Global Economic Outlook

June 2020

Czech National Bank —— Global Economic Outlook —— June 2020

CZECH NATIONAL BANK

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Cut-off date for data

12 June 2020

CF survey date

8 June 2020

GEO publication date

19 June 2020

Notes to charts

ECB, Fed, BoE and BoJ: 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 Refinitiv 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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I. Introduction

COVID-19: a gradual return to normal not only in the USA? The topic in June is the first more comprehensive inventory of damage in the global economy after the coronavirus apocalypse, which is likely to be the greatest since the end of WWII. The first calculation is provided in the updated global economic outlook by the World Bank and the OECD. Both institutions expect an annual decline of -5.2% and -6.0%, respectively, for this year, followed by a recovery of 4.2% and 5.2%, respectively, next year. These outlooks might deteriorate further if the pandemic returns or the two most important pre-coronavirus issues – Brexit and trade wars – develop negatively. At the moment, at least a worsening of the Sino-US trade relations seems likely, as the situation is very close to a withdrawal from the phase-one trade deal. As regards Brexit, there is still a chance of extending the transition period before the end of June. Nevertheless, global news headlines mainly featured the United States, where the still bleak epidemiologic situation, which ended the longest lasting post-war boom and plunged the economy into recession, was compounded by widespread unrest following the death of an African-American during a police arrest in Minneapolis. The ECB also came under the spotlight in early June, having decided to increase the limit for asset purchases under the PEPP by EUR 600 billion to a total of EUR 1,350 billion. At the same time, this massive programme was extended for purchases until at least the end of June 2021 and for reinvestment of maturing assets until at least the end of 2022.

June GDP growth and inflation outlooks for monitored countries, in %

GDP	EA	DE	US	UK	JP	CN	RU
2020	-8.4 ↘	-6.5 ↘	-5.6 ↘	-9.0 ↘	-5.3 ↗	1.4 ↘	-5.0 ↘
2021	6.1 ↘	5.2 →	4.4 ↗	6.1 →	2.6 ↗	8.0 →	3.4 ↗

Inflation	EA	DE	US	UK	JP	CN	RU
2020	0.3 →	0.6 →	0.8 ↗	0.9 ↘	-0.3 ↗	2.9 ↘	4.2 ↘
2021	1.0 ↘	1.4 →	1.8 →	1.3 ↘	0.0 ↘	1.8 ↘	3.7 →

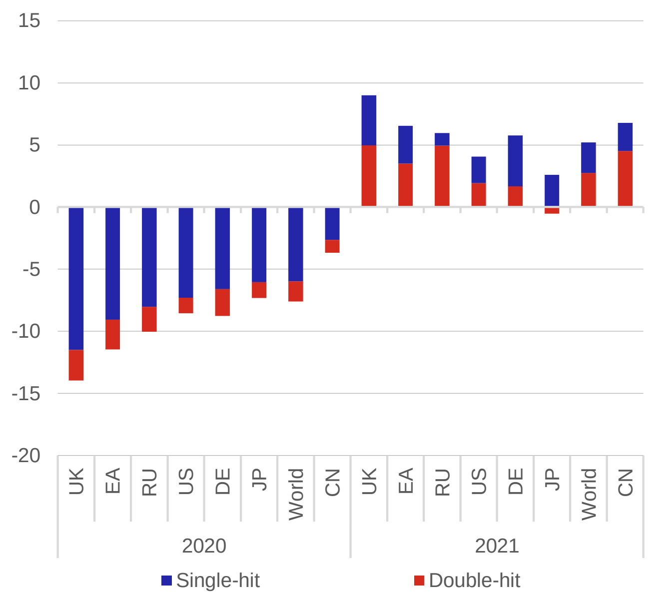
Source: Consensus Forecasts (CF)
Note: The arrows indicate the direction of revisions compared with the last GEO.

As expected, **June GDP growth outlooks** brought a further decline in performance in the monitored countries. Despite this trend, China remains the only country to overcome the coronavirus crisis with positive GDP growth this year. Only Japan recorded a moderation of this year's expected decline in the January outlook. In 2021, assuming that a second wave of the pandemic does not arrive; most economies will visibly restart their economic growth. **Consumer price inflation outlooks** are also lower than in May. This will push most economies further below the 2% "ideal". The current crisis is still unlikely to follow the stagflation scenario.

