ECB's quantitative easing, including a reduction in interest rates further into negative territory. Of the economies under review, only the US economy is expected to maintain inflation above the "magic" level of 2% at the end of 2017.

The GDP growth outlooks for emerging BRIC countries were also mostly lowered slightly compared to the previous month. While the change is only cosmetic for India, the revision of China's outlooks reflects a continued gradual decline in its economic growth. The inflation outlooks for India and China were unchanged from February. In the case of China, therefore, they do not reach the desired 2% level. An inflation rate exceeding 5% is expected in India. This, however, is fully in line with the dynamics of the Indian economy. Both these economies are in a completely different situation than Brazil and Russia, which this year will be accompanied by slumpflation, i.e. a situation of negative GDP growth and rising inflation.

The outlooks for euro area interest rates remain very low, with no sign of growth until the end of 2017. For the USA, a further interest rate hike is rather unlikely in 2016 Q1. According to CF, the US dollar will appreciate slightly against the euro, the Japanese yen, the Chinese renminbi and the Indian rupee, and to a greater extent against the Brazilian real, at the one-year horizon. The dollar is expected to be broadly stable against the Russian rouble at the one-year horizon. The oil price outlook remains very slightly rising at the one-year horizon, reaching approximately USD 42 a barrel. Its path moved upwards slightly compared to the previous month. Natural gas prices based on long-term contracts normally follow oil prices with a lag of several months and are therefore expected to drop further in the next few months. The market outlooks for the industrial metals and food commodity indices and the overall commodity basket are only slightly rising.

Leading indicators for countries monitored in the GEO



Zdroj: Bloomberg, Datastream

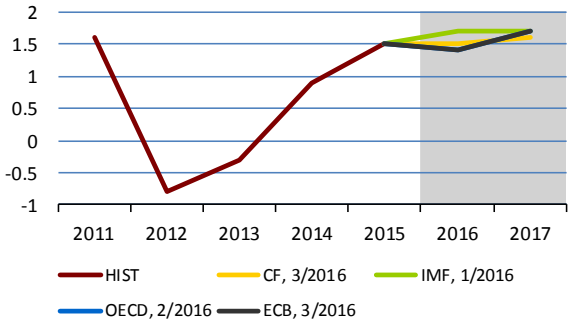
II.1 Euro area

The outlooks for both economic growth and inflation were revised downwards, reflecting a continued very weak economic recovery in the euro area. According to the new outlooks, GDP growth will not exceed 1.5% this year and only slightly higher economic growth is expected in 2017. Consumer price inflation is projected to be close to zero this year and above 1% in 2017.

GDP grew by 0.3% quarter on quarter in 2015 Q4, the same as in Q3. Economic growth stood at 1.6% year on year and at 1.5% in 2015 as a whole. Compared to previous quarters, the contribution of investment to total growth increased at the end of 2015, on top of the previously observed large contribution of household consumption. By contrast, a negative contribution of net exports slowed total growth. Real retail sales growth was in line with previous months in January. On the other hand, industrial production recorded decreases in both year-on-year and month-on-month terms in December. The unemployment rate edged down further to 10.3% in January. The ZEW economic sentiment indicator fell considerably in February. The PMI leading indicator in manufacturing also decreased slightly.

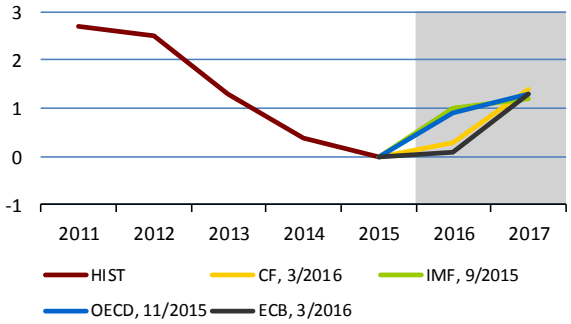
According to Eurostat's flash estimate, the euro area fell back into the deflation zone for the first time in five months in February, with consumer prices decreasing by 0.2%. The overall decline in prices was largely due to energy prices. By contrast, prices of services rose by 1%. Excluding energy and food, prices went up by 0.7%. The ECB responded with a further easing of monetary policy in March. Specifically, key interest rates were lowered (the ECB's deposit rate is now -0.4%). The QE programme was expanded to include bond purchases of EUR 80 billion on a monthly basis, with investment-grade corporate bonds added to the list of eligible securities. The ECB also announced a new TLTRO programme of cheap loans. The 3M Euribor declined to -0.23% and is expected to fall further at the one-year horizon. Conversely, CF expects the German ten-year government bond yield to rise to 0.7% at the one-year horizon.

GDP growth, %



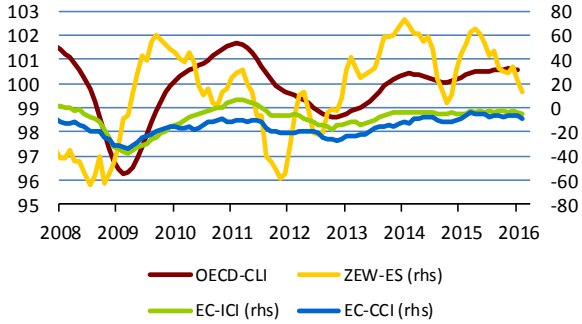
	CF	IMF	OECD	ECB
2016	1.5	1.7	1.4	1.4
2017	1.6	1.7	1.7	1.7

Inflation, %



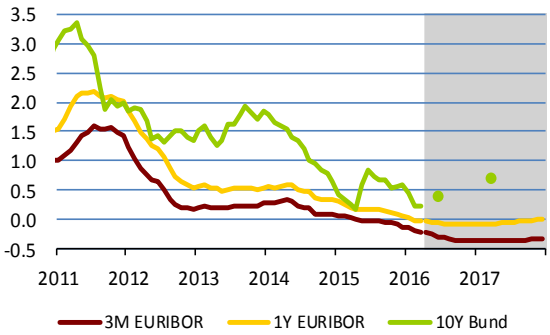
	CF	IMF	OECD	ECB
2016	0.3	1.0	0.9	0.1
2017	1.4	1.2	1.3	1.3

Leading indicators



	OECD-CLI	EC-ICI	EC-CCI	ZEW-ES
12/15	100.6	-2.0	-5.7	33.9
1/16	100.6	-3.1	-6.3	22.7
2/16		-4.4	-8.8	13.6

Interest Rates

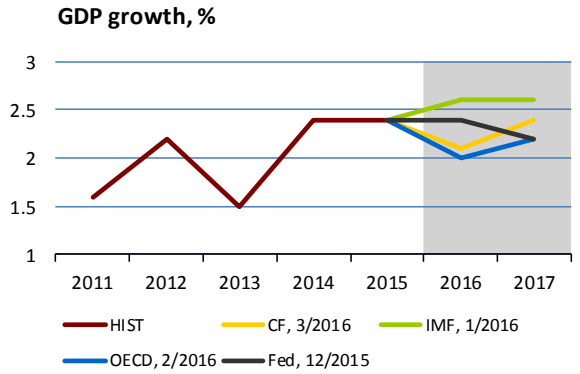


	02/16	03/16	06/16	03/17
3M EURIBOR	-0.18	-0.21	-0.30	-0.36
1Y EURIBOR	-0.01	-0.03	-0.06	-0.07
10Y Bund	0.23	0.23	0.40	0.70

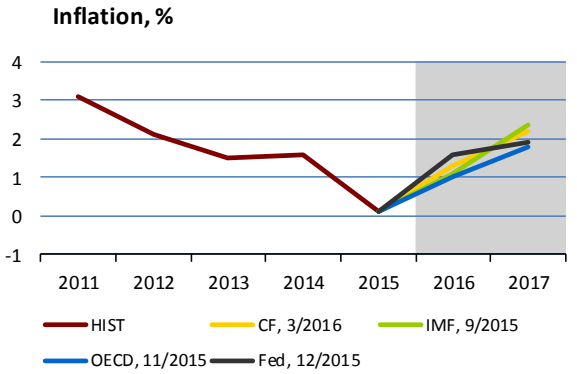
II.2 United States

The US economy slowed less at the end of 2015 than suggested by the initial estimate. GDP growth in 2015 Q4 was revised upwards to 1% (quarter-on-quarter, annualised). The revision was due mainly to a higher stock of inventories, while growth in private consumption was lowered slightly to 2%. However, the effect of inventories will only be temporary, as growth was affected at the end of last year by a strong dollar and lower profits of mining and quarrying firms. Nevertheless, the January industrial production data were favourable, reaching a 14-month high. The ISM PMI leading indicator rose slightly in February, with new orders assessed particularly positively. The labour market continues to improve. A total of 242,000 new jobs were created in the non-agricultural sector in February and upward revisions were made to the figures for January and December. The unemployment rate remains at 4.9% and the participation rate rose to 62.9%. Retail sales also saw a turnaround in January. Consumer confidence remains high as well. Concerns of a possible recession in the USA have therefore decreased.

