GLOBAL ECONOMIC OUTLOOK - JUNE

2018

Monetary Department
External Economic Relations Division

CZECH NATIONAL BANK

Cut-off date for data
15 June 2018

CF survey date
11 June 2018

GEO publication date
22 June 2018

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, with exception of MT and LU, for which they come from EIU.
Leading indicators are taken from Bloomberg and Datastream.
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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Editor-in-chief I. Summary	Editor II.4 United Kingdom	II.1 Euro area	II.2 Germany VI. Focus	II.3 United States III.1 China

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II.5 Japan III.2 India	III.3 Russia III.4 Brazil	V.1 Oil and natural gas V.2 Other commodities

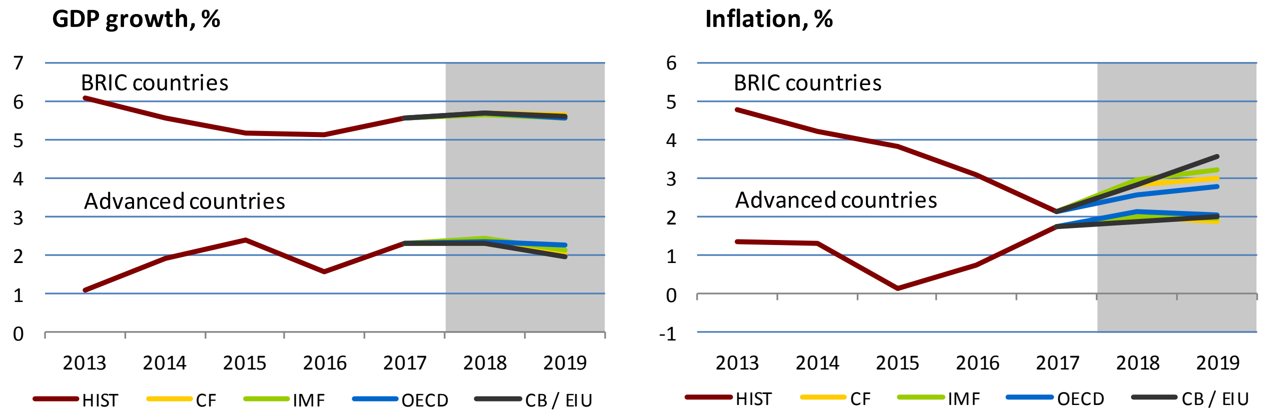
The June issue of Global Economic Outlook presents the regular monthly overview of recent and expected developments in selected territories, focusing on key economic variables: inflation, GDP growth, leading indicators, interest rates, exchange rates and commodity prices. The analytical section of this issue presents the annual assessment of the forecasts included in GEO, i.e. those issued by international institutions, selected central banks and Consensus Economics. With the benefit of hindsight, it can be said that the monitored institutions tended to be pessimistic with their economic outlooks for 2017. By contrast, they expected higher inflation for the BRIC countries and Japan than the subsequent outcomes.

The current outlooks for economic growth in the advanced economies we monitor – except the USA – have decreased, especially for this year. The main uncertainty surrounding the growth outlook stems from global trade, which may be disrupted by US protectionist measures and the reactions of the countries hit by them. Nevertheless, according to current outlooks, the USA will continue to enjoy robust growth of around 3%, despite further monetary policy tightening by the Fed. It raised the target range for its key rate again in June, and another increase is expected this year. The situation in the euro area, whose growth slowed at the start of the year and where monetary policy normalisation keeps being postponed, is rather different. The weaker growth combined with still lower-than-optimal inflation, exacerbated by potential negative developments in some euro area countries (Italy in particular), was probably the main cause of the extension of the quantitative easing programme announced by the ECB after its June meeting. Securities purchases should thus continue into 2018 Q4, albeit at a reduced pace of EUR 15 billion a month. Moreover, the ECB's key rates should remain at their current level at least until summer 2019. The outlooks for the UK and Japan still indicate distinctly lower growth compared to the USA and the euro area and have additionally been lowered slightly for this year. In the case of the UK, this is due mainly to long-running negative Brexit-related factors. The outlooks for UK inflation for 2019 have been reduced compared to last month, so no further increase in interest rates is expected in the near future. In Japan, expected inflation has been lowered for this year and it seems that it will be very hard to lift inflation from its low 1% level.

The current outlooks for BRIC countries still expect solid GDP growth rates. The traditionally strong growth outlooks for India and China have been at current levels for several months now, so the June outlook confirms that the downward path of GDP growth in China will be slightly slower than expected a couple of months ago. However, the unusual news from the Chinese economy of a current account deficit and uncertainty regarding the signing of a new trade deal with the USA may upset the positive expectations. By contrast, the Indian economy will return to more than 7.5% growth from its current slightly weaker rates. The inflation estimates for China are relatively low, only just above the 2% level. The expected inflation figure in India was reduced slightly from the previously attacked 5% level, in line with the economic growth in that country. The outlooks for Brazil and Russia generally worsened in the last month, although their expected results are still solid (by post-crisis standards). The Brazilian and Russian economies are expected to grow by around 3% and 2% respectively, amid inflation close to 4%.

According to market outlooks, euro area interest rates will remain negative until the end of 2019. By contrast, US interest rates can be expected to keep edging up. According to CF, the US dollar will weaken against all the monitored currencies one year ahead, except for the renminbi, against which it will be broadly stable. The outlook for the Brent crude oil price was little changed from May. According to CF, it will fluctuate around USD 71 a barrel at the one-year horizon. Food commodity prices are expected to offset their recent decline by rising over the outlook horizon, whereas base metals prices are expected to stagnate after their current rise ends.

GDP growth and inflation development and outlook in monitored countries



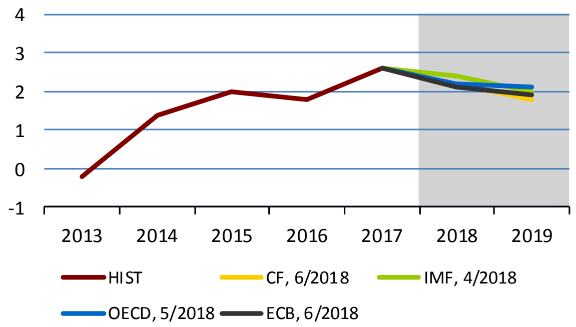
Note: The figures represent the weighted averages of historical series / outlooks in individual countries. The weights are based on nominal GDP measured in USD during 2013–2016 (source: EIU). Advanced countries: euro area, United States, United Kingdom, Japan. BRIC countries: China, India, Russia, Brazil.

II.1 Euro area

Euro area GDP growth slowed at the start of this year in line with deceleration of monthly indicators. The growth fell to 0.4% in quarter-on-quarter terms and 2.5% year-on-year terms. Turning to the components of GDP, the slowdown was due mainly to lower contribution of net exports, while growth in private domestic demand remained robust. The slower expansion is partly a result of one-off factors (weather fluctuations, strikes and an influenza epidemic), which hit Germany in particular. However, it also reflects fundamentals (a stronger euro and capacity constraints in some countries) and a return to longer-term average growth rates. The figures for Q2 currently signal continued growth, albeit at a lower pace. For example, the PMI in manufacturing has been falling since January, but at 55.5 in May it remains above-average and is safely in the expansion band. However, its export orders component is signalling a slowdown in output in the coming months. On the one hand, consumption is being supported by accommodative monetary policy and favourable labour market developments, as unemployment fell to 8.5% in April and wage growth increased to 1.8% (year on year) in Q1. On the other hand, higher oil prices and a weaker euro than at the start of the year are negatively affecting households' disposable income. The monitored GDP growth outlooks were revised downwards. Growth of around 2.2% is expected this year, dropping to 2.0% next year.

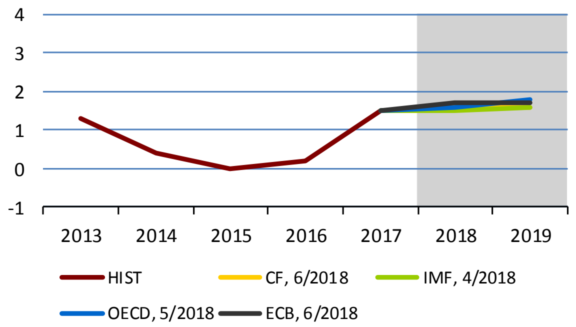
HICP inflation rose to 1.9% in May, due mainly to a higher energy price contribution, although core inflation also went up (to 1.1%). The higher oil price is also reflected in the new OECD, ECB and CF outlooks, which were revised up. Headline inflation is expected to be 1.6% this year and rise to just below the ECB's target in 2019. At its meeting in June, the Governing Council confirmed that securities purchases would continue at a pace of EUR 30 billion a month until September and then be reduced to EUR 15 billion a month until the end of 2018, when the programme is expected to be ended. Key rates are expected to remain at current levels until next summer. Market outlooks expect the 3M EURIBOR to turn positive again at the end of 2019.

GDP growth, %



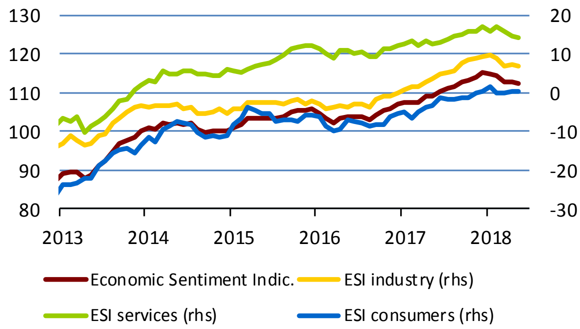
	CF	IMF	OECD	ECB
2018	2.2	2.4	2.2	2.1
2019	1.8	2.0	2.1	1.9

Inflation, %



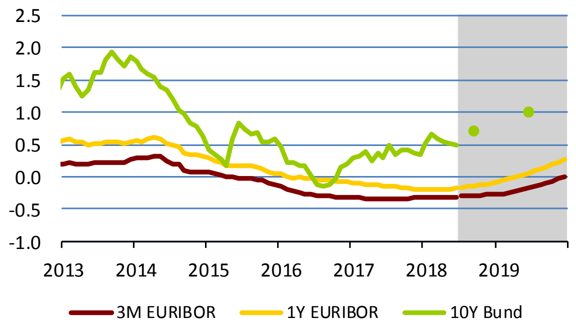
	CF	IMF	OECD	ECB
2018	1.6	1.5	1.6	1.7
2019	1.6	1.6	1.8	1.7

Leading indicators



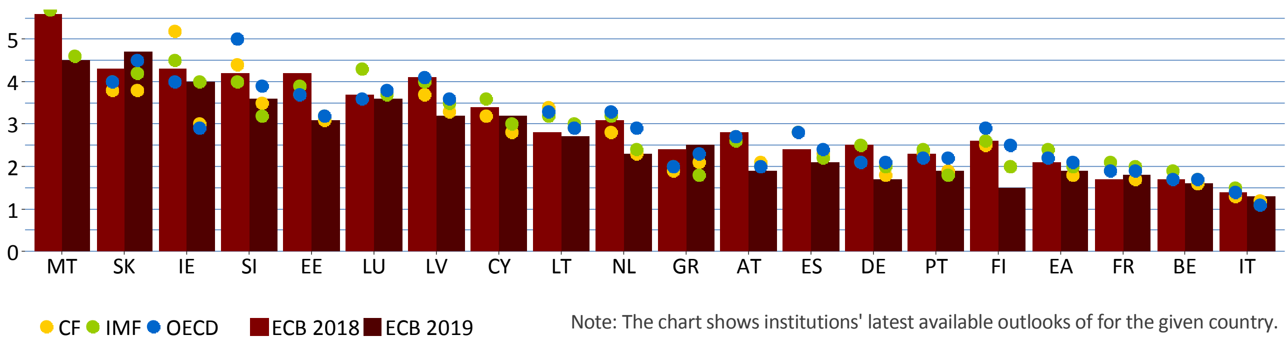
	ESI	industry	services	consumers
3/18	112.8	7.0	16.0	0.1
4/18	112.7	7.3	14.7	0.3
5/18	112.5	6.8	14.3	0.2

Interest Rates, %

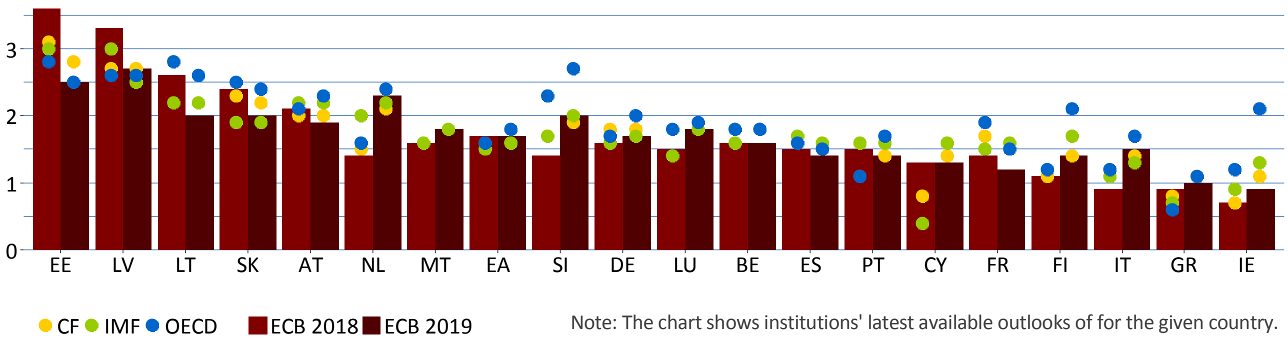


	05/18	06/18	09/18	06/19
3M EURIBOR	-0.33	-0.32	-0.30	-0.18
1Y EURIBOR	-0.19	-0.18	-0.15	0.06
10Y Bund	0.51	0.49	0.70	1.00

GDP growth outlooks in the euro area countries in 2018 and 2019, %



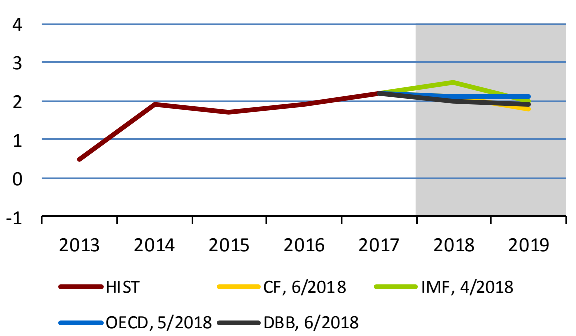
Inflation outlooks in the euro area countries in 2018 and 2019, %



II.2 Germany

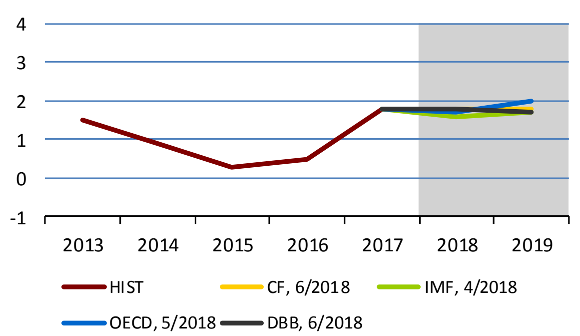
Owing to a slowdown in Q1, the GDP growth outlook was revised down for both 2018 and 2019 (CF and OECD; DBB for this year only). The slower growth was due to weaker external demand and lower government consumption. In May, the ZEW economic sentiment indicator remained at its lowest levels since 2012 and the IFO expectations index went down again due to foreign trade uncertainty stemming from the USA's protectionist measures and possible retaliation by other countries. The PMI leading indicator in manufacturing fell in May but stayed in the expansion band. The labour market situation was favourable, with the unemployment rate dropping further. However, wage growth remains subdued for now, despite rising to 2.5%[1] in Q1. Inflation therefore increased in May due mainly to growth in energy prices, while core inflation was broadly flat. CF revised its inflation outlook for both years closer to the ECB's 2% target. The DBB only increased its 2018 projection. The OECD outlook for 2018 was conversely revised down slightly.