The **dollar** will be *de facto* stable against the euro and the pound at the one-year horizon, depreciate slightly against the yen and the renminbi, while appreciating against the rouble. The outlook for the **price of Brent crude oil** in the one-year horizon is slightly higher than in May, at USD 44.8/bbl (the highest estimate is USD 60/bbl, and the lowest USD 35/bbl). The outlook for **market rates** is slightly falling for the 3M USD LIBOR, while the outlook for 3M EURIBOR rates remains negative over the entire outlook horizon, as has been the case for several years now.

The current issue's chart returns to the new OECD outlook, which quite unusually contains two possible scenarios for further developments. The first, "Single-hit", assumes that the pandemic is already under control. The other, "Double-hit", assumes that the pandemic returns before the end of this year. Not only does the other scenario intensify the downturn this year (down by 7.2% instead of 6%), but it also brings very limited growth next year (a mere 2.8 instead of 5.2%), thus postponing the return to pre-crisis levels for further years ahead.

OECD outlook for GDP in monitored economies, in %



Source: OECD
Note: "Single-hit" assumes the pandemic under control; "Double-hit" assumes a return of a second wave before the end of 2021.

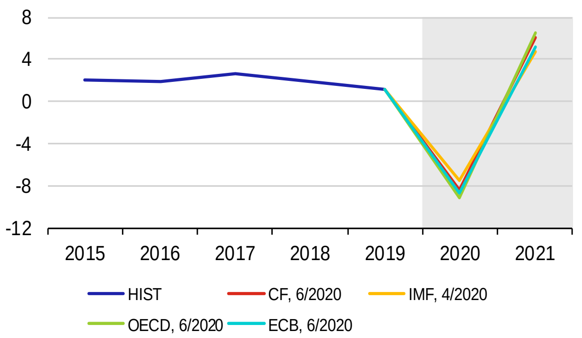
The current issue contains an analysis "Annual assessment of the forecasts included in GEO". The analysis assesses last year's forecasts by individual institutions for individual variables. The shorter the forecast horizon, the more precise the forecasts become, but e.g. forecasts for inflation were worse, even though it was more stable. Forecasts for GDP were too optimistic compared to the actual outcome.

II.1 Euro area

The euro area economy decreased significantly in Q1 due to the beginning of the coronavirus crisis. GDP recorded a record-high decrease of 3.6% compared with the previous quarter. The economy recorded a year-on-year decline of 3.1%. The lower economic activity in the monetary union was mainly attributable to the introduction of government measures to curb the spread of COVID-19. The largest declines were recorded by the economies of France, Italy and Spain. A similarly sizeable fall was also recorded, e.g. by the Slovak economy. By contrast, the decrease in the German economy was about one-half of that, which was connected with the adoption of less restrictive measures. Hit were mainly household consumption and investment, but to a lesser extent also net exports both in annual and quarterly terms. Therefore, the European Union came up with a plan for a EUR 750 billion recovery fund.

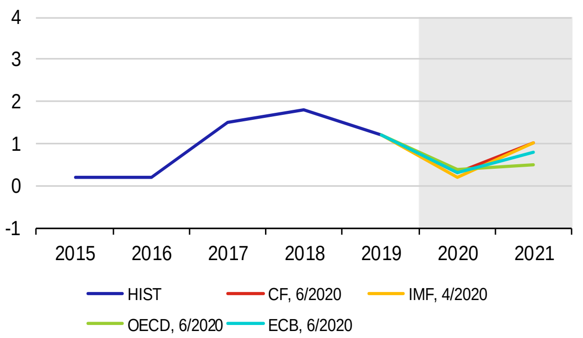
However, the main impact of the COVID 19 pandemic can be expected in the current Q2, as confirmed by leading indicators. Compared with 2020 Q1, when restrictions were in place for only 2–4 weeks, euro area activity was restricted for much longer in Q2. Moreover, only a gradual renewal of consumer demand and return to normal activity can be expected. On the other hand, fiscal measures taken to support economies should already have a positive effect. The PMI in manufacturing increased to 39.1 in May compared to April. The drop in the output and new orders was replaced with a sharp fall in employment. The largest improvement was recorded in Italy, while Germany followed by Spain recorded the worst figures of all the countries. In April, a significant drop was recorded in industrial production, including a sizeable decline in the car industry, and retail sales, while unemployment remained at the current levels for the time being. According to the German Ifo index, business sentiment improved in May.