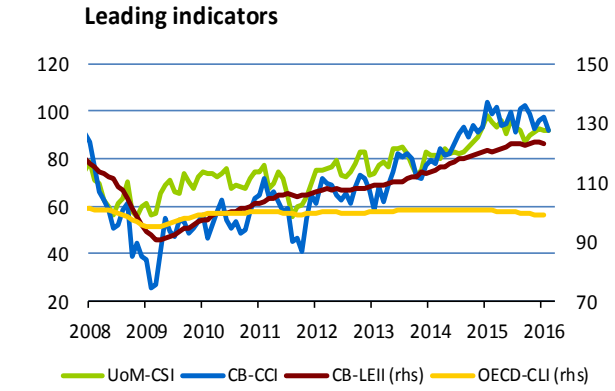
Annual consumer price inflation rose to 1.3% in January, the highest level in four and half years. The main sources of inflation were higher rents and health care expenditure. Similar developments can be observed for core inflation. There was thus an intense discussion before the Fed's meeting in March about whether the current inflation level was a sufficient stimulus for a further monetary-policy tightening. In the March survey, more than 88% of CF panellists believed that rates would not be raised at the March meeting. The survey expects them to increase by 50 bp by the end of the year. Market outlooks for interest rates shifted slightly upwards, while the dollar is expected to start to appreciate again. The March CF only revised its GDP growth forecast for 2016 (down by 0.1 pp). The OECD also revised its growth forecast for both years.



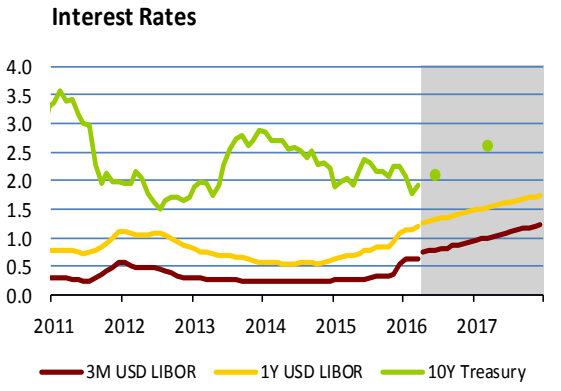
	CF	IMF	OECD	Fed
2016	2.1	2.6	2.0	2.4
2017	2.4	2.6	2.2	2.2



	CF	IMF	OECD	Fed
2016	1.3	1.1	1.0	1.6
2017	2.2	2.4	1.8	1.9



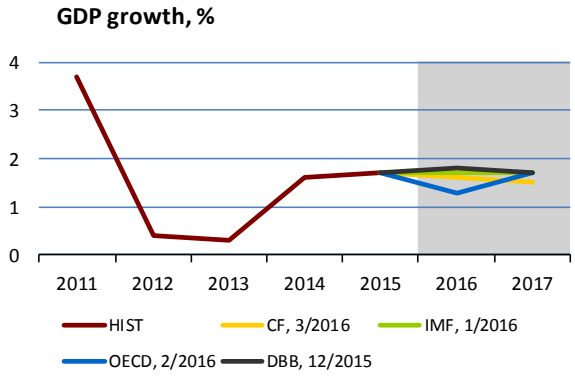
	CB-LEII	OECD-CLI	UoM-CSI	CB-CCI
12/15	123.4	99.1	92.6	96.3
1/16	123.2	99.0	92.0	97.8
2/16			91.7	92.2



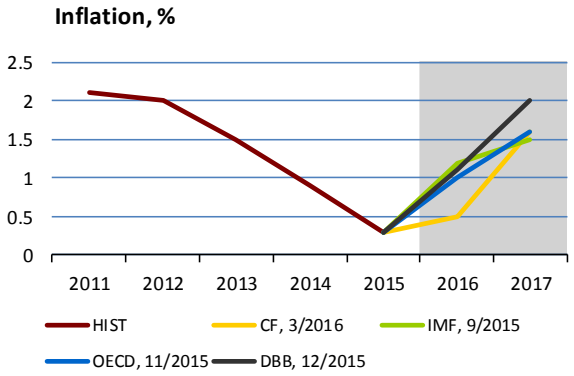
	02/16	03/16	06/16	03/17
USD LIBOR 3M	0.62	0.63	0.77	1.00
USD LIBOR 1R	1.14	1.14	1.31	1.53
Treasury 10R	1.78	1.91	2.10	2.60

II.3 Germany

The quarterly GDP growth rate in Germany was unchanged at 0.3% in 2015 Q4. Growth in household and government consumption outweighed a decline in net exports. Annual economic growth dropped to 1.3%. GDP growth rose to 1.7% in 2015 as a whole. The general government surplus rose to EUR 19.4 billion. Compared to February, the March CF reduced its economic growth estimate for 2016 and 2017 to 1.6% and 1.5% respectively. Leading indicators also suggest lower growth, having mostly decreased in January and February. This worse outlook is largely due to concerns about growth in Asian economies, China in particular. By contrast, a sharp rise in industrial production in January and expected continued growth in household consumption point to improved economic developments. Annual consumer price inflation decreased from 0.5% in January to zero growth in February. CF lowered its expected average inflation figure for 2016 to 0.5%.



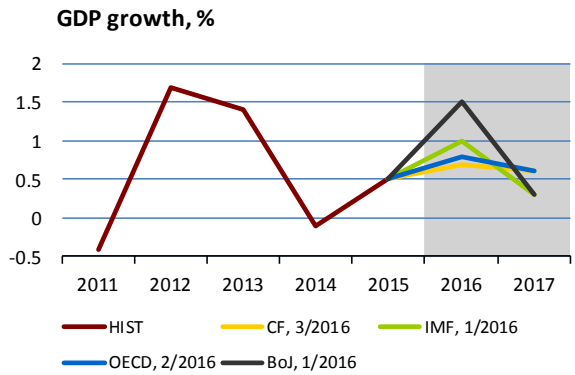
	CF	IMF	OECD	DBB
2016	1.6	1.7	1.3	1.8
2017	1.5	1.7	1.7	1.7



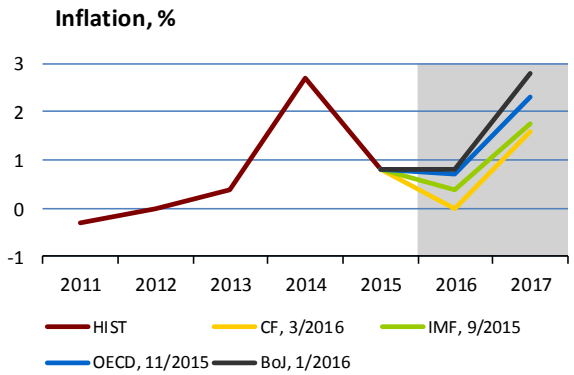
	CF	IMF	OECD	DBB
2016	0.5	1.2	1.0	1.1
2017	1.6	1.5	1.6	2.0

II.4 Japan

Growth in Japan worsened significantly at the end of 2015. Quarterly GDP growth was -0.3% according to the flash estimate. The decline mainly affected private consumption (-0.9% quarter-on-quarter), while capital expenditure was flat. Financial markets even expect a further downward revision, due to weak domestic and external demand. Retail sales fell year on year in December and January and consumer confidence dropped to a one-year low in February. On the other hand, industrial production recorded an increase of 3.7% in January compared to the previous month, but this may only have been a temporary phenomenon. The economy is still not showing any increase in inflationary pressures. Core inflation excluding food prices has remained close to zero for almost a year now, and headline annual inflation was negative in January (-0.1%). Nominal wage growth remains sluggish despite the efforts of both the government and the central bank. As suggested by the new CF outlook, inflation will not rebound from zero in 2016. The inflation outlook for both years has been lowered, as has expected GDP growth in 2016.