GDP growth, %



	CF	IMF	OECD	DBB
2018	2.1	2.5	2.1	2.0
2019	1.8	2.0	2.1	1.9

Inflation, %



	CF	IMF	OECD	DBB
2018	1.8	1.6	1.7	1.8
2019	1.8	1.7	2.0	1.7

[1] In business economy.

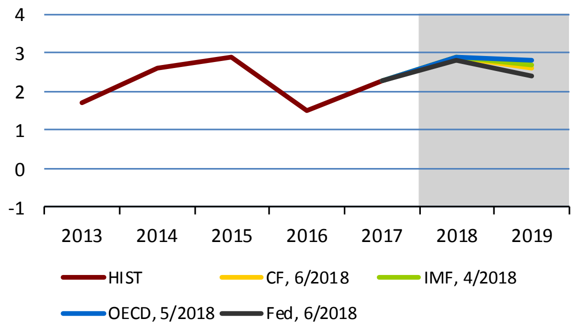
II.3 United States

Trade disputes persist between the USA and other countries. This leads to retaliatory measures and an escalation of the conflict. At the end of May, the tariff exemption on imports of steel and aluminium from the EU, Canada and Mexico came to an end. The EU responded by introducing tariffs on selected US goods imported to the EU. President Trump reacted to the EU's action by threatening to put a tax of up to 25% on vehicle imports. The negotiations with China were also unsuccessful, so the USA decided in early June to introduce further tariffs on goods imports of up to USD 50 billion a year. China is expected to impose retaliatory tariffs on imports of US goods (such as soy and beef), as it hinted in March.

The US economy continues to expand. The second estimate of GDP growth for 2018 Q1 was revised downwards slightly to 2.2% (in quarter-on-quarter annualised terms), but growth in Q2 might exceed 4.5% according to the Atlanta Fed. An improvement is expected in industry in particular; the ISM PMI leading indicator suggests greater optimism of firms in all the main components (new orders, production and employment). Consumer sentiment remains robust, and retail sales went up by 5.9% year on year in May. Non-farm payrolls reached 223,000 in April and the unemployment rate dropped to 3.8%, the lowest level since April 2000. The average hourly wage increased by 2.7% year on year.

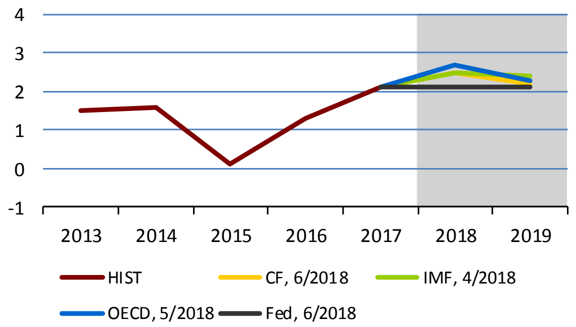
Headline consumer inflation rose further to 2.7% in May and the core PCE remains close to the central bank's target. The rising prices and continued economic expansion contributed to the Fed's decision to raise the target band for its key rates by 25 bp to 1.75%–2.00% at the June meeting as expected. The FOMC members' median estimates suggest that two more 25 bp hikes in the key rate can be expected before the end of 2018. Also, the accompanying statement no longer contained forward guidance, i.e. that rates would remain below the neutral level for some time. Both the June CF and the Fed's new outlook expect higher growth this year. The OECD and the Fed also revised their inflation forecasts upwards for both years.

GDP growth, %



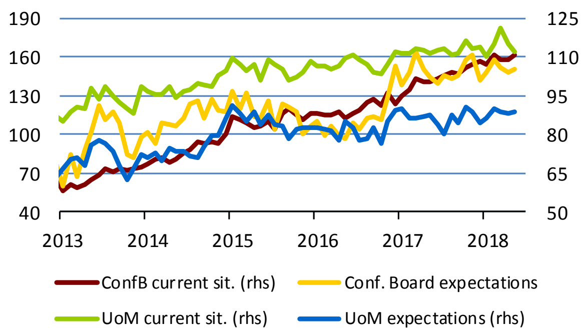
	CF	IMF	OECD	Fed
2018	2.9	2.9	2.9	2.8
2019	2.6	2.7	2.8	2.4

Inflation, %



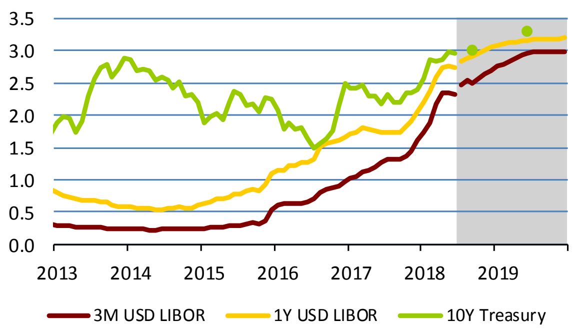
	CF	IMF	OECD	Fed
2018	2.5	2.5	2.7	2.1
2019	2.2	2.4	2.3	2.1

Leading indicators



	ConfB curr.	ConfB exp.	UoM curr.	UoM exp.
3/18	158.1	106.2	121.2	88.8
4/18	157.5	104.3	114.9	88.4
5/18	161.7	105.6	111.8	89.1

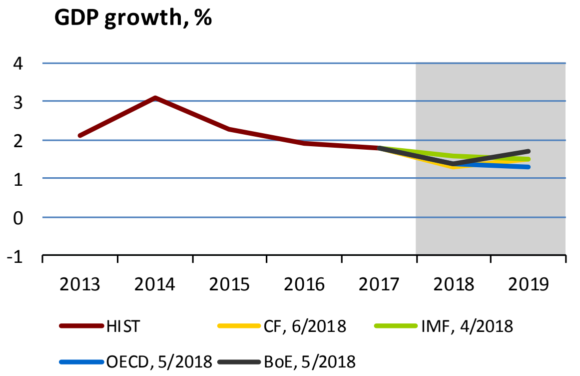
Interest Rates, %

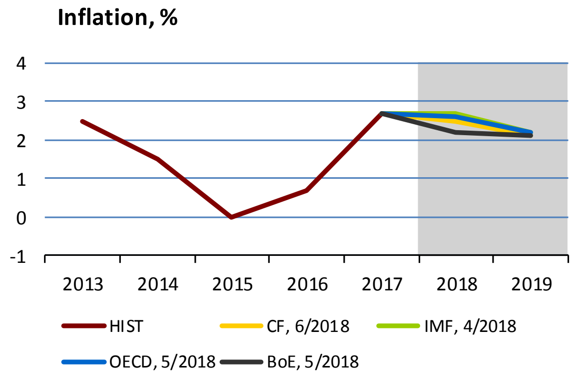


	05/18	06/18	09/18	06/19
USD LIBOR 3M	2.34	2.32	2.49	2.95
USD LIBOR 1R	2.75	2.75	2.92	3.16
Treasury 10R	2.98	2.95	3.00	3.30

II.4 United Kingdom

The UK economy grew at a rate of just 1.2% year on year in Q1. GDP rose by only 0.1% quarter on quarter as corporate investment dropped and consumption growth slowed. Moreover, the latest monthly indicators suggest that the slowdown may not be only temporary. Year-on-year industrial production growth slowed to 1.8% in April (from 2.9% in March) and construction fell for the fourth straight month. However, leading indicators are not pessimistic. The PMI in manufacturing rose to 54.4 and the PMI in services to 54.0 in May. Household demand is also improving. Retail sales recorded surprisingly high year-on-year growth of 3.9% in May (compared to 1.4% on average in Q1). The June CF still lowered its GDP growth forecast for this year to 1.3%, the new OECD outlook expects 1.4%. Inflation has stabilised in recent months, standing at 2.4% in both April and May. Core inflation was 2.1%. The BoE is thus not expected to raise rates at the end of June.



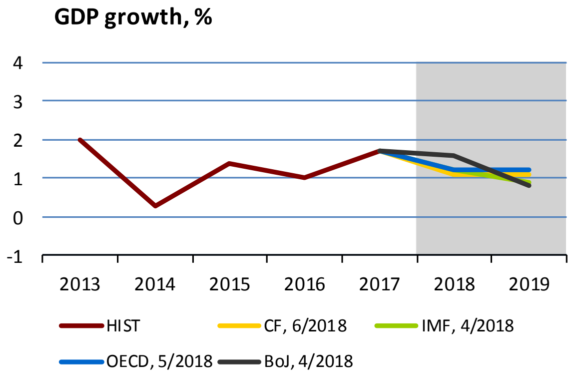


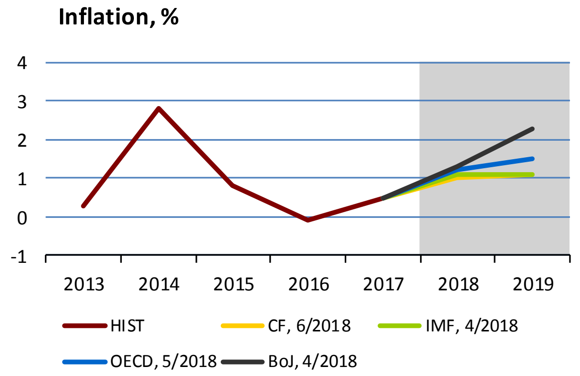
	CF	IMF	OECD	BoE
2018	1.3	1.6	1.4	1.4
2019	1.5	1.5	1.3	1.7

	CF	IMF	OECD	BoE
2018	2.5	2.7	2.6	2.2
2019	2.1	2.2	2.2	2.1

II.5 Japan

The final data confirmed the end of the longest expansion of the Japanese economy since the 1980s. GDP growth decreased by an announced 0.6% in Q1 (in quarter on quarter annualised terms). However, it was probably affected by transient factors such as bad weather and a dip in global demand for some products. Retail sales growth increased in both year-on-year and month-on-month terms in April, but household expenditure fell further and wage growth slowed sharply. Year-on-year industrial production growth increased, but industrial output is recording lower growth rates this year than it did last year. The PMI in manufacturing fell to 52.8 points in May. According to purchasing managers, this was due to slower growth in output, new orders and employment. The outlooks for GDP growth and inflation saw only minor changes. The BoJ left the monetary policy stance unchanged at its June meeting.





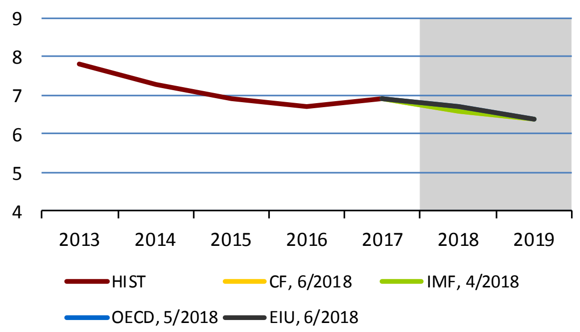
	CF	IMF	OECD	BoJ
2018	1.1	1.2	1.2	1.6
2019	1.1	0.9	1.2	0.8

	CF	IMF	OECD	BoJ
2018	1.0	1.1	1.2	1.3
2019	1.1	1.1	1.5	2.3

III.1 China

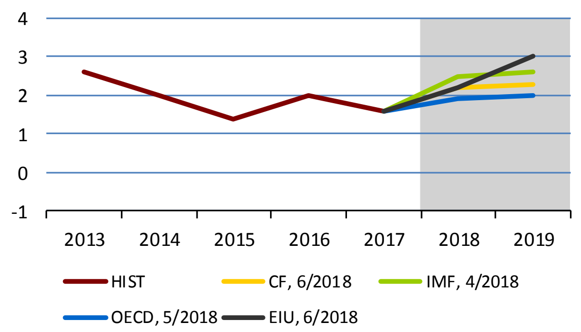
China recorded a current account deficit (of USD 28 billion) for the first time in 15 years in 2018 Q1. The question is whether the Chinese economy is undergoing a structural change that will lead to sustained current account deficits. According to official data, the trade surplus is shrinking while the services deficit is widening steadily. The effect of Chinese society getting wealthier and related factors – such as greater popularity of tourism and capital outflows abroad – will be significant. Given the current disputes, a trade deal between China and the USA would also have a major impact on the current account balance. Investment, industrial production and retail sales fell short of expectations in May but remain solid. The June CF saw no change in the economic outlook. The new EIU outlook expects slightly lower inflation pressures. The OECD forecast for inflation this year was revised in the opposite direction.