GDP growth, %



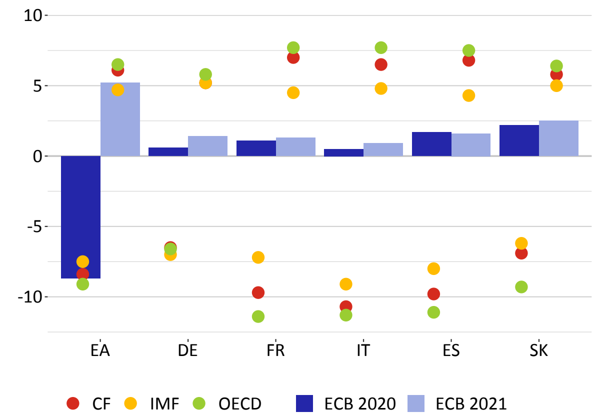
	CF	IMF	OECD	ECB
2020	-8.4	-7.5	-9.1	-8.7
2021	6.1	4.7	6.5	5.2

Inflation, %

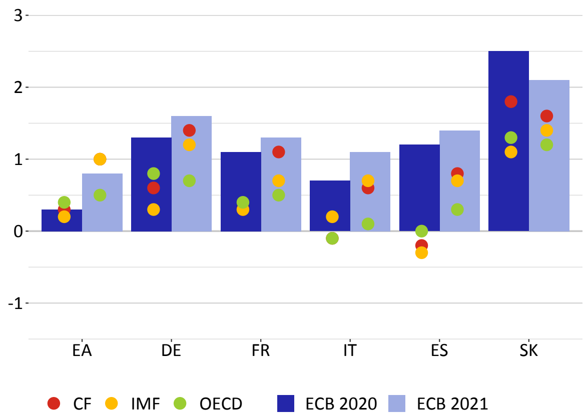


	CF	IMF	OECD	ECB
2020	0.3	0.2	0.4	0.3
2021	1.0	1.0	0.5	0.8

GDP growth in selected euro area countries in 2020 and 2021, %



Inflation in selected euro area countries in 2020 and 2021, %



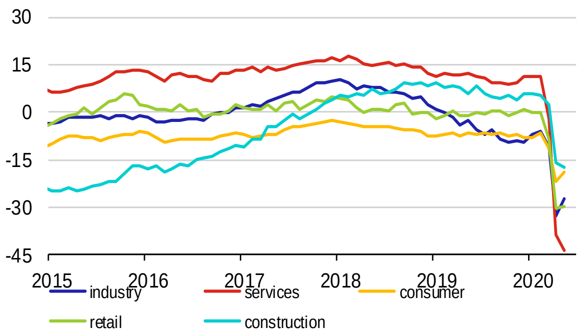
Note: Charts show institutions' latest available outlooks of for the given economy.

The monitored institutions revised expected GDP developments further downwards for this year, but the OECD and the ECB expect the euro area economy to pick up more strongly in 2021. By contrast, CF lowered slightly its outlook for next year. The higher growth next year reflects expectations of a compensation of this year's marked decline. However, not even GDP growth exceeding 6% next year (CF, OECD) will lead to a return of the economies to the pre-crisis level. As regards the large countries, the crisis will hit most France, Italy and Spain. According to CF, household consumption and investment will decline by 8.5% and 11.4% respectively in the euro area proper this year**.**

The expected economic downturn is reflected in a lower consumer price inflation outlook. According to the monitored institutions, inflation will stand only slightly above zero this year and not even its acceleration next year will be very pronounced. Spain and Italy even expect deflation, i.e. an annual price decline, this year. According to Eurostat's flash estimate, headline inflation declined to 0.1% in May, due to a pronounced decrease in energy prices. Prices in Spain decreased for the second consecutive month. Nevertheless, core inflation in the euro area remained at 0.9%.