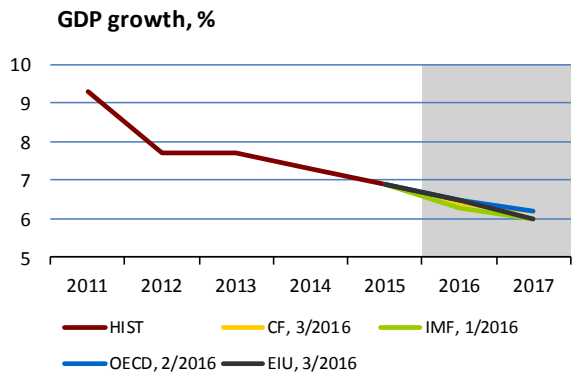
	CF	IMF	OECD	BoJ
2016	0.7	1.0	0.8	1.5
2017	0.6	0.3	0.6	0.3

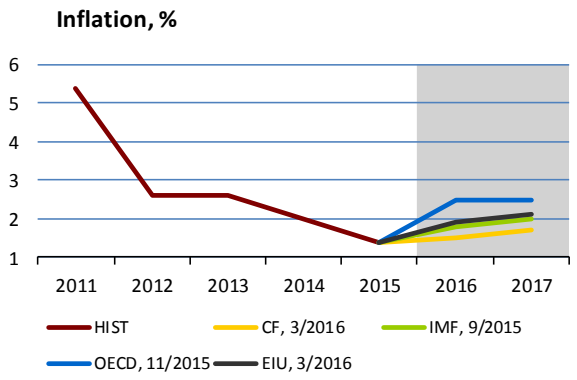


	CF	IMF	OECD	BoJ
2016	0.0	0.4	0.7	0.8
2017	1.6	1.8	2.3	2.8

III.1 China

The finalization of the new (thirteenth) five-year economic development plan (for 2016–2020) is an important, albeit planned, event in China this month. The growth target has been lowered again and newly a target band has been introduced, set at 6.5%–7% for 2016. Along with the assumption of weaker economic growth, the Chinese government expects the fiscal deficit to increase from 2.3% in 2015 to 3% of GDP this year (initial expectations were at 4%). The inflation target remained unchanged (at around 3%), and a rise in annual consumer price inflation from 1.8% in January to 2.3% in February increases the probability of the target being met. The PMI went down further in February, and both exports and imports declined much more than expected (Reuters survey) – by 25.4% and 13.8% respectively. The growth rate of exports was the worst since May 2009. However, the annual statistics in these months are significantly affected by the beginning of the new year, which, based on the lunar calendar, started only in March last year.



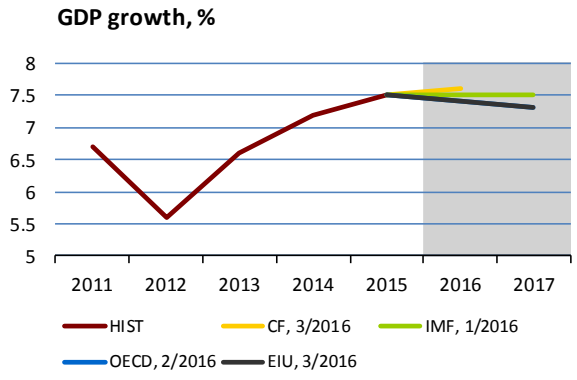


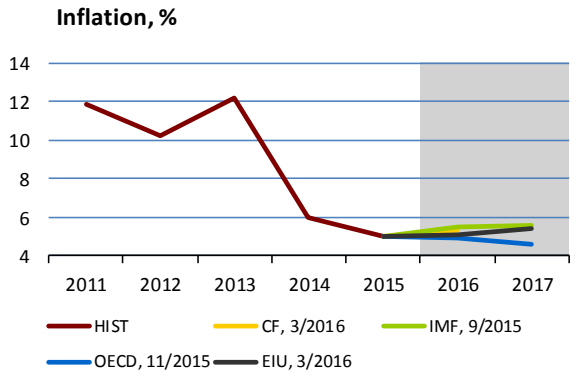
	CF	IMF	OECD	EIU
2016	6.4	6.3	6.5	6.5
2017	6.2	6.0	6.2	6.0

	CF	IMF	OECD	EIU
2016	1.5	1.8	2.5	1.9
2017	1.7	2.0	2.5	2.1

III.2 India

The Indian government is continuing its efforts to reduce the state budget deficit and is planning a deficit of 3.5% of GDP for the fiscal period 2016/2017. At the same time, it has introduced a nine-pillar reform programme focusing on areas ranging from agriculture to the financial sector. Industrial production recorded a year-on-year contraction for the third consecutive month in January, shrinking by 1.5%. The PMI in manufacturing remained at 51.1 points in February. Increases were recorded for new orders, exports, output and sales activity, but these are not sufficient to be reflected in growth in aggregate output. The forecast for GDP growth recorded only marginal changes. CF lowered its outlook for the fiscal year 2016/2017, while the OECD increased its. The OECD revised its outlook for the next fiscal period downwards. Inflation fell by 0.5 pp to 5.2% in February, mainly because of lower food price inflation as temperatures returned to normal. The inflation outlooks were unchanged.



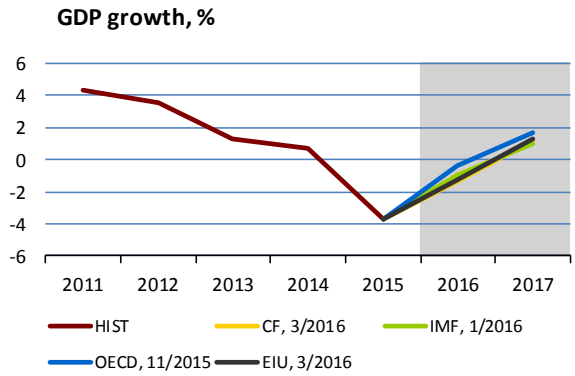


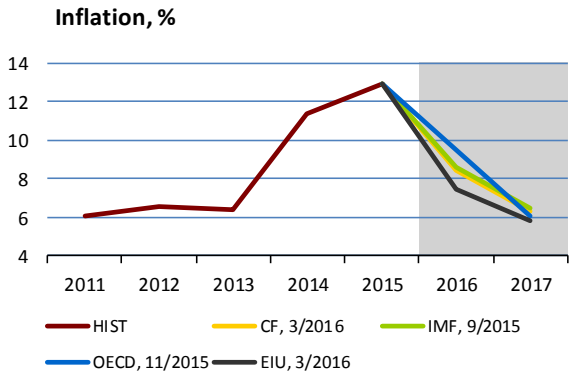
	CF	IMF	OECD	EIU
2016	7.6	7.5	7.4	7.4
2017		7.5	7.3	7.3

	CF	IMF	OECD	EIU
2016	5.3	5.5	4.9	5.1
2017		5.6	4.6	5.4

III.3 Russia

The short-term economic growth indicators in Russia improved slightly in January, but the overall situation remains unfavourable. The annual decline in industrial production moderated from 4.5% to 2.7%. The decline in wages in real terms meanwhile decreased from 8.4% to 6.1%. Unemployment remained unchanged in January. The goods and services surplus decreased in January due to an increased rate of decline in exports (-36.4%) amid a much lower rate of decline in imports (-20.9%). Inflation slowed to 8% in February, the lowest level since September 2014. As oil prices increased, the Russian rouble appreciated – from around RUB 77 to the dollar in mid-February to around RUB 72 in early March. The March CF lowered its GDP growth outlook for both this year and the next (to -1.4% and 1.2% respectively) and increased its inflation outlook (to 8.4% and 6.3% respectively).