GDP growth, %



	CF		IMF	OECD		EIU	
2018	6.6	→	6.6	6.7	→	6.7	→
2019	6.4	→	6.4	6.4	→	6.4	→

Inflation, %

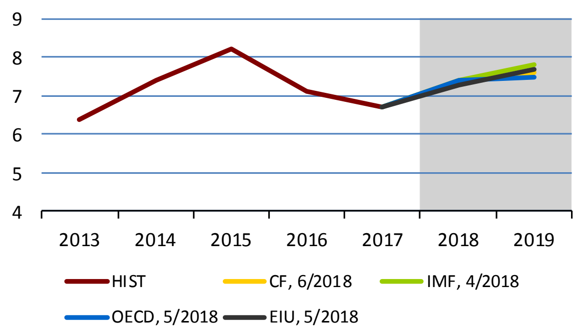


	CF		IMF	OECD		EIU	
2018	2.2	→	2.5	1.9	↗	2.2	↘
2019	2.3	→	2.6	2.0	→	3.0	↘

III.2 India

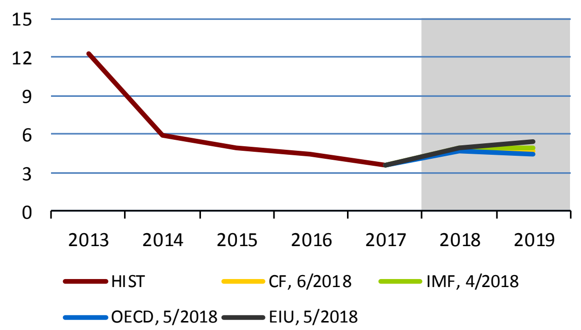
The Indian economy expanded by 7.7% in Q1. Its growth thus increased by 0.7 pp in the last quarter of fiscal year 2017/2018, mainly on the back of investment. Year-on-year industrial production growth surged in April, supported by higher extraction and manufacturing output, despite sandstorms disrupting the economy in April. The PMI in manufacturing dropped slightly to 51.2 points in May, as growth in output, new orders and employment all declined according to purchasing managers. According to outlooks, Indian GDP growth will remain high. Consumer price inflation rose by 0.3 pp to 4.9% in May. Prices of food (especially fruit and vegetables) and fuels showed the highest growth. The RBI increased its base rate by 0.25 pp to 6.25% in June due to stronger inflation pressures. The inflation forecasts were revised slightly, but the direction of the revisions differed across institutions.

GDP growth, %



	CF		IMF	OECD		EIU	
2018	7.4	→	7.4	7.4	↗	7.3	↘
2019	7.6	→	7.8	7.5	→	7.7	↘

Inflation, %

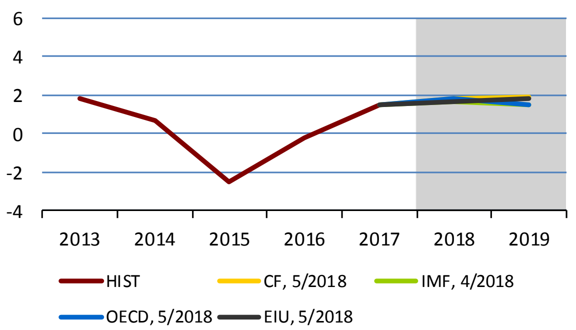


	CF		IMF	OECD		EIU	
2018	4.8	↘	5.0	4.7	↗	5.0	↗
2019	4.7	↘	5.0	4.4	↗	5.4	↗

III.3 Russia

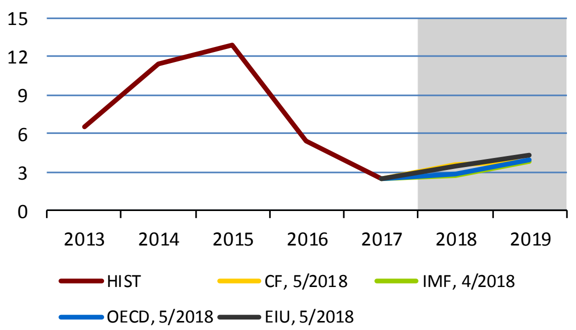
Year-on-year industrial production growth in Russia rose to 1.3% in April (after a previous slowdown to 1.0%) and growth in manufacturing turned positive (1.1%). Nevertheless, the PMI does not foresee a continued expansion in this sector. It dropped below 50 in May. The PMI in services also declined but remains optimistic about future developments (54.1). Annual inflation remained at 2.4% for the third consecutive month, with prices of services growing the most in May (4%). The rouble appreciated slightly in the period under review, supported by oil prices, but subdued economic growth had the opposite effect on it. As a result, the Russian currency was fluctuating around RUB 62.5 to the dollar in mid-June. According to the new CF, EIU and OECD outlooks, growth will remain under 2% this year and the next and inflation will return to the target at the end of 2019.

GDP growth, %



	CF	IMF	OECD	EIU
2018	1.8	1.7	1.8	1.7
2019	1.9	1.5	1.5	1.8

Inflation, %

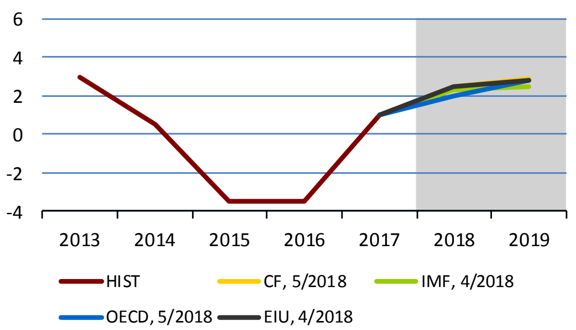


	CF	IMF	OECD	EIU
2018	3.6	2.8	2.9	3.5
2019	3.9	3.8	4.0	4.3

III.4 Brazil

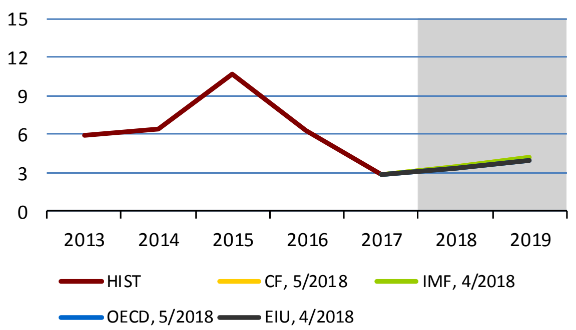
Year-on-year industrial production growth in Brazil reached almost a five-year high of 8.9% in April. Conversely, the June PMI descended into the economic contraction band (to 49.5, from 50.0 in May). Both the PMI in manufacturing and the PMI in services decreased. The Brazilian real depreciated to a two-year low against the dollar in early June (to almost BRL 4 to the dollar) on concerns about economic policy, especially the fiscal outlook and the renewal of costly fuel subsidies by President Temer following widespread strikes. The depreciation was also due to uncertainty surrounding the October presidential elections. Following the sharp fall, the real returned to the levels observed at the end of May. Subsequently, however, it started to weaken again. The policy rate was unchanged in the period under review. The new CF and OECD outlooks expect weaker growth this year, with GDP growth expected at 2.0%–2.5%.

GDP growth, %



	CF	IMF	OECD	EIU
2018	2.5	2.3	2.0	2.5
2019	2.9	2.5	2.8	2.8

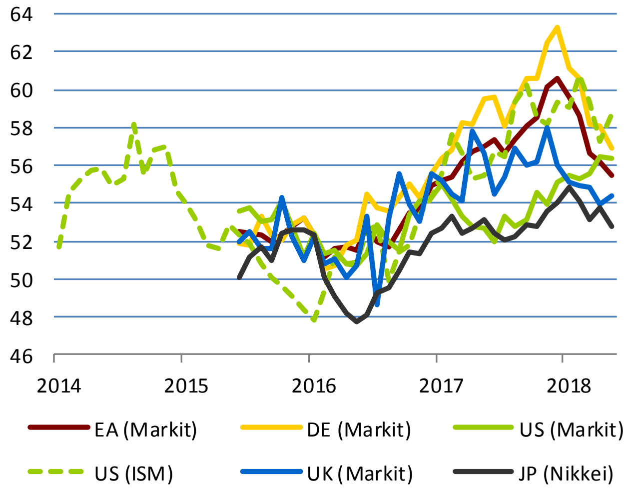
Inflation, %



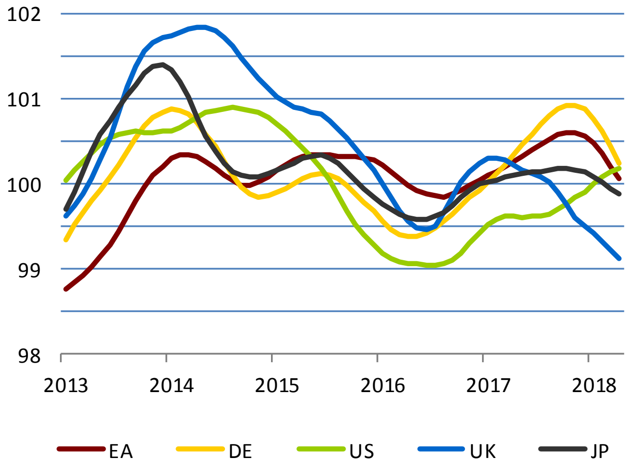
	CF	IMF	OECD	EIU
2018	3.5	3.5	3.4	3.3
2019	4.2	4.2	4.0	4.0

IV.1 Advanced economies

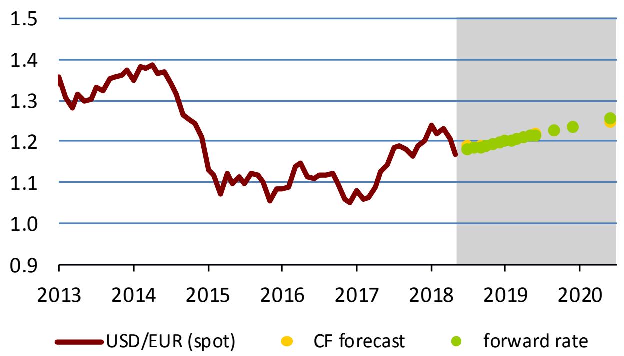
PMI in manufacturing



OECD Composite Leading Indicator

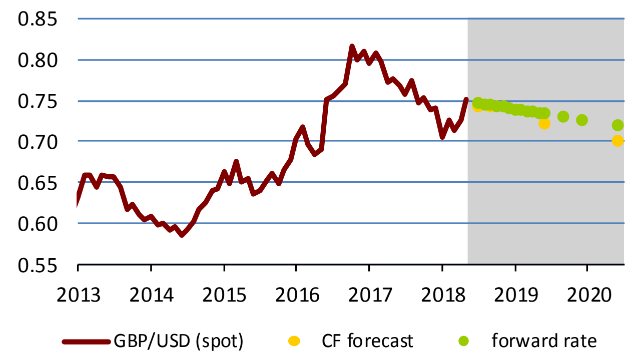


The US dollar (USD/EUR)



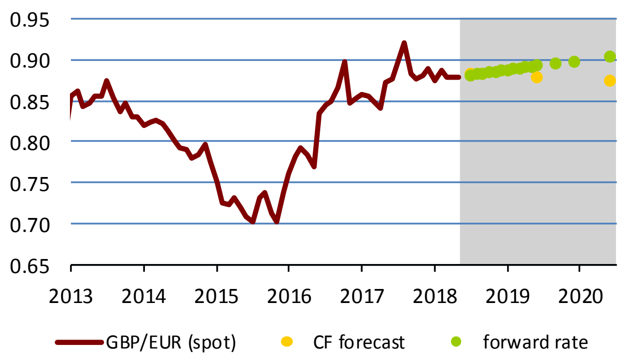
	11/6/18	07/18	09/18	06/19	06/20
spot rate	1.181				
CF forecast		1.187	1.189	1.219	1.246
forward rate		1.181	1.187	1.215	1.256

The British pound (GBP/USD)



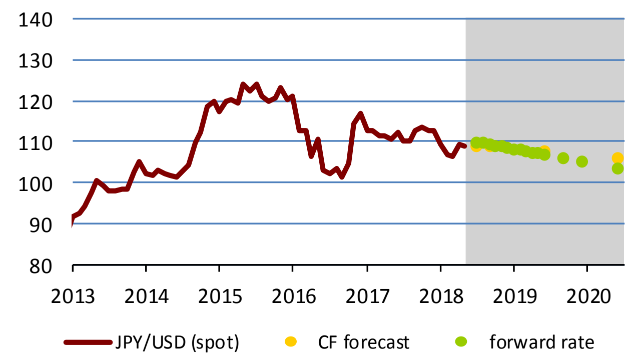
	11/6/18	07/18	09/18	06/19	06/20
spot rate	0.747				
CF forecast		0.743	0.743	0.721	0.701
forward rate		0.746	0.744	0.734	0.720

The British pound (GBP/EUR)



	11/6/18	07/18	09/18	06/19	06/20
spot rate	0.882				
CF forecast		0.883	0.883	0.879	0.874
forward rate		0.882	0.883	0.892	0.905

The Japanese yen (JPY/USD)

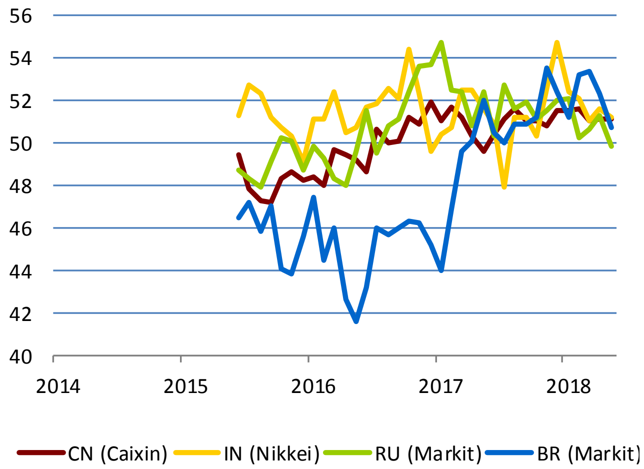


	11/6/18	07/18	09/18	06/19	06/20
spot rate	109.9				
CF forecast		109.0	108.9	107.8	106.1
forward rate		109.8	109.3	106.9	103.3

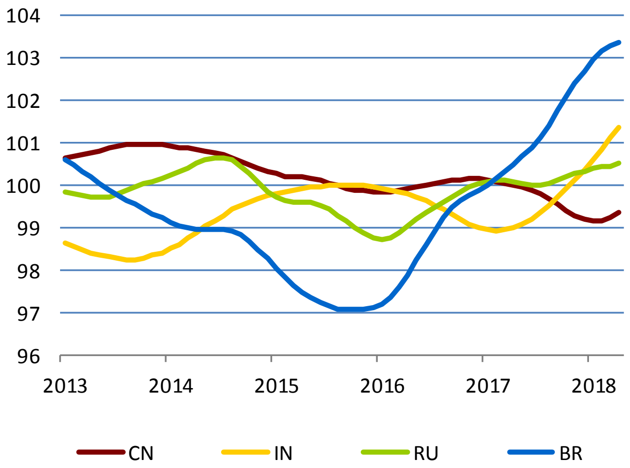
Note: Exchange rates as of last day of month. Forward rate does not represent outlook; it is based on covered interest parity, i.e. currency of country with higher interest rate is depreciating. Forward rate represents current (as of cut-off date) possibility of hedging future exchange rate.