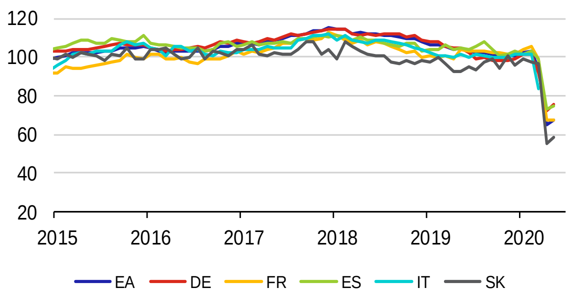
The ECB eased monetary policy further at its June meeting. At the same time, it revised downwards the outlook for inflation and economic growth in the euro area. The coverage under the pandemic emergency purchase programme (PEPP) was increased by EUR 600 billion to a total of EUR 1,350 billion. The horizon of net asset purchases under the PEPP was also extended at least until mid-2021. At the same time, net purchases under the asset purchase programmes (APP) will continue at a monthly rate of EUR 20 billion, together with a temporary envelope of additional purchases of EUR 120 billion until the end of 2020. The interest rate settings remained unchanged. The 3M Euribor is expected at -0.4% at the one-year horizon, with a German ten-year government bond yield at zero.

ESI leading indicators



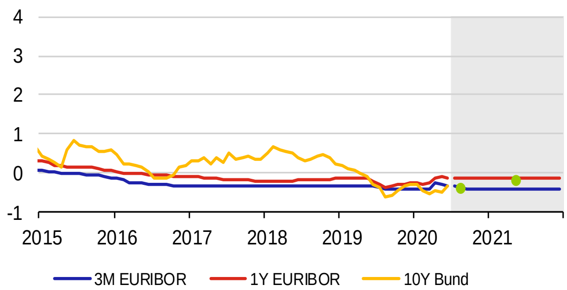
	industry	services	consum.	retail	constr.
3/20	-11.2	-2.3	-11.6	-8.6	2.3
4/20	-32.5	-38.6	-22.0	-30.1	-16.1
5/20	-27.5	-43.6	-18.8	-29.7	-17.4

ESI leading indicators



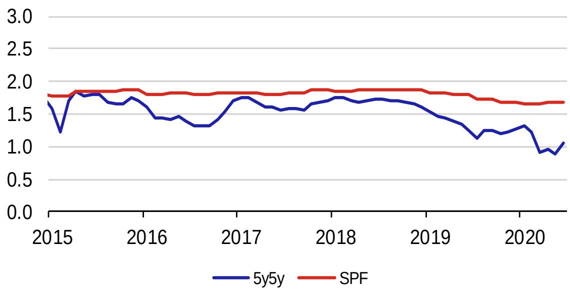
	EA	DE	FR	ES	IT	SK
3/20	94.2	92.0	99.0	99.3	83.7	96.7
4/20	64.9	72.1	67.9	73.3		55.1
5/20	67.5	75.3	67.6	74.9	63.0	59.0