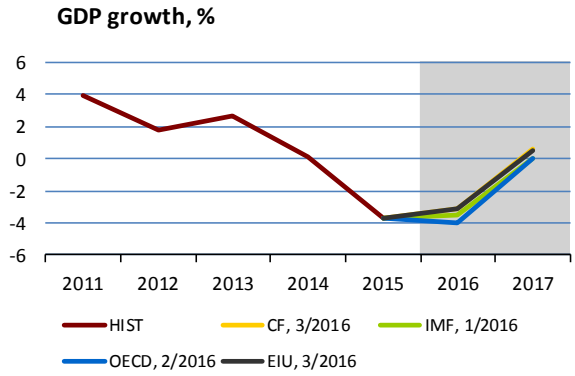


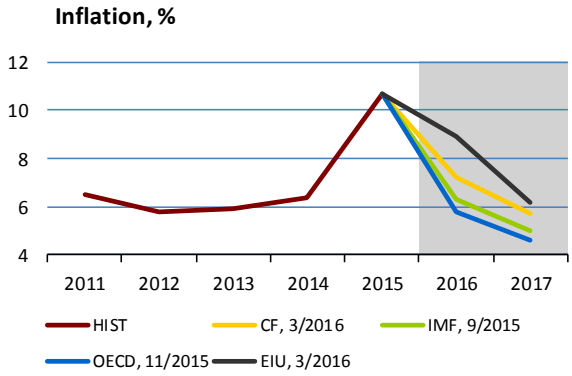
	CF	IMF	OECD	EIU
2016	-1.4	-1.0	-0.4	-1.3
2017	1.2	1.0	1.7	1.3

	CF	IMF	OECD	EIU
2016	8.4	8.6	9.5	7.5
2017	6.3	6.5	6.1	5.8

III.4 Brazil

Owing to continued political and economic uncertainty, two agencies downgraded Brazil's rating in February. Standard and Poor's shifted its rating deeper into the risk band and Moody's downgraded its by two notches to speculative grade. Moreover, their outlooks remain negative. Unemployment rose to 7.6% in January. Industrial production and the PMI in manufacturing are declining further. Annual GDP growth was -5.9% in 2015 Q4, representing the seventh consecutive quarter of negative growth. The Brazilian economy contracted by 3.8% in 2015 as a whole, with all components of domestic demand declining. GDP is expected to decrease by more than 3% this year, with the OECD expecting a drop of as much as 4%, and to be around, or slightly above, zero in 2017. Inflation declined by 0.3 pp in February compared to the previous month, to 10.4%. The central bank's expectations that inflation has peaked and will continue to decline may thus materialise. CF increased its inflation outlooks by 0.2 pp for both years. The EIU left its outlooks unchanged.



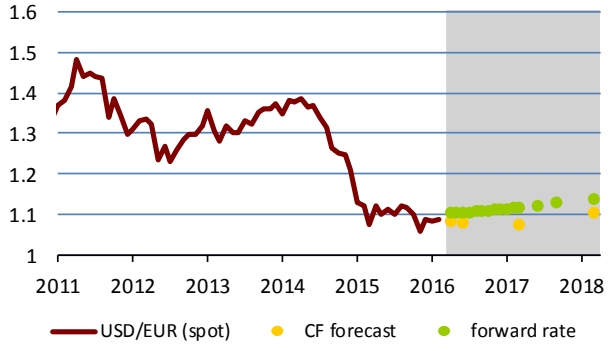


	CF	IMF	OECD	EIU
2016	-3.1	-3.5	-4.0	-3.1
2017	0.6	0.0	0.0	0.5

	CF	IMF	OECD	EIU
2016	7.2	6.3	5.8	8.9
2017	5.7	5.0	4.6	6.2

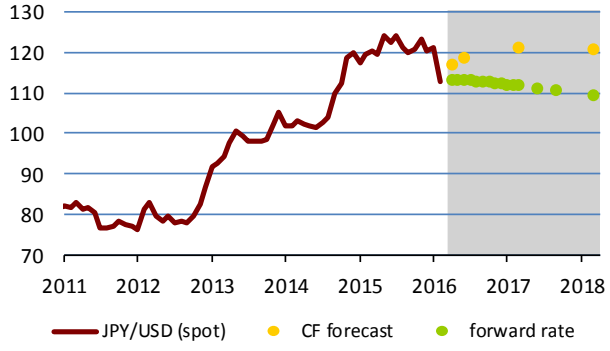
IV. Outlook of exchange rates

The US dollar (USD/EUR)



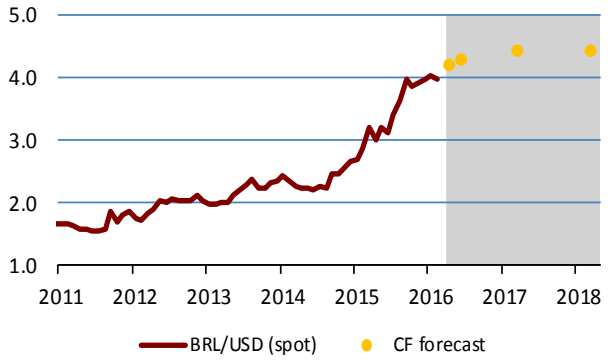
	7/3/16	04/16	06/16	03/17	03/18
spot rate	1.101				
CF forecast		1.085	1.080	1.075	1.106
forward rate		1.103	1.105	1.118	1.139

The Japanese yen (JPY/USD)



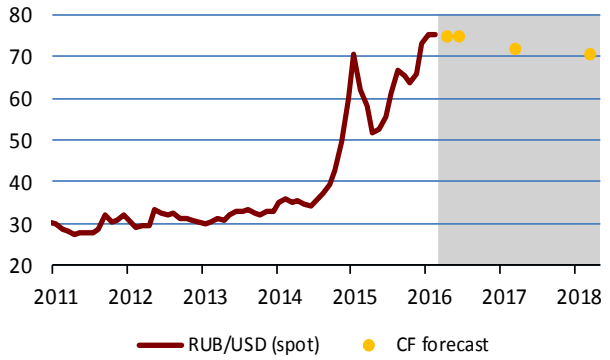
	7/3/16	04/16	06/16	03/17	03/18
spot rate	113.4				
CF forecast		117.0	118.6	121.0	120.9
forward rate		113.3	113.1	111.7	109.2

The Brazilian real (BRL/USD)



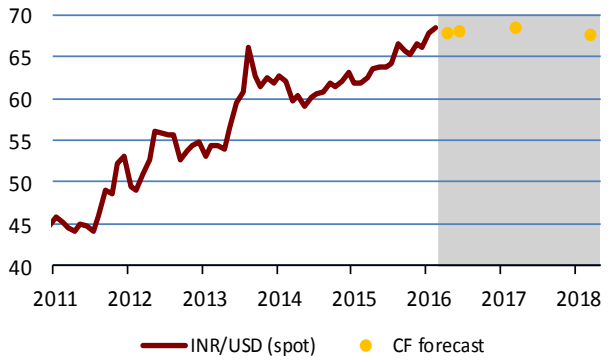
	7/3/16	04/16	06/16	03/17	03/18
spot rate	3.770				
CF forecast		4.190	4.279	4.430	4.420

The Russian rouble (RUB/USD)



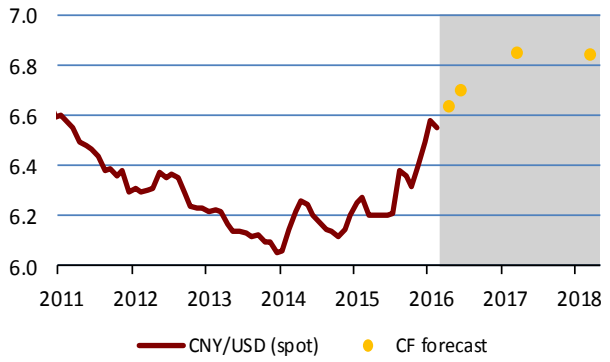
	7/3/16	04/16	06/16	03/17	03/18
spot rate	71.68				
CF forecast		74.92	74.97	71.94	70.58

The Indian rupie (INR/USD)



	7/3/16	04/16	06/16	03/17	03/18
spot rate	67.17				
CF forecast		67.77	67.96	68.52	67.70

The Chinese renminbi (CNY/USD)



	7/3/16	04/16	06/16	03/17	03/18
spot rate	6.515				
CF forecast		6.635	6.699	6.848	6.843

Exchange rates as of last day of 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) possibility of hedging future exchange rate.