IV.2 BRIC countries

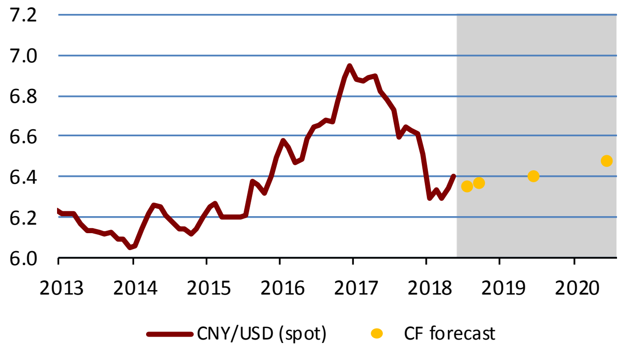
PMI in manufacturing



OECD Composite Leading Indicator

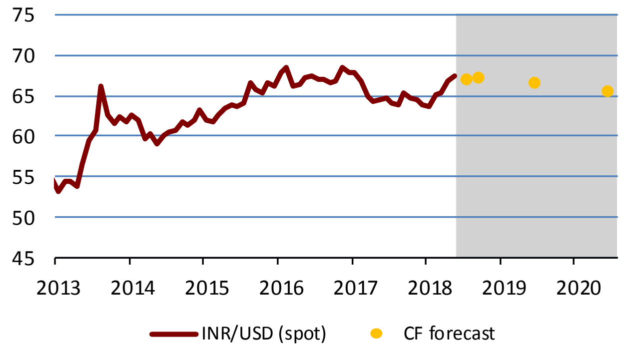


The Chinese renminbi (CNY/USD)



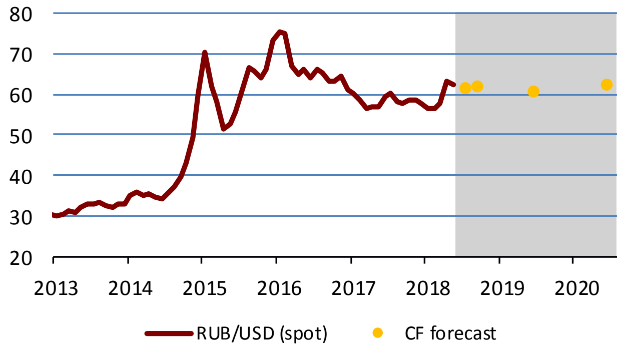
	11/6/18	07/18	09/18	06/19	06/20
spot rate	6.402				
CF forecast		6.348	6.370	6.406	6.476

The Indian rupie (INR/USD)



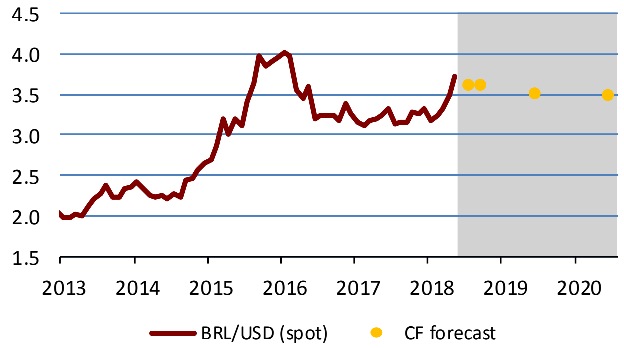
	11/6/18	07/18	09/18	06/19	06/20
spot rate	67.42				
CF forecast		67.04	67.24	66.53	65.47

The Russian rouble (RUB/USD)



	11/6/18	07/18	09/18	06/19	06/20
spot rate	62.66				
CF forecast		61.64	61.88	60.56	62.16

The Brazilian real (BRL/USD)



	11/6/18	07/18	09/18	06/19	06/20
spot rate	3.677				
CF forecast		3.624	3.618	3.52	3.499

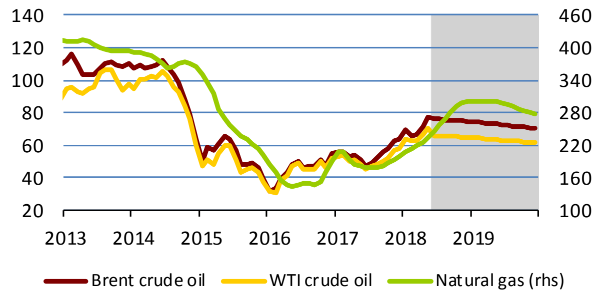
Note: Exchange rates as of last day of month.

V.1 Oil and natural gas

In May, the price of Brent crude oil continued to follow the strong growth trend that started in early April, and by the middle of the month it was nearing USD 80/bbl. The price was supported by a further increase in geopolitical tensions, robust demand and a continued decrease in global oil stocks. At the end of May, however, the oil price corrected downwards on speculation of a possible increase in production by OPEC and Russia. From then until mid-June, the price fluctuated just above USD 75/bbl as markets awaited the outcome of a key OPEC meeting in Vienna on 22–23 June. Logistical problems with transporting oil from inland to the coast limit the possibility of exporting US oil to the global market. Amid fast growing oil production in the USA, this is increasing the discount for WTI versus Brent.

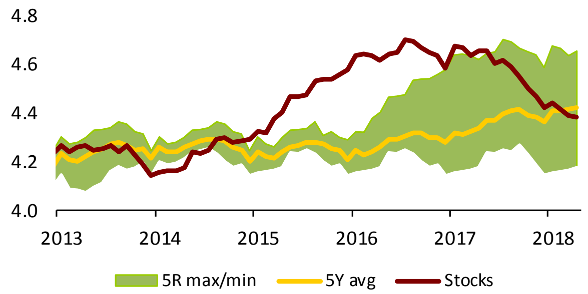
The market curve based on Brent futures was little changed from last month, only its negative slope moderated slightly. It implies an average price of USD 73.2 and 72.4/bbl for this year and the next respectively. The June CF expects the Brent oil price to correct quickly to USD 72.7/bbl at the three-month horizon and to decline further to USD 71.1/bbl at the one-year horizon. The EIA is also just below the market curve. It revised its forecast upwards by USD 2/bbl, but it still expects an average Brent price of only USD 71/bbl this year and USD 68/bbl the next. However, the outcome of the upcoming OPEC meeting and the subsequent negotiations between Saudi Arabia and Russia about a possible increase in production will be important for the oil price going forward. Following a decrease in April, hedge funds also reduced their net long positions for the oil complex in May and the ratio of long to short positions also fell significantly. This means investors are again to a greater extent opening bets on a future decline in oil prices.

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

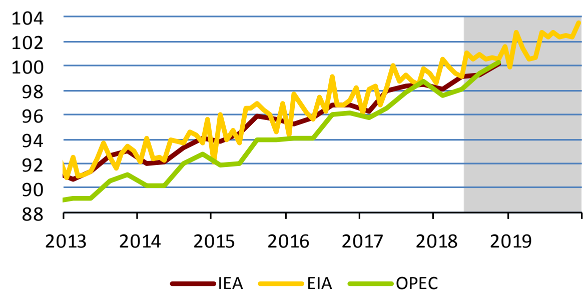


	Brent	WTI	Natural gas
2018	73.22	65.22	253.09
2019	72.36	62.93	292.87

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

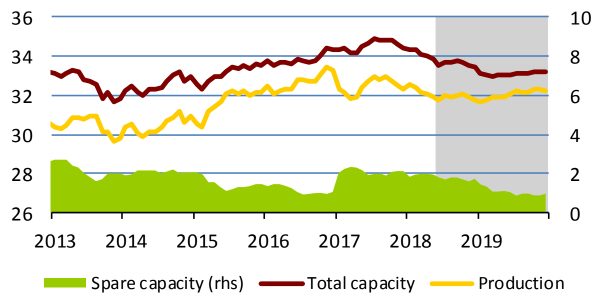


Global consumption of oil and oil products (mil. barrel / day)



	IEA	EIA	OPEC
2018	99.17	100.30	98.85
2019		102.01	

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



	Production	Total capacity	Spare capacity
2018	32.02	33.83	1.81
2019	32.05	33.10	1.05

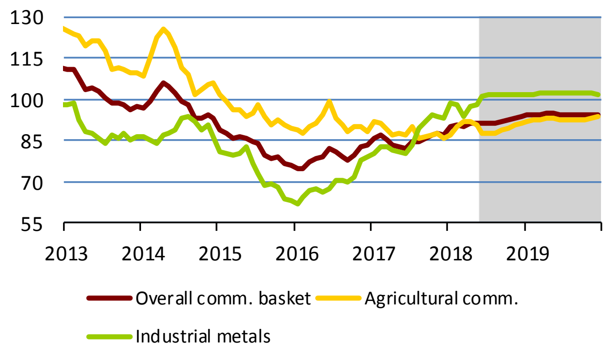
Source: Bloomberg, IEA, EIA, OPEC, CNB calculation
Note: Oil price at ICE, average gas price in Europe – World Bank data, smoothed by the HP filter. Future oil prices (grey area) are derived from futures and future gas prices are derived from oil prices using model. Total oil stocks (commercial and strategic) in OECD countries – IEA estimate. Production and extraction capacity of OPEC – EIA estimate.

V.2 Other commodities

The aggregate non-energy commodity price index was flat at the April level in May and the first half of June, reflecting opposite movements in its two components. The food commodity price sub-index recorded a sharp decline in early June, while the industrial metals price sub-index built on its strong April growth and increased further in the period under review. Over the outlook horizon, food commodity prices are expected to offset their current decline by rising until the end of the year, while metals prices are expected to stagnate on average at their current more than six-year high.

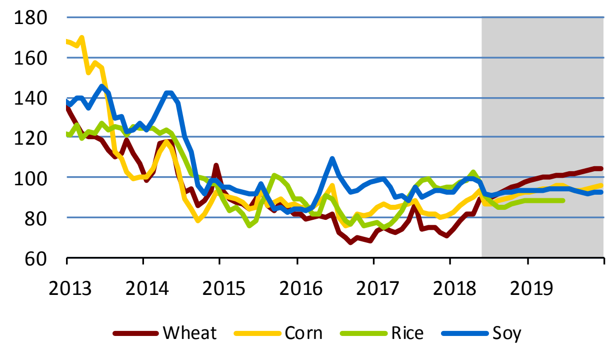
Following strong growth in April, the price of aluminium remains at its highest level since 2011, but further growth is not expected due to increased exports from China. The price of nickel continued to rise on concerns about the possible imposition of US sanctions on the Russian producer. Prices of other metals were generally flat or falling in May due to a weakening manufacturing outlook (the JP Morgan PMI in global manufacturing dropped to a nine-month low in May) and a strengthening dollar. The price of copper surged in early June due to another expected strike at the world's largest mine in Chile, while prices of other industrial metals recorded renewed modest growth. The price of cotton added to the growth in industrial commodities in May, while the price of natural rubber was flat. Price movements were also mixed across food commodities. The wheat price rose slightly (with growth also expected at the forecast horizon), but other grain prices went down. The previous increase in the price of cocoa was also corrected by a strong decline. Conversely, the previous several-month decline in the price of sugar halted. The price of pork surged in April, while the price of beef moved in the opposite direction.

Non-energy commodities price indicies



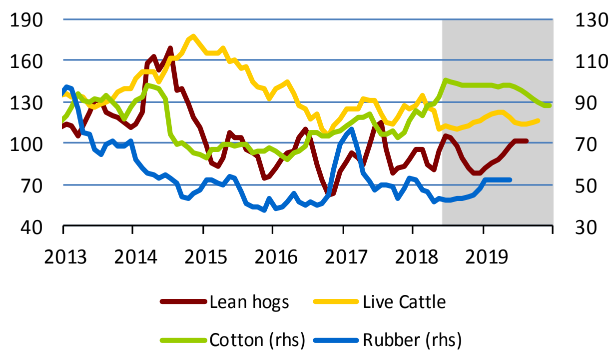
	Overall	Agricultural	Industrial
2018	91.6	89.6	99.8
2019	94.5	92.8	102.1

Food commodities



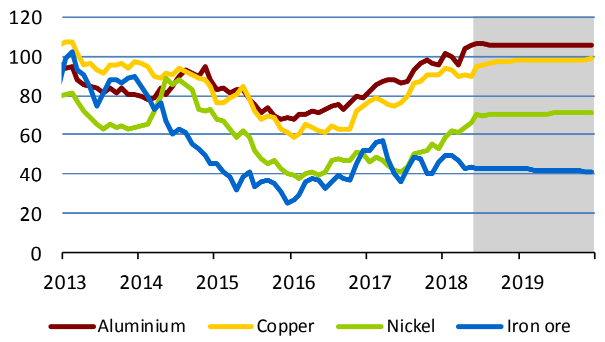
	Wheat	Corn	Rice	Soy
2018	88.2	88.9	91.9	94.4
2019	101.6	94.5	88.4	93.5

Meat, non-food agricultural commodities



	Lean hogs	Live Cattle	Cotton	Rubber
2018	90.7	117.7	94.2	45.1
2019	93.8	117.9	94.4	52.5

Basic metals and iron ore



	Aluminium	Copper	Nickel	Iron ore
2018	104.0	94.3	67.0	44.3
2019	105.7	98.4	70.9	41.9

Source: Bloomberg, CNB calculations.