Interest Rates, %



	5/20	6/20	9/20	6/21
3M EURIBOR	-0.27	-0.34	-0.40	-0.42
1Y EURIBOR	-0.08	-0.11	-0.13	-0.14
10Y Bund	-0.50	-0.33	0.00	0.00

Inflation expectations in the euro area, %



Note: Inflation expectations based on 5year inflation swap and SPF

	5y5y	SPF
4/20	0.95	1.67
5/20	0.89	1.67
6/20	1.05	1.67

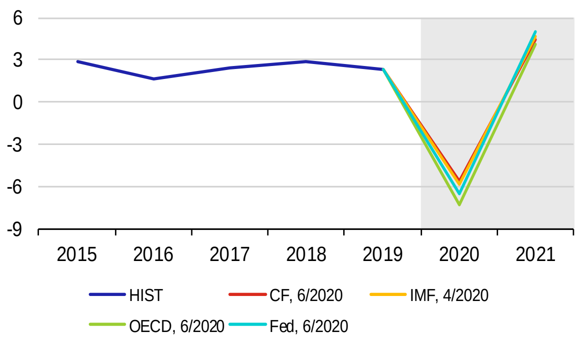
II.2 United States

Like the whole of Europe, the US economy is experiencing a very deep contraction with permanent consequences. The largest impact of the current crisis is expected in 2020 Q2, as confirmed by the figures for April and May. The outlooks for GDP assume an increasingly sharper decline; CF expects the US economy to fall by 5.6%. The June OECD outlook estimates the decrease in GDP at 7.3% or even 8.5%, should the second wave of the pandemic occur. The second wave would also delay by two years the return of GDP to the level observed at the end of 2019. Industrial production and retail sales recorded annual declines of 18% and 16.4%, respectively, in April. US foreign trade is also affected significantly. Having declined in March, exports fell further by 20.5%, with imports decreasing by 13.7%. Forward-looking indicators continue to signal a strong contraction. The first positive news came from the labour market. Unemployment fell from 14.4% in April to 13.3% in May, with non-farm payrolls rising by 2.5 million in May. It must be noted that the non-farm payrolls dropped by 22 million in March and April and wages decreased by 8.5% in April.

As expected, the Fed left the interest rates unchanged at its meeting in June, but does not believe in a fast recovery after the current coronavirus crisis. After six months of silence, the Fed also published its forecast for future developments in which it expects zero rates until the end of 2022 and also only a gradual labour market recovery and persisting high unemployment. At the same time, there are concerns about the second wave of the pandemic. Fed Chairman Jerome Powell emphasised that they were ready to use additional expansionary instruments to boost the US economy. Stock markets have almost recovered from the crisis, with the NASDAQ recording a new all-time high.

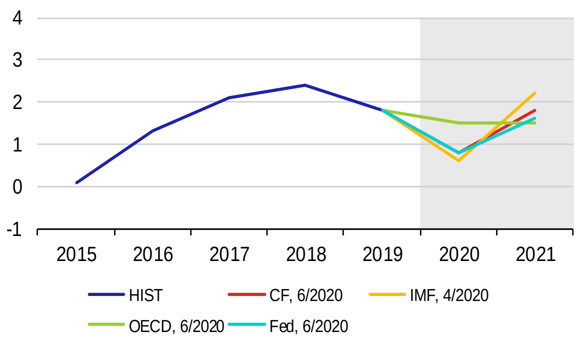
In addition, the current situation in the USA is accompanied by a wave of protests and campaign against racism. The protests were triggered by a video showing the arrest of an African-American who did not resist arrest, yet died as a result of police brutality during the arrest. The protests are unfortunately accompanied by violence and looting. It is very unclear how the current situation will develop.

GDP growth, %



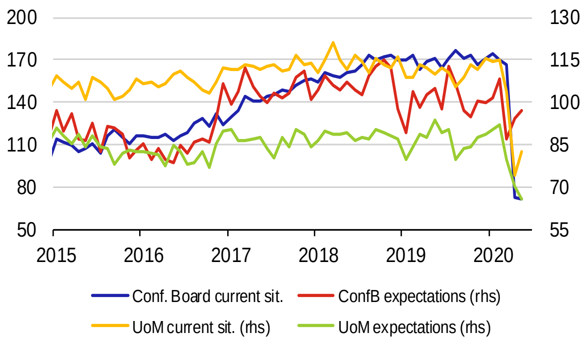
	CF	IMF	OECD	Fed
2020	-5.6	-5.9	-7.3	-6.5
2021	4.4	4.7	4.1	5.0

Inflation, %



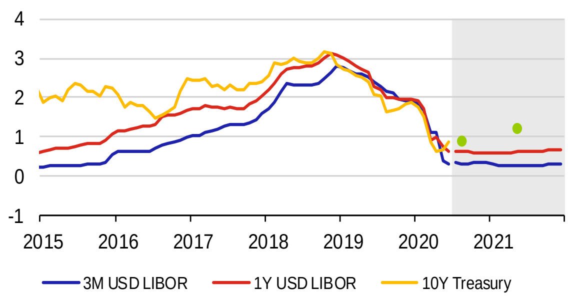
	CF	IMF	OECD	Fed
2020	0.8	0.6	1.5	0.8
2021	1.8	2.2	1.5	1.6