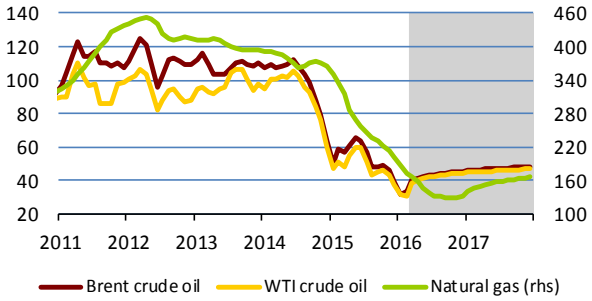
V.1 Oil and natural gas

The Brent crude oil price recorded a more than 12-year low of USD 27.9/bbl in the second half of January. In response to the fall in prices, representatives of the largest oil producers (Russia and Saudi Arabia) released numerous statements saying they were willing to discuss regulating their output in order to support and stabilise oil prices. Although two other major OPEC producers (Iran and Iraq) still refuse to join the agreement, sentiment in the oil market has improved greatly and the price of oil has returned to trend growth. Although this growth was interrupted in early February by concerns that Russia and Saudi Arabia were unlikely to agree, the still poor fundamentals later moved into the background and the Brent price rose by 35% in a month. In the second week of March it broke through USD 40/bbl. The growth in oil prices is being accompanied by increased activity by financial investors, who are massively reducing their short positions and strongly increasing their long positions in Brent. However, since a fundamental surplus of oil persists in the market, further rapid growth in oil prices is not very likely. Although a further decline in shale extraction in North America is expected, it will be offset by an increase in production in Iran.

The EIA estimates the average oil surplus in the market (and thus growth in global stocks) at 1.6 million b/d in 2016 and 0.6 million b/d in 2017. The market might reach equilibrium in 2017 Q4. Accordingly, the EIA revised its oil price forecast downwards substantially for this year and the next (by USD 3 and 10/bbl respectively), expecting Brent to average only USD 34 and USD 40/bbl respectively.

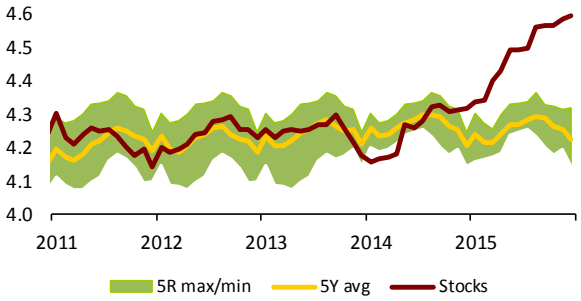
Market prices of natural gas both in Europe and the USA remain under pressure from rising production and low consumption due to unusually warm weather in the northern hemisphere.

Outlook for prices of oil (USD/barrel) and natural gas (USD / 1000 m³)

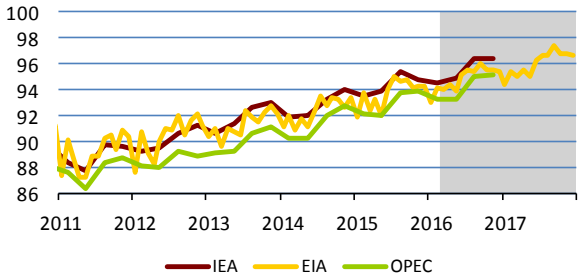


	Brent	WTI	Natural gas
2015	53.64	48.80	263.16
2016	41.65	40.54	146.35

Total stocks of oil and oil products in OECD (bil. barrel)

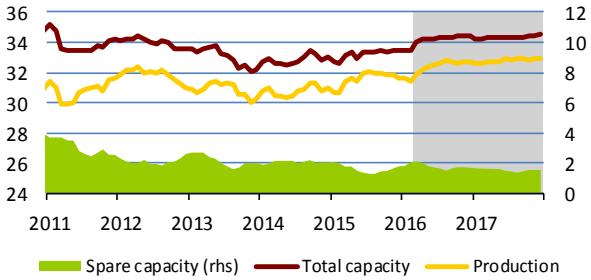


Global consumption of oil and oil products (mil. barrel / day)



	IEA	EIA	OPEC
2015	94.40	93.71	92.95
2016	95.58	94.85	

Production, total and spare capacity in OPEC countries (mil. barrel / day)



	Production	Total capacity	Spare capacity
2015	31.60	33.22	1.62
2016	32.34	34.14	1.79

Note: Oil price in USD/barrel, price of Russian natural gas at German border in USD / 1,000 m^3 (IMF data, smoothed by the HP filter). Future oil prices (grey area) are derived from futures and future gas prices are derived from oil prices using model. Total oil stocks (commercial and strategic) in OECD countries including average, maximum and minimum in past five years in billions of barrels. Global consumption of oil and oil products in millions of barrels a day. Production and extraction capacity of OPEC in million barrels a day (EIA estimate).
Source: Bloomberg, IEA, EIA, OPEC, CNB calculation

V.2 Other commodities

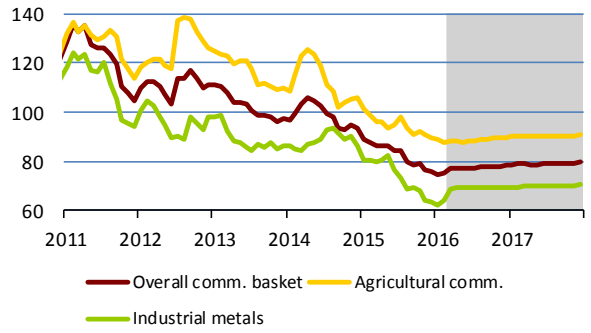
The average monthly non-energy commodity price index halted its sharp downward trend, which had lasted almost two years, and recorded its largest increase since April 2014 in early March. This was due to the industrial metals price sub-index, which started rising in February (by 3.7% on average) and accelerated further to 6.9% in early March. Conversely, the food commodity price sub-index dropped further in February and rose only slightly at the start of March.

The prices of virtually all basic metals have been increasing since mid-January, initially supported by a depreciating dollar and later benefiting from improving sentiment in the oil market. Strong growth was recorded by the price of copper, which followed a similar path to oil prices. The price of iron ore surged to its highest level since June 2015.

By contrast, prices of most food commodities remain under pressure after the latest USDA bulletin continued to report high global stocks. Traders' attention will thus be focused on the weather in major agricultural regions. Grain prices decreased further or remained flat (soy) last month, close to their lowest levels in many years. Price increases were recorded only by sugar and cocoa and by lean hogs, which, however, showed the usual seasonality, which should continue until about mid-2016. The price of live cattle was flat, but its outlook is declining strongly.

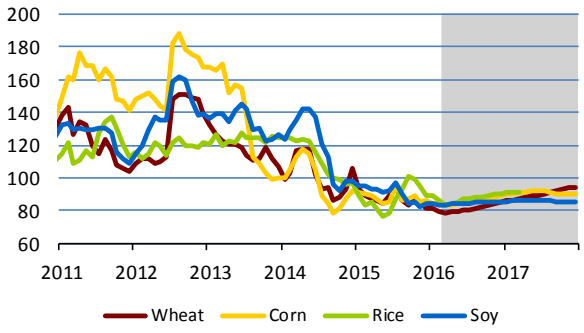
Despite a slight increase, the price of rubber is close to its December 2008 low, while the price of cotton declined to its lowest level since June 2009.