Note: Structure of non-energy commodity price indices corresponds to composition of The Economist commodity indices. Prices of individual commodities are expressed as indices 2010 = 100.

Annual assessment of the forecasts included in GEO[2]

Every month, Global Economic Outlook (GEO) provides an overview of the latest economic forecasts issued by international institutions, selected central banks and Consensus Economics. With the benefit of hindsight, it can be said that the monitored institutions tended to be pessimistic with their economic outlooks for 2017. Their forecasts for GDP growth expected lower levels on average. On the other hand, expected consumer price inflation was higher than the subsequent outcomes for the BRIC countries and Japan. At the same time, the outlooks for short-term interest rates in the euro area were slightly overestimated, while those for rates in the USA were underestimated. As regards the exchange rates of the monitored currencies against the dollar, forecasters expected a stronger dollar for most currency pairs compared to what transpired. The crude oil price was also slightly underestimated in the forecasts on average over the entire assessment period. The underestimation of the crude oil price and the overshooting of expected inflation in some countries suggest higher expected inflationary demand-pull pressures, which did not materialise.

1 Introduction

Every year, we assess the accuracy of the forecasts of the economic variables regularly monitored in GEO. The results of this assessment provide valuable information about which of the monitored institutions produced estimates that were the closest to the subsequently recorded outcomes and were thus the most successful in their forecasts. In addition to Consensus Forecasts (CF),[3] we assess the outlooks derived from market contracts when assessing the forecasts for interest rates, the dollar exchange rate and oil prices. The assessment always applies to the past year. In the case of the forecasts for GDP growth and CPI inflation for a given calendar year (fixed-event forecasts), we are now assessing the forecasts for 2017. In the case of the forecasts published for a fixed horizon that shifts further into the future each time a new forecast is published (rolling-event forecasts), the assessment covers the predictions since April 2016. From the outlooks regularly published in GEO, this category of rolling forecasts contains, for example, the three-month and one-year outlooks for foreign interest rates and oil prices and the outlooks for the exchange rates of the monitored currencies against the dollar.

Owing to the short length of the time series under assessment, the analysis mainly uses the simple mean forecast error (MFE). The forecast error e_t is calculated as the difference between the ex post known actual value a_t and the corresponding forecast f_t: $e_t = a_t - f_t$. A positive forecast error therefore means that the forecasted value undershot the subsequent outcome, while a negative error means that it overshot it. The source of actual levels of GDP and consumer price inflation growth for 2017 is the database of the Economist (EIU Country Data). The source of the actual levels of the other variables is Datastream. Futures contracts for interest rates, exchange rates and the Brent crude oil price are obtained from the Bloomberg database.

We also use the mean absolute percentage error (MAPE) to assess the accuracy of the GDP and inflation growth forecasts across institutions and also to assess forecast accuracy across the currencies' exchange rates against the dollar. This variable, expressed in percentages, is suitable for cross-checking variables of various dimensions. Moreover, the individual errors are given in absolute terms, so positive and negative forecast errors do not cancel each other out, as is the case with the MFE. The formal notation is as follows:

$$MAPE = \frac{100}{n}\sum_{t=1}^{n}\left|\frac{a_t - f_t}{a_t}\right|. \qquad (1)$$

2 Assessment of the accuracy of the GDP growth and CPI inflation forecasts for 2017

GEO regularly monitors actual and predicted GDP growth and CPI inflation in the euro area, the USA, Germany, Japan and the BRIC countries (Brazil, Russia, India and China); in 2017 it also started to monitor the UK economy and the forecasts for it. The forecasts for GDP growth and inflation for these countries are taken primarily from the CF survey, the International Monetary Fund (IMF) and the Organisation for Economic Cooperation and Development (OECD). These three institutions cover all the countries monitored. In the case of advanced economies, we also monitor the forecasts of their central banks, i.e. the European Central Bank (ECB), the Federal Reserve, Deutsche Bundesbank (DBB), the Bank of Japan (BoJ) and the Bank of England (BoE). For the BRIC countries, the forecasts of the Economist Intelligence Unit (EIU) are used instead. These institutions differ in the frequency and date of publication of their forecasts. The forecast updates range from monthly (CF and the EIU[4]) and quarterly (the IMF, OECD,

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[2] Author: Filip Novotný. The views expressed in this article are those of the author and do not necessarily reflect the official position of the Czech National Bank.

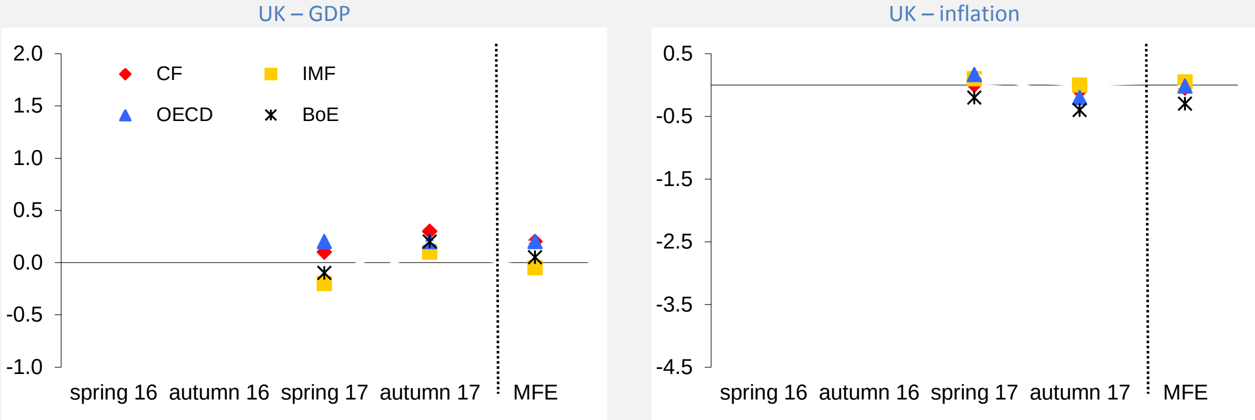
[3] A regular publication issued by Consensus Economics.

[4] The outlook update frequency varies across countries.

ECB, Fed and BoJ) through to half-yearly (DBB). For presentational reasons, only the half-yearly forecasts (i.e. the spring and autumn forecasts) are assessed. They correspond to the May and November CF.

The GDP growth outcomes came as a positive surprise in most of the countries under review. Chart 3 shows the deviations of the GDP growth forecasts for the monitored countries from the subsequent outcomes. In addition, the left-hand part of Chart 1 shows the accuracy of the GDP growth forecasts for the UK, which is limited to only half of the horizon of the forecasts for 2017. The charts reveal that only the growth forecast for India was higher than the actual outcome in 2017.[5] The GDP growth forecasts for the USA and the UK materialised almost exactly. GDP growth in the USA was thus more or less correctly expected over the entire two-year forecast horizon, while the euro area economy, and with it Germany, came as a positive surprise. GDP growth in the euro area, which hit a ten-year high in 2017, was ultimately higher than that in the USA. In spring 2016, expectations had been skewed in favour of the USA. Except for the dynamically growing China and India, the other monitored countries recorded growth of less than 2% in 2017. Nevertheless, even this growth came as a positive surprise to forecasters.

Chart 1 Forecast errors for GDP growth and consumer price inflation for 2017 (pp)

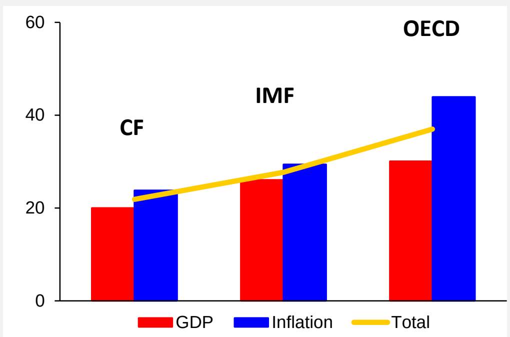


Note: CF – Consensus Forecasts, IMF – International Monetary Fund, OECD – Organisation for Economic Cooperation and Development, BoE – Bank of England. MFE is the mean forecast error for the given year.

CF recorded the smallest mean absolute percentage forecast error (MAPE) overall for the GDP growth and inflation forecasts among the institutions which forecast these variables for all countries (see Chart 2). It had the smallest forecast error both for GDP growth and inflation. The charts of the deviations of GDP growth also show that the usually over-pessimistic growth forecasts mostly became gradually more accurate over the assessment period (spring 2016 to autumn 2017). The central banks' forecasts were in line with those of the other institutions. The biggest uncertainty (as measured by the variability of the forecasts across institutions) pertained to the forecasts for Brazil and Russia, or, in the case of the advanced countries, Japan.

In contrast to the growth forecasts, the monitored institutions expected higher inflation in 2017 than the subsequent outcomes, especially in the BRIC countries and Japan (see Chart 4). For these countries, the GDP growth and inflation forecast errors were thus negatively correlated. This is not consistent with the concept of demand-pull inflation. The lower-than-expected oil price might therefore have contributed to this result. For the advanced countries, the resulting inflation was broadly in line with expectations. However, this meant inflation expectations for the euro area, and within it also Germany, were below the ECB's 2% target, as actual inflation stood at 1.5% and 1.7% respectively in 2017. Similarly, inflation in the euro area is also expected to be below 2% this year. Conversely, inflation in the USA amounted to 2.1% last year and the expectations for this year are approximately on target. Chart 2 also shows that the inflation forecasts were less accurate overall than the GDP growth forecasts.

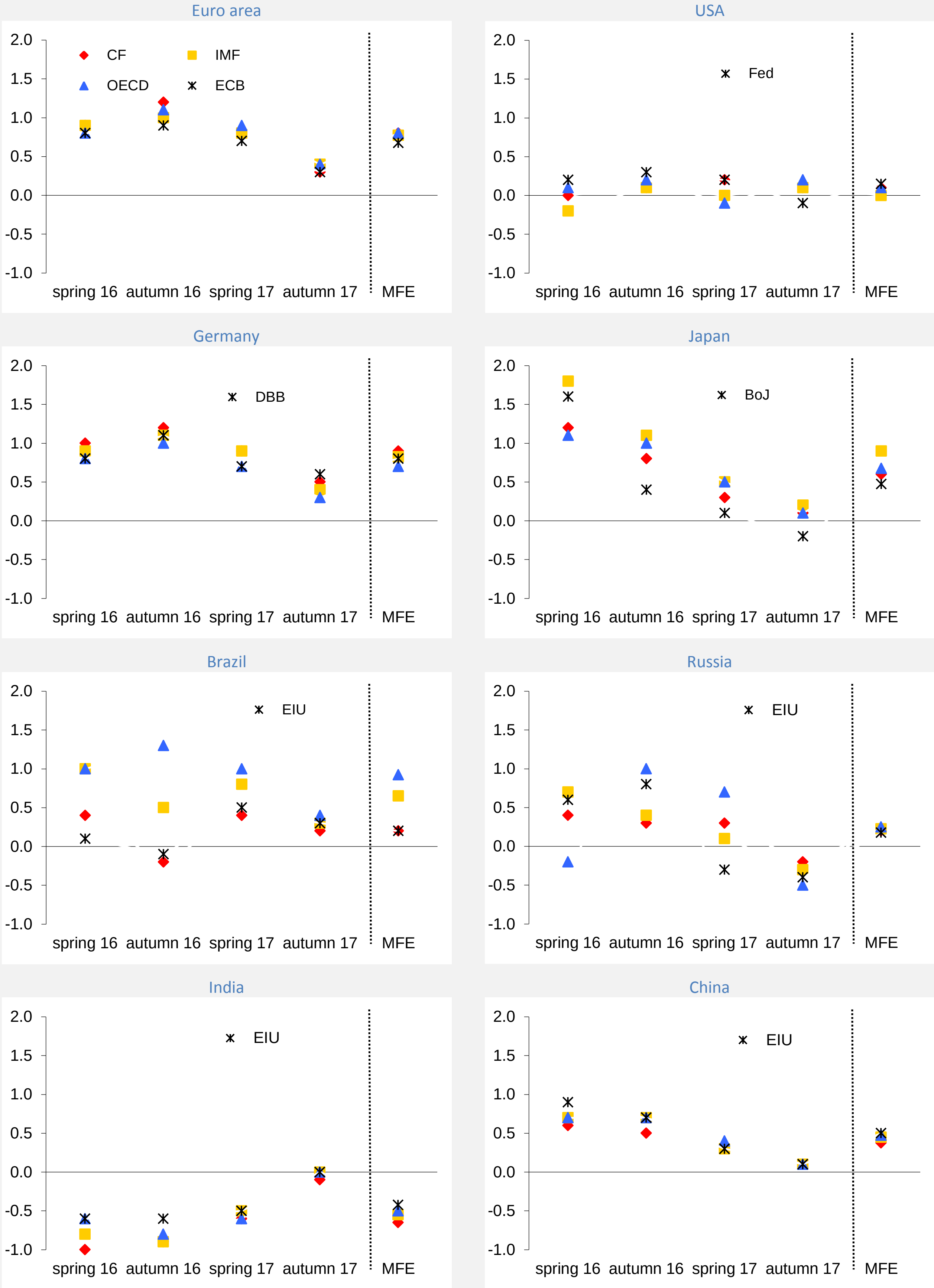
Chart 2 MAPE – comparison of the accuracy of institutions forecasting GDP and inflation for all countries



Note: CF – Consensus Forecasts, IMF – International Monetary Fund, OECD – Organisation for Economic Cooperation and Development MAPE is the mean absolute percentage error.