Non-energy commodities price indicies



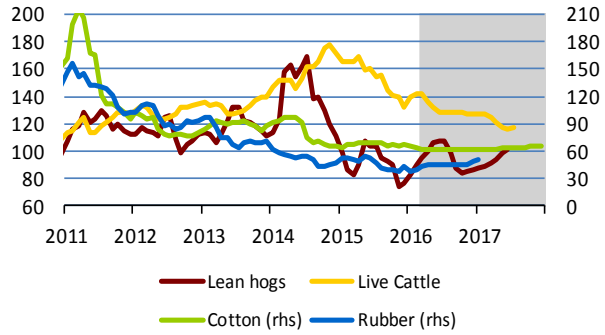
	Overall	Agricultural	Industrial
2015	82.8	94.7	74.0
2016	77.1	88.7	68.2

Food commodities



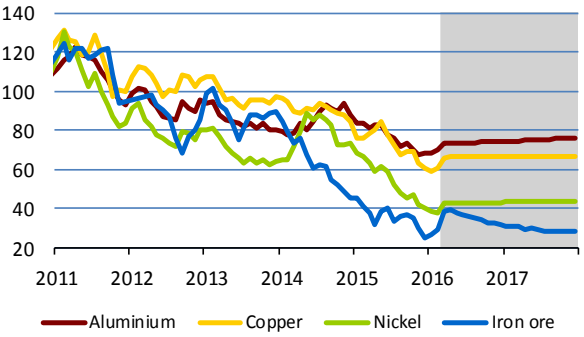
	Wheat	Corn	Rice	Soy
2015	87.4	88.1	88.3	90.2
2016	81.4	85.8	87.7	84.5

Meat, non-food agricultural commodities



	Lean hogs	Live Cattle	Cotton	Rubber
2015	91.8	154.3	67.5	46.7
2016	94.1	132.1	61.9	

Basic metals and iron ore



	Aluminium	Copper	Nickel	Iron ore
2015	76.6	73.0	54.4	36.0
2016	73.0	65.6	42.3	34.3

Note: Structure of non-energy commodity price indices corresponds to composition of The Economist commodity indices. All prices are given as indices, 2010 = 100 (charts) and percentage changes (tables).
Source: Bloomberg, CNB calculations.

The Europe 2020 strategy: Will it be fulfilled?[1]

According to the European Commission, the EU recorded GDP growth of 1.9% last year. The Commission expects the rate of growth to be the same this year and just 0.1 percentage point higher in 2017. The EIU[2] differs minimally in its outlooks, predicting annual GDP growth in the range of 1.7%–1.9% up to 2020 for the EU28. The US economy by contrast grew by 2.1% last year. The Federal Reserve's outlook till 2018 predicts that the USA will continue to maintain a lead of up to 0.5 percentage point. The situation is similar for unemployment, differing only in scale. Unemployment in the EU reached 9.5% in 2015 and could fall to 8.7% over the next two years according to the Commission. In the USA it was more than five percentage points lower and will continue to drop according to Fed estimates. Already a second EU economic strategy tries to answer why the EU is growing more slowly and creating fewer jobs than its global competitors and to find a cure for this problem. This article evaluates its success to date.

1 Europe 2020 – the economic strategy for the current decade

Supporting economic development and growth has been one of the EU's objectives right from the outset. The first comprehensive strategy devoted to this topic was drawn up at the start of the new millennium. The ambitious Lisbon Strategy set itself the goal for the next decade of making the EU "the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion". It was a failure. There were many reasons for this, ranging from those not linked in any way with the strategy itself (the financial and economic crisis) through to those stemming directly from its mistakes (a nonsensically tough target, an inappropriate institutional architecture, a lack of interest in individual Member States, among others).

Following the Lisbon Strategy, a new ten-year economic development plan called Europe 2020 was drawn up in 2010. Unlike its predecessor, whose ambitions had been lofty but relatively vague, the new strategy was defined in terms of five specific, measurable targets (summarised in Table 1). Besides the numerical targets that the EU as a whole is supposed to hit by 2020, each Member State has its own national targets. This reflects the countries' diversity and specific features,[3] helps them identify with the overall strategy and makes them more motivated to get actively involved in implementing it.

1	**Employment**	Increase the employment rate of the population aged 20–64 to at least 75%
2	**R&D**	Invest 3% of EU GDP in R&D
3	**Climate change and energy sustainability**	Reduce greenhouse gas emissions by at least 20% compared to 1990 levels, increase the share of energy from renewables to 20% and achieve a 20% increase in energy efficiency
4	**Education**	Reduce the rates of early school leaving below 10% and increase the share of the population aged 30–34 having completed tertiary education to at least 40%
5	**Fighting poverty and social exclusion**	Reduce the number of people living in or at risk of poverty and social exclusion by at least 20 million

Table 1 Headline targets of the Europe 2020 strategy for the EU28

Source: European Commission

2 Assessment of success to date

The Europe 2020 strategy entered its "second half" in January. How successful has the EU been in meetings its targets so far? We compare the latest available data for the EU as a whole (the EU28) with the figures dating from the start of the decade and with the targets set for 2020. The data are summarised in Table 2. The **employment rate**, the first of the variables under review, has been rising gradually in the EU (from 68.6% in 2010 to 69.2% in 2014), but too slowly to reach 75% by 2020. **R&D investment** also increased only slightly during the first four years of this decade (from 1.93% to 2.03% of GDP), so it currently seems rather unlikely that the 3% target will be reached.

The **climate change and energy target**, composed of three parts, offers much greater hope. Greenhouse gas emissions in the EU stood at 85.5% of the 1990 reference value in 2010 but at just 80.2% in 2013. The 80% target is therefore now within reach. The share of energy from renewables rose from 12.5% to 15%

[1] Author: Pavla Břízová (Pavla.Brizova@cnb.cz). The views expressed in this article are those of the author and do not necessarily reflect the official position of the Czech National Bank.

[2] Economist Intelligence Unit.

[3] The Lisbon Strategy was strongly criticised for its one-size-fits-all policy, which failed to take account of the different starting conditions, specific features and comparative advantages of the different countries.

(in 2013), so although the EU will probably not hit the 20% target by the end of the decade, it may at least get somewhere near it. In the Europe 2020 assessment, growth in energy efficiency is approximated by decline in energy consumption. Primary consumption in the EU dropped from 1,652.4 Mtoe[4] to 1,566.9 Mtoe between 2010 and 2013. If it continues to fall at a similar rate, the 1,483 Mtoe target should be met comfortably.

Successes in the **education area** are also inspiring optimism. The share of early school leavers[5] fell from 13.9% in 2010 to 11.2% in 2014 and is thus on course to fall to the 10% target by the end of the decade. The share of tertiary graduates[6] is also rising at a favourable pace – from 33.8% to 37.9% in 2014 (the target being 40%). So, the EU's only real failure is in the **social cohesion area**. The number of people living in poverty[7] has risen since the start of the decade (from 118.1 million to 122.3 million). It is therefore unlikely that the promised 20 million people will be lifted out of this category by the end of 2020. In terms of the main motto of Europe 2020 – "A strategy for smart, sustainable and inclusive growth" – the EU economy might be rather greener and better educated (at least in terms of school attendance), but it remains relatively non-innovative, is not generating enough job growth and is increasingly threatened by social inequality.

	Europe 2020 headline target indicators	**2010**	**2014**	**2020 target**
1	Employment rate (% of population aged 20–64)	68.6	69.2	75
2	Total R&D expenditure (% of GDP)	1.93	2.03	3
3a	Greenhouse gas emissions (1990=100)	85.54	80.2	80
3b	Share of renewables in final energy consumption (%)	12.5	15	20
3c	Primary energy consumption (Mtoe)	1,652.4	1,566.5	1,483
4a	Rate of early school leaving (% of population aged 18–24)	13.9	11.2	10
4b	Share of population with tertiary education (% of population aged 30–34)	33.8	37.9	40
5	Number of people in or at risk of poverty and social exclusion (thousands)	118,143	122,320	98,143

Table 2 Progress of the EU28 in meeting the Europe 2020 targets

Source: Eurostat, author's calculations

Note: The last known figures for 2013 were used for the energy targets.

3 The Member States compared

How are the individual Member States getting on? As Europe 2020 is essentially made up of eight mutually incomparable[8] numerical targets (eight statistical variables are used to define its five headline targets), we need to use multiple criteria decision-making tools to assess the overall fulfilment of the strategy. One such tool is MULTIMOORA,[9] first described in Brauers (2004). This technique is summarised in Box 1.[10]

For this method to be usable, minor changes had to be made to some of the input variables. While, for example, the employment rate in per cent is comparable across the Member States, energy consumption and the number of people living in poverty in absolute terms are not. For this reason, greenhouse gas

[4] Million tonnes of oil equivalent; a unit of heat (1 Mtoe = 1,000,000 toe = 41.868×10^{12} J).

[5] Defined as the share of 18 to 24 year old persons who have at most lower secondary education and are not in further education and training.

[6] The share of 30 to 34 year old persons who have attained tertiary education.

[7] More precisely, the number of people in or at risk of poverty and social exclusion. This indicator corresponds to the number of people falling into at least one of the following categories: (i) their equivalised disposable income (OECD definition) is below 60% of the national median equivalised disposable income; (ii) they are in a situation of severe material deprivation, i.e. they cannot afford at least four of the following nine items: to pay their rent and utility bills, to adequately heat their home, to pay unexpected expenses, to eat meat, fish or equivalent proteins every second day, a one-week annual holiday away from home, a car, a washing machine, a colour television and a telephone; (iii) they live in households with very low work intensity where adult household members worked less than 20% of their potential work time in the past year.

[8] We cannot say, for example, that a 1 pp increase in employment is equivalent to any specific decrease in emissions.

[9] Multi-Objective Optimisation by Ratio Analysis plus Full Multiplicative Form.

[10] Examples of other methodological approaches can be found, for example, in the CNB's *Analyses of the Czech Republic's current economic alignment with the euro area*.

Box 1. MULTIMOORA

MULTIMOORA is a system of three distinct methods for multi-objective optimisation by ratio analysis (MOORA). The three mutually independent computations generate a qualitative ranking of items. The individual rankings are then used to compile the final ranking.

The methodology is applied to a matrix of data $\mathbb{X}$ composed of responses of all alternatives $i = 1, \dots, m$ on all objectives $j = 1, \dots, n$. The elements x_{ij} of matrix $\mathbb{X}$ denote the i-th alternative of the j-th objective. (The alternatives in the Europe 2020 context are the EU Member States, i.e. $m = 28$, and the number of objectives is $n = 8$. Matrix $\mathbb{X}$ is thus a database of Europe 2020 indicator values achieved by the Member States at a single moment in time.)

The first of the three methods is called the **Ratio System of MOORA**. The data are first normalised by comparing each response to the values of an objective over all the alternatives:

$$x_{ij}^* = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{m} x_{ij}^2}}.$$

(This tells us where Member State i ranks in terms of objective j by comparison with all the other Member States.) In the second step, the normalised responses x_{ij}^* are added (if the values of objective j are to be increased, for example in the case of employment) or subtracted (if they are to be reduced, for example in the case of emissions), over all the alternatives:

$$y_i^* = \sum_{j=1}^{g} x_{ij}^* - \sum_{j=g+1}^{n} x_{ij}^*,$$

where g is the number of objectives j to be increased. The higher is y_i^*, the better is the final rank of the alternative.

The second method is the **Reference Point of MOORA**. It takes the normalised responses x_{ij}^* found using the previous method and calculates reference points:

$$r_j = \max_i x_{ij}^*$$

for the objectives j whose values are to be increased, and analogously through minimisation for those whose values are to decrease. (The reference points thus represent the best values of objectives achieved across the Member States.) The ranking of the alternatives is then obtained using the Tchebycheff metric:

$$\max_j \left| r_j - x_{ij}^* \right|.$$

The alternative with the smallest value of this distance is assigned the best rank. (The Member State whose largest deviation from the reference point – out of all the objectives – is the smallest is given the highest rank.)

The third and final method is the **Full Multiplicative Form**, based on the utility function:

$$U_i^* = \frac{A_i}{B_i},$$

where $A_i = \prod_{j=1}^{g} x_{ij}$ is the product of the objectives that are to increase, and $B_i = \prod_{j=g+1}^{n} x_{ij}$ analogously is the product of those that are to decrease. The higher is U_i^*, the better is the rank of the alternative.

By definition, each of the methods allows some variability in the rankings, as each puts a different emphasis in its equation on different aspects in the comparison of the data under assessment. The synthesis of the three methods in the final step ensures that the overall analysis is robust. (For more details see Brauers et al., 2011.)

In the case of large data structures, the theory of dominance is used to establish the final ranking. For smaller databases a simpler approach is sufficient. For each alternative, the sum and the average of its three rank numbers are calculated, and they are then ordered over all the alternatives.

emissions and primary energy consumption were normalised to the size of each economy in terms of GDP and the number of poor people was normalised to the overall country population.[11]

To determine the progress made by each country in achieving its targets since Europe 2020 was launched, the methodology was used first on 2010 data and then once again on the latest known data for 2014 (or 2013 for the climate and energy targets). This produces two rankings of the Member States, describing their relative starting positions in the indicators under review at the start of this decade (and thus reflecting their heterogeneity) and their current positions. The relative progress of each country is then expressed in terms of how many places they have risen or fallen in this time.

Sweden was far and away the best performer in the Europe 2020 indicators in absolute terms at both the start and the end of the period under review. Finland and Denmark swapped positions in second and third place. The Nordic countries can therefore still be regarded as the model for smart, sustainable and inclusive growth in the EU. At the opposite end of the scale were Malta, Bulgaria and, in 2010, Hungary, which in the more recent ranking was replaced by Romania.

However, all these countries were the strongest/weakest at both the start and the end of the period under review. Their progress, therefore, basically did not depart from the average in any way. It is much more

[11] Greenhouse gas emissions were thus expressed in million tonnes of CO_2 equivalent in relation to 2010 GDP, primary energy consumption in Mtoe in relation to 2010 GDP and the number of people living in poverty as the share in the total population in 2010.

interesting to look at the Member States that climbed or fell a few places in the rankings. Spain stands out in this regard, having slipped 11 places in four years. In terms of the Europe 2020 indicators it was the 10th best EU member in 2010, but by 2014 it had fallen to 21st. Estonia recorded a smaller but still sizeable drop from 17th to 24th place in the same period. Luxembourg, Portugal and Romania fell four, three and two places respectively.

On the other hand, the Czech economy showed the strongest relative progress, improving in its targets by nine places from 18th to 9th during the first four years of the Europe 2020 strategy. Other very successful countries in this regard include Latvia and Poland, which both went up five places (to 15th and 20th respectively). Greece[12] improved by three places and Belgium and Hungary by two. The rest of the countries roughly kept their original ranks. All the results are shown in Table 3.

What are the biggest successes and failures in terms of the individual Europe 2020 targets? The Czech Republic saw its employment rate go up from 70.4% to 73.5% and R&D investment from 1.34% to 2% of GDP, and it was also successful as regards the energy and climate variables. Greenhouse gas emissions stood at 70.5% of the 1990 level in 2010 and just 66% in 2013. The share of energy from renewable sources rose from 9.5% to 12.4%. Energy consumption meanwhile fell from 41.9 Mtoe to 39.6 Mtoe. In 2014, 28.2% of people aged 30–34 had attained tertiary education, whereas at the start of the decade the figure had been just 20.4%. The Czech Republic was unsuccessful in just two Europe 2020 indicators. The rate of early school leaving increased from 4.9% to 5.5%[13] and the number of people living in poverty rose by 37,000.

Spain moved in the opposite direction than intended in the areas of employment (a fall from 82.8% to 59.9%), R&D investment (a decrease from 1.35% to 1.2% of GDP) and elimination of poverty (an increase in the number of people living in poverty of 1.373 million). Successes achieved in education and energy failed to stop it sliding down the European rankings. Table 4 summarises the figures for both countries.

Member States	2010	2014	Diff.
Czech Republic	18	9	9
Latvia	20	15	5
Poland	25	20	5
Greece	21	18	3
Belgium	12	10	2
Hungary	26	24	2
Denmark	3	2	1
Ireland	15	14	1
Croatia	12	11	1
Lithuania	9	8	1
Slovakia	23	22	1
United Kingdom	19	18	1
Bulgaria	27	27	0
Germany	7	7	0
France	6	6	0
Malta	28	28	0
Netherlands	11	11	0
Austria	4	4	0
Slovenia	5	5	0
Sweden	1	1	0
Italy	16	17	-1
Cyprus	22	23	-1
Finland	2	3	-1
Romania	24	26	-2
Portugal	8	11	-3
Luxembourg	12	16	-4
Estonia	17	24	-7
Spain	10	21	-11

Table 3 Country rankings according to Europe 2020 target results in 2010 and 2014

Source: Eurostat, author's calculations

Note: The last known figures for 2013 were used for the energy targets.