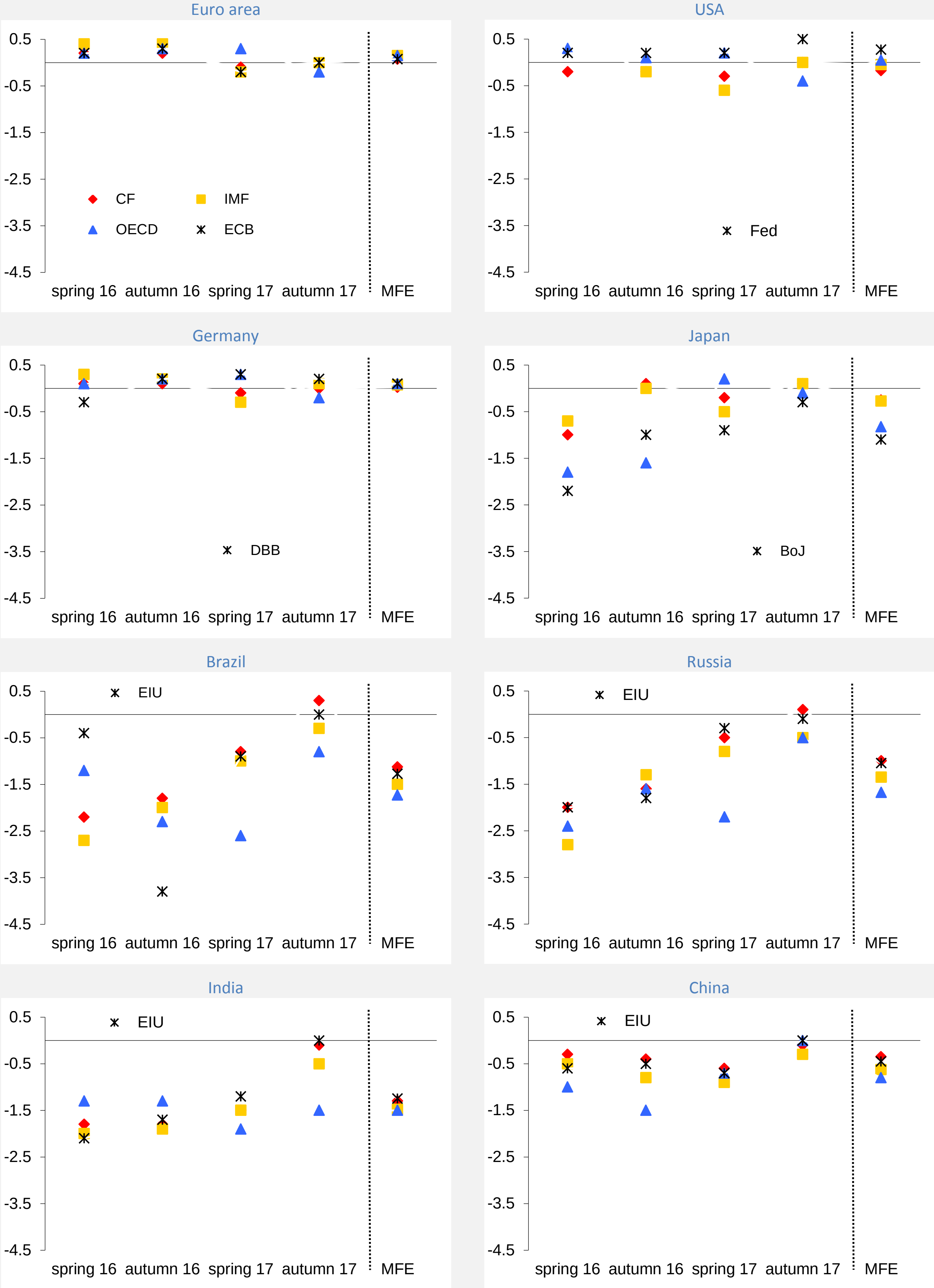
[5] Data for India pertain to the fiscal year, which begins on 1 April.

Chart 3 Forecast errors for GDP growth for 2017 (pp)



Note: CF – Consensus Forecasts, IMF – International Monetary Fund, OECD – Organisation for Economic Cooperation and Development, ECB – European Central Bank, Fed – Federal Reserve System of the USA, DBB – Deutsche Bundesbank, BoJ – Bank of Japan, EIU – Economist Intelligence Unit. MFE is the mean forecast error for the given year.

Chart 4 Forecast errors for consumer price inflation for 2017 (pp)



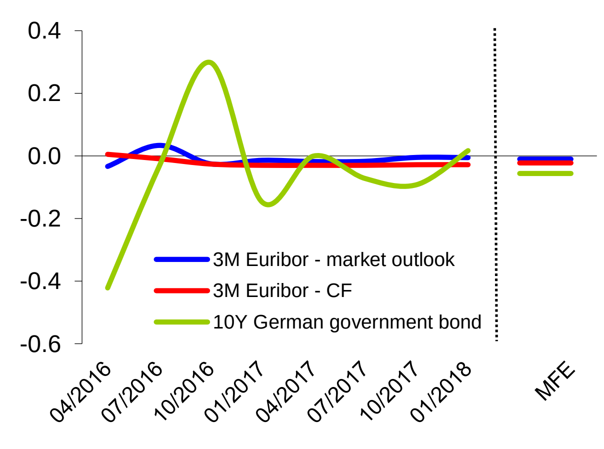
Note: CF – Consensus Forecasts, IMF – International Monetary Fund, OECD – Organisation for Economic Cooperation and Development, ECB – European Central Bank, Fed – Federal Reserve System of the USA, DBB – Deutsche Bundesbank, BoJ – Bank of Japan, EIU – Economist Intelligence Unit. MFE is the mean forecast error for the given year.

3 Assessment of the accuracy of the forecasts for foreign interest rates

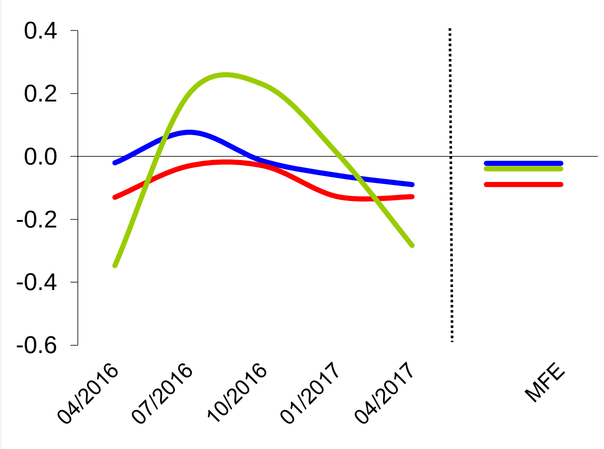
In GEO, interest rate outlooks are monitored for the euro area and the USA only. The outlooks for three-month interest rates are derived from futures. By contrast, the outlooks for long-term (ten-year) government bond yields are taken from CF. In the assessment we additionally use alternative three-month rate forecasts published in CF for comparison.

Chart 5 Forecast errors for interest rates for the euro area (pp)

Three-month outlooks



One-year outlooks



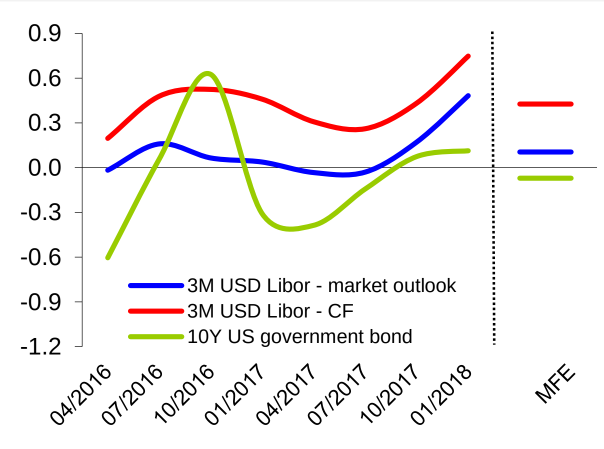
Note: MFE is the mean forecast error for the monitored period.

Short-term interest rate expectations for the euro area differed slightly from those for the USA (see Charts 5 and 6). While slightly higher rates were expected for the euro area, especially at the one-year horizon, the opposite applied to the USA to a much greater extent. On average, slower monetary policy tightening was expected in the USA. In the case of the three-month outlooks, the accuracy of the predictions was affected mainly by central banks' communications. As regards the short-term outlooks for euro rates, the forecasts were led by the ECB's current forward guidance, so expectations were firmly anchored at the current rate level (see Chart 5).

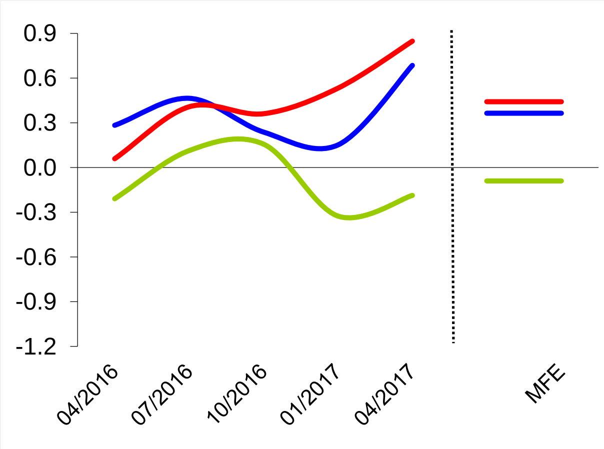
Increased uncertainty about interest rates at the short horizon (the three-month outlooks) was apparent in the USA. The first monetary policy rate increase (the first in seven years) happened in December 2015. However, this did not eliminate uncertainty from the prediction process, as the second post-crisis rate increase did not come until a full year later. This was followed by three hikes in 2017 and one more in March 2018. It is therefore not very surprising that the error in the CF forecast for dollar rates at the three-month horizon was broadly the same as that at the longer, one-year horizon. CF on average expected lower growth in the Fed's rates in the three-month outlook than that which actually materialised. The market outlooks for three-month rates were more accurate than the CF outlooks for both economies under review. We will thus continue to prefer them to the CF prediction in GEO's regular commentaries.

Chart 6 Forecast errors for interest rates for the USA (pp)

Three-month outlooks



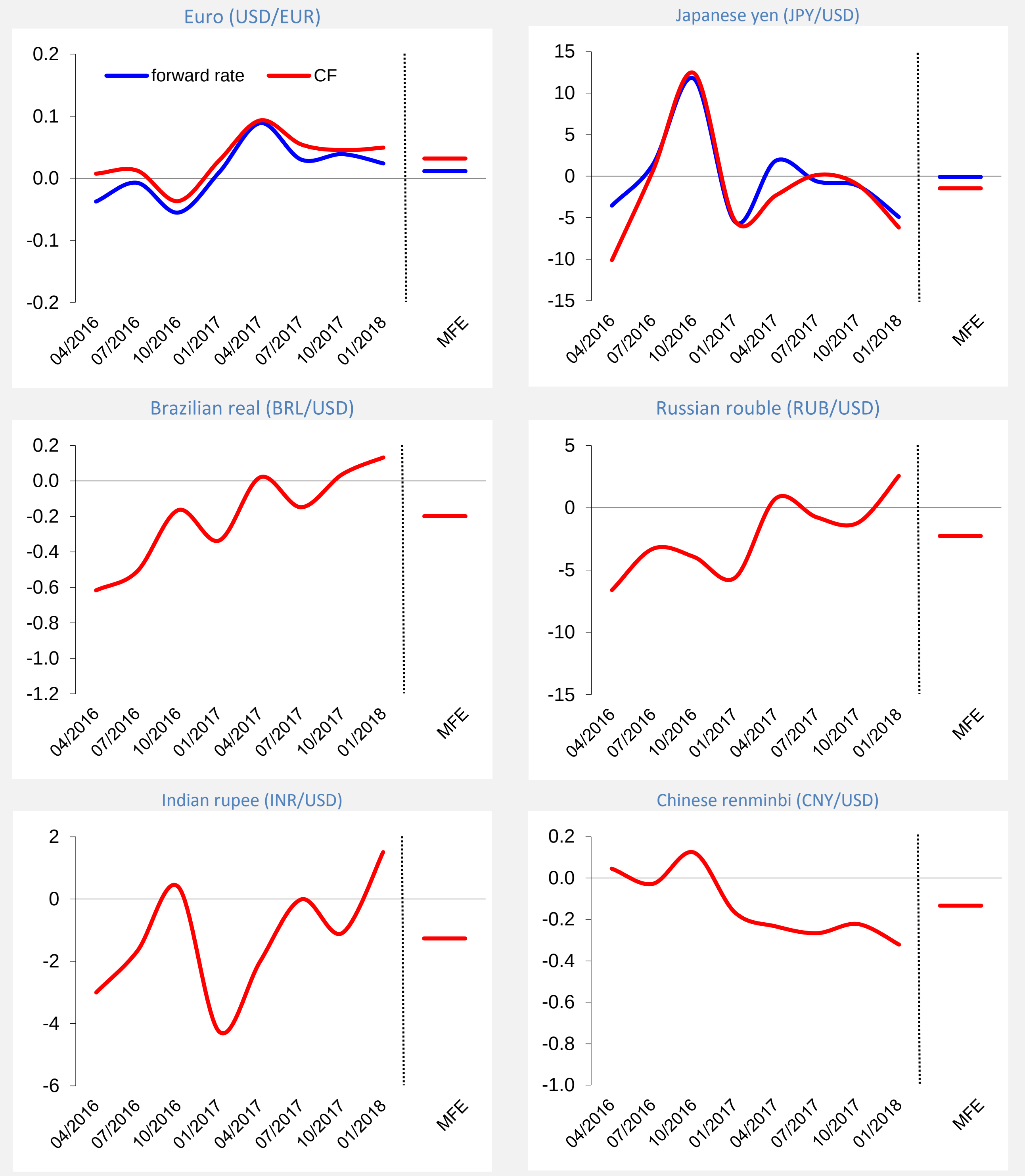
One-year outlooks



Note: MFE is the mean forecast error for the monitored period.

The forecasts for ten-year government bond yields were slightly overestimated on average for both the USA and the euro area. As for the short-term (three-month) outlooks, they were furthest from reality in spring and autumn 2016, when they predicted initially higher yields than those eventually generated and later lower yields than the actual outcomes. The deviation of the short-term forecast then decreased for both German bunds and US government bonds. The similarity in the deviations of the forecasts for long-term yields is due to the high correlation between German and US ten-year government bond rates. The deviations of the one-year outlooks for long-term rates were surprisingly less dynamic, reflecting uncertainties mainly at the shorter end of the forecasting horizon.

Chart 7 Three-month outlooks for exchange rates (deviations from reality)

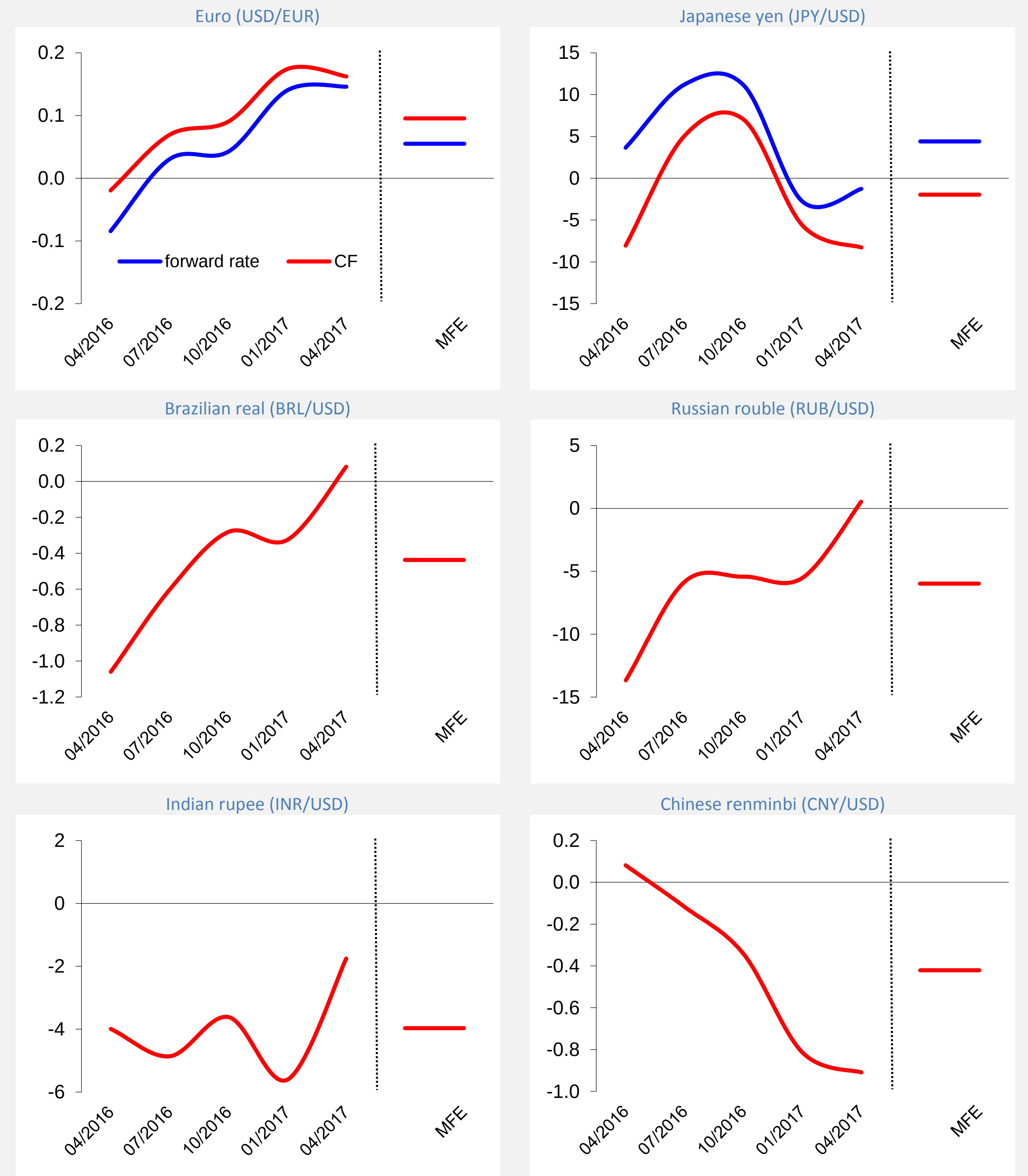


Note: CF – Consensus Forecasts. MFE is the mean forecast error for the monitored period.

4 Assessment of the accuracy of the forecasts for the dollar exchange rate

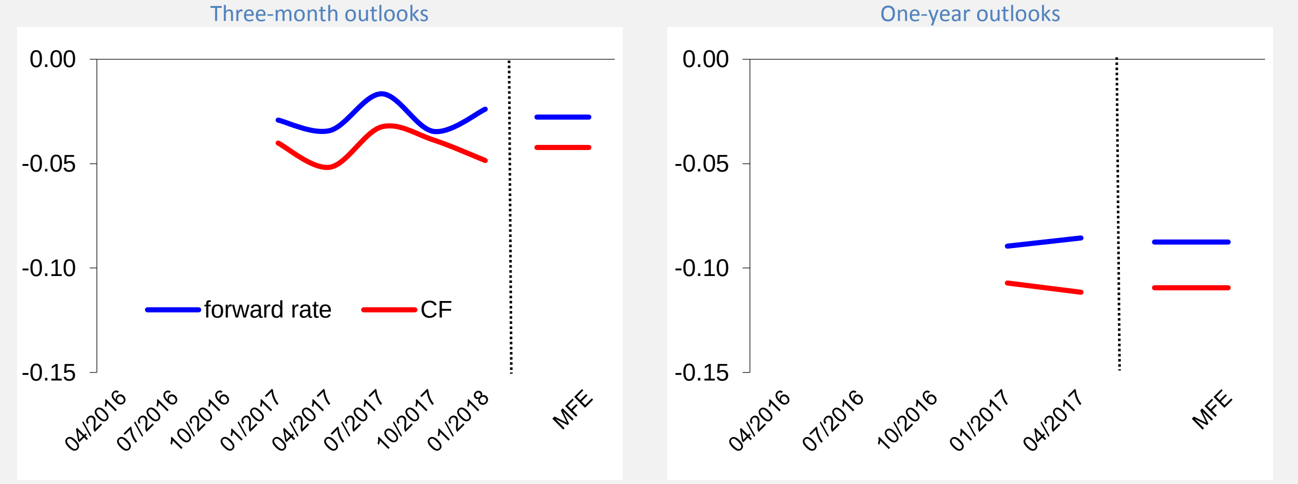
Both the three-month outlooks (see Chart 7) and the one-year outlooks (see Chart 8) predicted a stronger dollar than the subsequent outcomes for most currency pairs. GEO provides information about the outlooks for the exchange rates of selected currencies against the US dollar based on CF forecasts. In addition, forward rates are provided for the euro, the Japanese yen and, since 2017, sterling. They are based on covered interest parity and represent the current ability to hedge the future exchange rate rather than the outlook. The outlooks derived from market contracts were more accurate than the CF outlooks except for the one-year outlook for the dollar-yen exchange rate, where CF recorded a lower forecast error.

Chart 8 One-year outlooks for exchange rates (deviations from reality)



Note: CF – Consensus Forecasts. MFE is the mean forecast error for the monitored period.

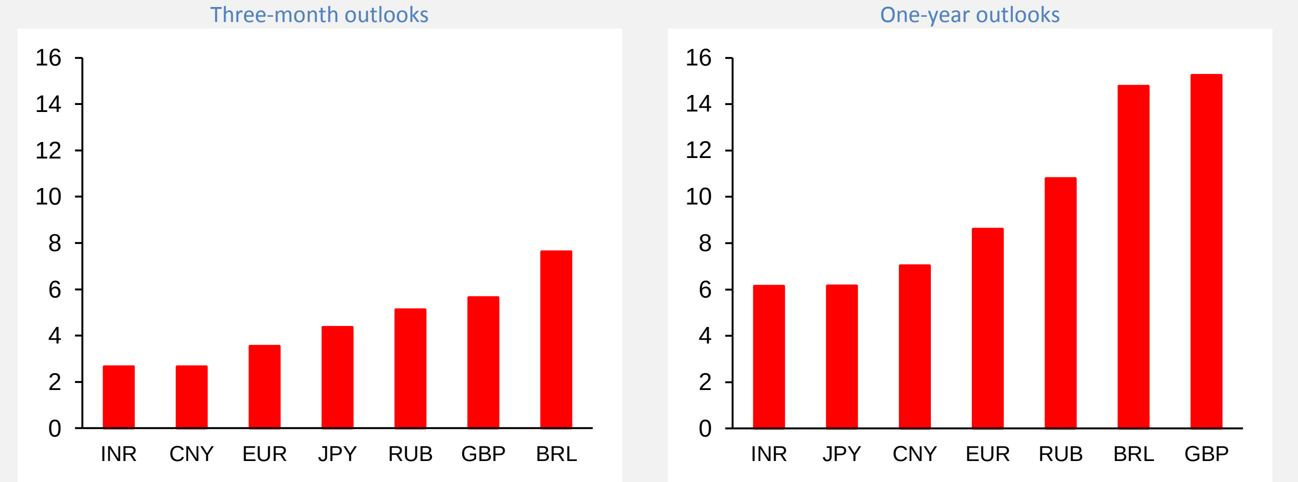
Chart 9 Forecast errors for the exchange rate of sterling (GBP/USD)



Note: CF – Consensus Forecasts. MFE is the mean forecast error for the monitored period.

In line with intuition, the three-month exchange-rate outlooks were more accurate than the one-year ones on average. The one-year USD/EUR outlooks (in spring 2016) had expected a weaker dollar, but the forecast deviation increased over the rest of the period in favour of an expected stronger dollar compared to the subsequent outcome. The forecast errors for the three-month and one-year outlooks for the Brazilian real and the Russian rouble followed a very similar pattern. They gradually decreased over time, from expectations of a stronger dollar to a virtually zero forecast error. The Chinese renminbi was characterised by the opposite trend, as its expected exchange rate against the dollar was relatively accurate in spring 2016 and the forecasting error later gradually increased in favour of a stronger dollar.

Chart 10 MAPE – forecast errors for the exchange rates of selected currencies against the dollar



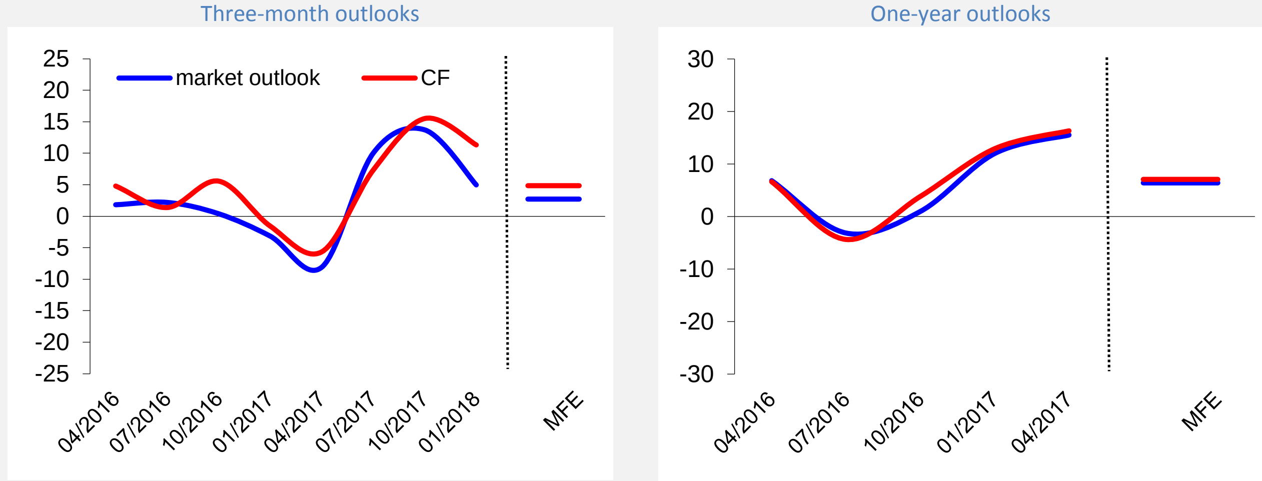
Note: MAPE is the mean absolute percentage error.

The exchange rate of the Indian rupee was the most accurate of all the currency pairs at both the three-month and one-year horizons. The forecasts for sterling and the Brazilian real were the worst performers (see Chart 10). The MAPE is used to compare the accuracy of the CF forecasts across the currencies' rates against the dollar. This comparison also reveals that the forecasts for the exchange rate of the dollar against the euro were relatively accurate, especially at the three-month horizon.

5 Assessment of the accuracy of the Brent crude oil price forecasts

The market outlooks for the Brent crude oil price derived from both futures contracts and CF outlooks underestimated the actual price at both the three-month and one-year horizons. This is the opposite picture to the 2016 and 2015 assessments, when the oil price forecasts had been higher than the outcomes. The curves of the forecast errors (see Chart 11) show that this was due mainly to a rise in the oil price from summer 2017 on. A comparison of the accuracy of the market outlooks and CF outlooks reveals that the former were slightly more accurate. GEO regularly describes both types of outlooks.

Chart 11 Forecast errors for the Brent oil price (USD a barrel)



Note: CF – Consensus Forecasts. MFE is the mean forecast error for the monitored period.

6 Conclusion

This article uses simple methods to assess the accuracy of the forecasts monitored in GEO over the past year. The accuracy of the forecasts of the institutions covered by GEO changes from year to year (see Table 1). This is one of the reasons why several institutions' forecasts are monitored in GEO. However, longer time period would be needed to assess them more accurately.[6] The accuracy of the CF forecasts, which are a key input into the CNB's own forecast for the Czech economy, is comparable with, and in many cases even better than, the available alternative forecasts. In addition, CF has the advantage of being published monthly and covering a relatively wide range of economic variables. The accuracy of CF stems from its defining characteristic, namely that it is the simple average of the forecasts from the contributing private institutions.[7] In the case of financial variables and the Brent crude oil price, forecasts derived from market forward or futures contracts are slightly more accurate than CF forecasts.