4 Conclusion

The main reason for drawing up comprehensive economic development strategies for the EU (the previous Lisbon Strategy and the current Europe 2020 strategy) was to identify the biggest shortcomings in current European economic policy hindering economic growth and development in the medium and long term, and to find ways of eliminating those shortcomings. In the first of these strategies the EU did a great job in identifying the main causes of insufficient economic growth in the EU by comparison with other world leaders and the risks to the future economic development of the EU. However, it completely failed in its efforts to remedy the situation. The Europe 2020 strategy generally adopted the objectives and priorities of the Lisbon Strategy, but elaborated them into five transparent targets, fulfilment of which can be

[12] Greece's success may seem surprising in light of its economic situation. However, this is due primarily to it meeting its climate/energy and education targets. An economic downturn generally leads to lower energy consumption and lower emissions. High unemployment meanwhile motivates students to stay in the education system and to postpone their entry into the labour market. Greece also increased its R&D investment (both in relative terms, from 0.6% of GDP in 2010 to 0.83% of GDP in 2014, and in absolute terms, by EUR 130 million).

[13] However, it remains well below the figures for most other EU countries (only in Croatia, Slovenia and Poland is it lower; the figure for the EU as a whole is 11.2%). Moreover, the Czech Republic has set itself a national target of 5.5% in this category.

	Europe 2020 headline target indicators	Czech Republic		Spain	
		2010	2014	2010	2014
1	Employment rate (% of population aged 20–64)	70.4	73.5	62.8	59.9
2	Total R&D expenditure (% of GDP)	1.34	2	1.35	1.2
3a	Greenhouse gas emissions (1990=100)	70.45	66.02	124.72	113.14
3b	Share of renewables in final energy consumption (%)	9.5	12.4	13.8	15.4
3c	Primary energy consumption (Mtoe)	41.9	39.6	122.8	113.6
4a	Rate of early school leaving (% of population aged 18–24)	4.9	5.5	28.2	21.9
4b	Share of population with tertiary education (% of population aged 30–34)	20.4	28.2	42	42.3
5	Number of people in or at risk of poverty and social exclusion (thousands)	1,495	1,532	12,029	13,402

Table 4 Progress of the Czech Republic and Spain in meeting the Europe 2020 targets

Source: Eurostat, author's calculations

Note: The last known figures for 2013 were used for the energy targets.

continuously measured by specified variables, and supplemented them with specific figures to be achieved by the end of 2020.

The Europe 2020 strategy entered its "second half" at the start of this year. Through the elaborate institutional cycle of the European Semester, consisting in the regular production of assessment reports (by the European Commission), National Reform Programmes (by the Member States), subsequent recommendations (again by the Commission) and other documents, the involvement of the Member States has increased significantly. Despite this, relatively little progress has been made in meeting the targets. The EU as a whole has so far managed to keep step with only the education, climate and energy targets. At the country level the situation is far more mixed. The best performers are the Nordic countries and the worst performers are the "new" Member States, especially those in south-east Europe. However, it is the Czech Republic that has made the most progress in the first four years. Conversely, Spain has fallen furthest down the European country rankings. However, there are still five years to go to meet all the targets. Who will ultimately emerge as the "winner" is still far from clear.

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A1. Change in GDP predictions for 2016

	CF		IMF		OECD		CB / EIU	
EA	-0.1	2016/3 2016/2	+0.1	2016/1 2015/9	-0.4	2016/2 2015/11	-0.3	2016/3 2015/12
US	-0.1	2016/3 2016/2	-0.2	2016/1 2015/9	-0.5	2016/2 2015/11	+0.1	2015/12 2015/9
DE	-0.2	2016/3 2016/2	+0.1	2016/1 2015/9	-0.5	2016/2 2015/11	0	2015/12 2015/6
JP	-0.3	2016/3 2016/2	0	2016/1 2015/9	-0.2	2016/2 2015/11	+0.1	2016/1 2015/10
BR	-0.4	2016/3 2016/2	-2.5	2016/1 2015/9	-2.8	2016/2 2015/11	0	2016/3 2016/2
RU	-0.9	2016/3 2016/2	-0.4	2016/1 2015/9	-1.2	2015/11 2015/6	0	2016/3 2016/2
IN	-0.1	2016/3 2016/2	0	2016/1 2015/9	+0.1	2016/2 2015/11	0	2016/3 2016/2
CN	0	2016/3 2016/2	0	2016/1 2015/9	0	2016/2 2015/11	0	2016/3 2016/2

A2. Change in inflation predictions for 2016

	CF		IMF		OECD		CB / EIU	
EA	-0.2	2016/3 2016/2	-0.0	2015/9 2015/4	-0.1	2015/11 2015/6	-0.9	2016/3 2015/12
US	0	2016/3 2016/2	-0.4	2015/9 2015/4	-0.8	2015/11 2015/6	-0.1	2015/12 2015/9
DE	-0.3	2016/3 2016/2	-0.1	2015/9 2015/4	-0.7	2015/11 2015/6	-0.7	2015/12 2015/6
JP	-0.3	2016/3 2016/2	-0.5	2015/9 2015/4	-0.9	2015/11 2015/6	-0.6	2016/1 2015/10
BR	+0.2	2016/3 2016/2	+0.4	2015/9 2015/4	+0.6	2015/11 2015/6	0	2016/3 2016/2
RU	+1.0	2016/3 2016/2	-1.2	2015/9 2015/4	+2.5	2015/11 2015/6	-1.2	2016/3 2016/2
IN	0	2016/3 2016/2	-0.2	2015/9 2015/4	-0.4	2015/11 2015/6	0	2016/3 2016/2
CN	0	2016/3 2016/2	+0.3	2015/9 2015/4	+0.5	2015/11 2015/6	0	2016/3 2016/2

A3. List of abbreviations

ABS	asset-backed securities
bbl	barrel
BoJ	Bank of Japan
BR	Brazil
BRIC	countries of Brazil, Russia, India and China
BRL	Brazilian real
CB	central bank
CB-CCI	Conference Board Consumer Confidence Index
CB-LEII	Conference Board Leading Economic Indicator Index
CBOT	Chicago Board of Trade
CBR	Central Bank of Russia
CF	Consensus Forecasts
CN	China
CNB	Czech National Bank
CNY	Chinese renminbi
DBB	Deutsche Bundesbank
DE	Germany
EA	euro area
EBRD	European Bank for Reconstruction and Development
EC	European Commission
ECB	European Central Bank
EC-CCI	European Commission Consumer Confidence Indicator
EC-ICI	European Commission Industrial Confidence Indicator
EIA	Energy Information Administration
EIU	Economist Intelligence Unit
EU	European Union
EUR	euro
EURIBOR	Euro Interbank Offered Rate
Fed	Federal Reserve System (the US central bank)
FOMC	Federal Open Market Committee
FRA	forward rate agreement
FY	fiscal year
GBP	pound sterling
GDP	gross domestic product
HICP	harmonised index of consumer prices
CHF	Swiss franc
ICE	Intercontinental Exchange
IFO	Institute for Economic Research
IFO-BE	IFO Business Expectations
IMF	International Monetary Fund
IN	India
INR	Indian rupee
IRS	Interest Rate swap
ISM	Institute for Supply Management
JP	Japan
JPY	Japanese yen
LI	leading indicators
LIBOR	London Interbank Offered Rate
MER	Ministry of Economic Development (of Russia)
MMBtu	million of British Thermal Units
OECD	Organisation for Economic Co-operation and Development
OECD-CLI	OECD Composite Leading Indicator
PMI	Purchasing Managers' Index
PPI	producer price index
QE	quantitative easing
RU	Russia
RUB	Russian rouble
TLTRO	targeted longer-term refinancing operations
UoM	University of Michigan
UoM-CSI	University of Michigan Consumer Sentiment Index
US	United States
USD	US dollar
USDA	United States Department of Agriculture
WEO	World Economic Outlook
WTI	West Texas Intermediate (crude oil used as a benchmark in oil pricing)
ZEW-ES	ZEW Economic Sentiment

A4. List of thematic articles published in the GEO

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