Table 1 Aggregate table of mean forecast errors (MFE)

MFE	CF		OECD		IMF		EIU	
in pp	2016	2017	2016	2017	2016	2017	2016	2017
GDP growth – adv. countries	-0.12	0.60	-0.13	0.57	-0.08	0.63	-	-
GDP growth – BRIC countries	-0.49	0.03	-0.57	0.29	-0.30	0.19	-0.35	0.11
Inflation – adv. countries	-0.41	-0.08	-0.46	-0.13	-0.25	-0.03	-	-
Inflation – BRIC countries	-0.58	-0.94	-0.99	-1.43	-1.24	-1.24	-0.93	-1.01
	CF		**FWD/FUTURES**					
	2016	**2017**	**2016**	**2017**				
3M Euribor (in pp)	-0.15	-0.06	-0.11	-0.02				
3M Libor USD (in pp)	0.02	0.43	-0.03	0.23				
USD/EUR	0.02	0.06	-0.02	0.03				
Brent crude oil (USD/bbl)	-6.49	5.95	-4.21	4.58				

Note: The smallest average growth forecast error in the given year for the given indicator is shown in grey. A positive forecast error means that the forecasted value undershot the subsequent outcome. CF – Consensus Forecasts, OECD – Organisation for Economic Cooperation and Development, IMF – International Monetary Fund, EIU - Economist Intelligence Unit.

[6] One such assessment relevant to the CNB is Novotný and Raková (2010) *Assessment of Consensus Forecasts Accuracy: The Czech National Bank Perspective*. CNB WP 14/2010 .

[7] The characteristics of CF are described in more detail in an earlier article *How consensus has evolved in Consensus Forecasts* by Tomáš Adam and Jan Hošek in GEO 04/2015.

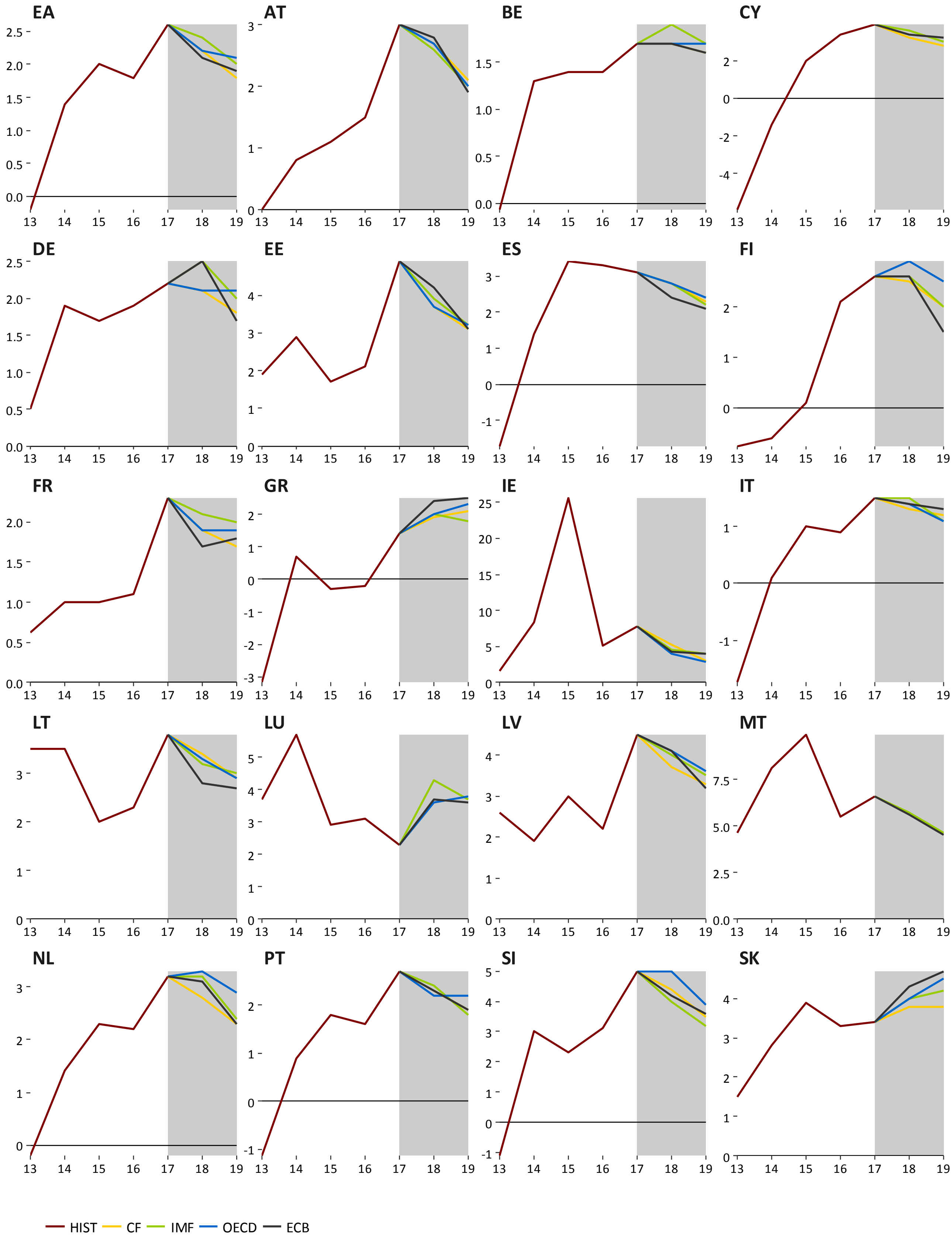
A1. Change in GDP predictions for 2018

	CF		IMF		OECD		CB / EIU	
EA	-0.1	2018/6 2018/5	+0.2	2018/4 2018/1	-0.1	2018/5 2018/3	-0.3	2018/6 2018/3
DE	-0.2	2018/6 2018/5	+0.2	2018/4 2018/1	-0.3	2018/5 2018/3	-0.5	2018/6 2017/12
US	+0.1	2018/6 2018/5	+0.2	2018/4 2018/1	0	2018/5 2018/3	+0.1	2018/6 2018/3
UK	-0.1	2018/6 2018/5	+0.1	2018/4 2018/1	+0.1	2018/5 2018/3	-0.4	2018/5 2018/2
JP	-0.2	2018/6 2018/5	0	2018/4 2018/1	-0.3	2018/5 2018/3	+0.2	2018/4 2018/1
CN	0	2018/6 2018/5	0	2018/4 2018/1	0	2018/5 2018/3	0	2018/6 2018/5
IN	0	2018/6 2018/5	0	2018/4 2018/1	+0.2	2018/5 2018/3	-0.3	2018/5 2018/5
RU	-0.2	2018/5 2018/4	0	2018/4 2018/1	0	2018/5 2018/3	0	2018/5 2018/5
BR	-0.2	2018/5 2018/4	+0.4	2018/4 2018/1	-0.2	2018/5 2018/3	-0.3	2018/4 2018/3

A2. Change in inflation predictions for 2018

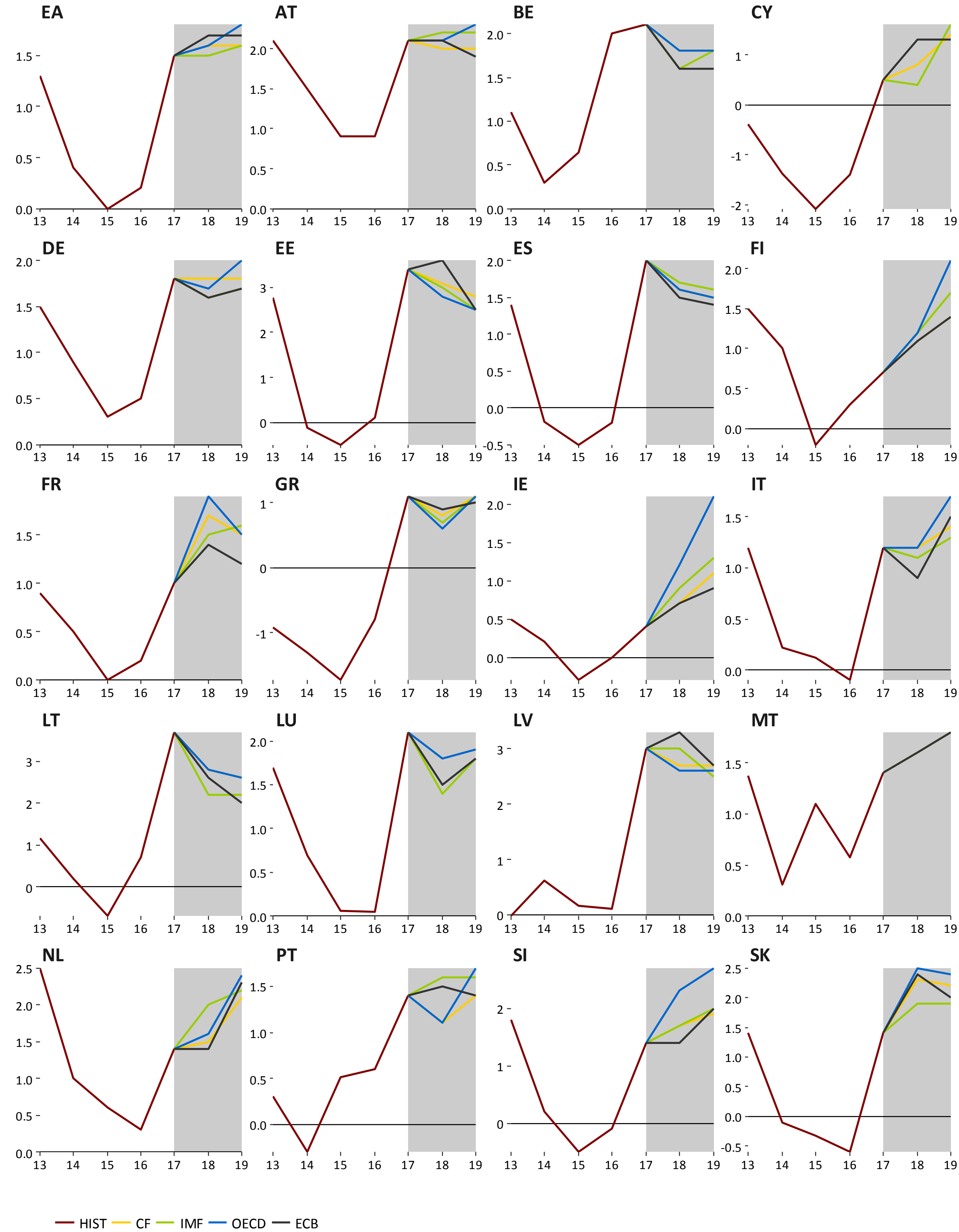
	CF		IMF		OECD		CB / EIU	
EA	+0.1	2018/6 2018/5	+0.1	2018/4 2017/10	+0.1	2018/5 2017/11	+0.3	2018/6 2018/3
DE	+0.1	2018/6 2018/5	+0.1	2018/4 2017/10	-0.1	2018/5 2017/11	+0.2	2018/6 2017/12
US	0	2018/6 2018/5	+0.4	2018/4 2017/10	+0.7	2018/5 2017/11	+0.2	2018/6 2018/3
UK	0	2018/6 2018/5	+0.1	2018/4 2017/10	0	2018/5 2017/11	-0.2	2018/5 2018/2
JP	0	2018/6 2018/5	+0.6	2018/4 2017/10	+0.2	2018/5 2017/11	-0.1	2018/4 2018/1
CN	0	2018/6 2018/5	+0.1	2018/4 2017/10	+0.1	2018/5 2017/11	-0.2	2018/6 2018/5
IN	-0.1	2018/6 2018/5	+0.1	2018/4 2017/10	+0.1	2018/5 2017/11	+0.1	2018/5 2018/5
RU	-0.1	2018/5 2018/4	-1.1	2018/4 2017/10	-0.9	2018/5 2017/11	0	2018/5 2018/5
BR	0	2018/5 2018/4	-0.5	2018/4 2017/10	-0.5	2018/5 2017/11	-0.3	2018/4 2018/3

A3. GDP growth in the euro area countries



Note: The chart shows institutions' latest available outlooks of for the given country (in %).

A4. Inflation in the euro area countries



Note: The chart shows institutions' latest available outlooks of for the given country (in %).

A5. List of abbreviations

AT	Austria
bbl	barrel
BE	Belgium
BoE	Bank of England (the UK central bank)
BoJ	Bank of Japan (the central bank of Japan)
bp	basis point (one hundredth of a percentage point)
BR	Brazil
BRIC	countries of Brazil, Russia, India and China
BRL	Brazilian real
CB	central bank
CBR	Central Bank of Russia
CF	Consensus Forecasts
CN	China
CNB	Czech National Bank
CNY	Chinese renminbi
ConfB	Conference Board Consumer Confidence Index
CXN	Caixin
CY	Cyprus
DBB	Deutsche Bundesbank (the central bank of Germany)
DE	Germany
EA	euro area
ECB	European Central Bank
EE	Estonia
EIA	Energy Information Administration
EIU	Economist Intelligence Unit
ES	Spain
ESI	Economic Sentiment Indicator of the European Commission
EU	European Union
EUR	euro
EURIBOR	Euro Interbank Offered Rate
Fed	Federal Reserve System (the US central bank)
FI	Finland
FOMC	Federal Open Market Committee
FR	France
FRA	forward rate agreement
FY	fiscal year
GBP	pound sterling
GDP	gross domestic product
GR	Greece
ICE	Intercontinental Exchange
IE	Ireland
IEA	International Energy Agency
IFO	Leibniz Institute for Economic Research at the University of Munich
IMF	International Monetary Fund
IN	India
INR	Indian rupee
IRS	Interest Rate swap
ISM	Institute for Supply Management
IT	Italy
JP	Japan
JPY	Japanese yen
LIBOR	London Interbank Offered Rate
LME	London Metal Exchange
LT	Lithuania
LU	Luxembourg
LV	Latvia
MKT	Markit
MT	Malta
NIESR	National Institute of Economic and Social Research (UK)
NKI	Nikkei
NL	Netherlands
OECD	Organisation for Economic Co-operation and Development
OECD-CLI	OECD Composite Leading Indicator
PMI	Purchasing Managers' Index
pp	percentage point
PT	Portugal
QE	quantitative easing
RBI	Reserve Bank of India (central bank)
RU	Russia
RUB	Russian rouble
SI	Slovenia
SK	Slovakia
UK	United Kingdom
UoM	University of Michigan Consumer Sentiment Index - present situation
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	Centre for European Economic Research