Leading indicators



	ConfB curr.	ConfB exp.	UoM curr.	UoM exp.
3/20	166.7	86.8	103.7	79.7
4/20	73.0	94.3	74.3	70.1
5/20	71.1	96.9	82.3	65.9

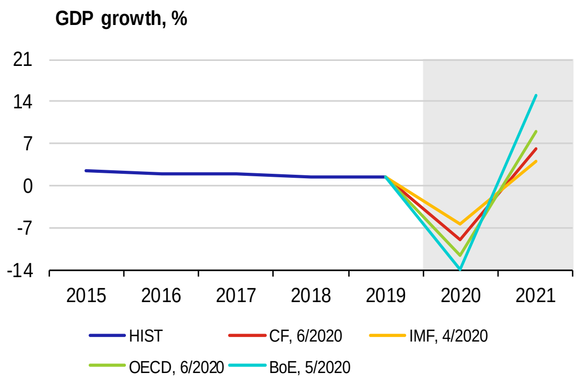
Interest Rates, %



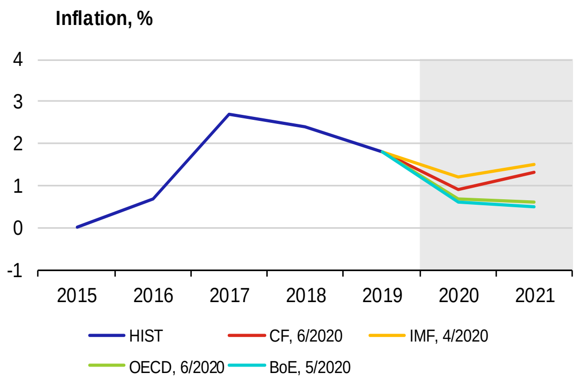
	5/20	6/20	9/20	6/21
USD LIBOR 3M	0.40	0.32	0.32	0.26
USD LIBOR 1R	0.74	0.74	0.62	0.63
Treasury 10R	0.67	0.86	0.00	0.00

II.3 United Kingdom

Brexit has come again to the fore and BoE Governor A. Bailey is calling on banks to prepare for the situation without a free trade agreement between the EU and the UK. Negotiations on post-Brexit relations have hit a dead end before the summit in late June and if the option of extending the transition period fails, there is a risk that from 1 January 2021, trade relations between the EU and the UK will follow general WTO rules. In order to combat the coronavirus, Prime Minister B. Johnson will preside over a new strategic COVID-19 committee. The government will also provide guarantees of up to GBP 10 billion to trade credits insurance schemes. If a further economic stimulus is needed, the BoE is, for the first time, considering negative interest rates, or a possible further extension of quantitative easing. The state intends to continue to support firms and furloughed workers until the end of October. The forward-looking composite indicator PMI remains in the contraction band, but has gone up to around 40. CF revised downwards the GDP growth outlook to -9.0% for 2020, while leaving the outlook for 2021 at 6.1%. The new OECD forecast is estimating an economic decline of 11.5% this year, followed by 9% growth in 2021.



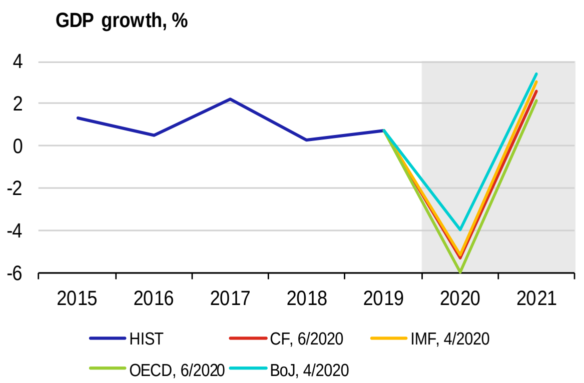
	CF	IMF	OECD	BoE
2020	-9.0	-6.5	-11.5	-14.0
2021	6.1	4.0	9.0	15.0



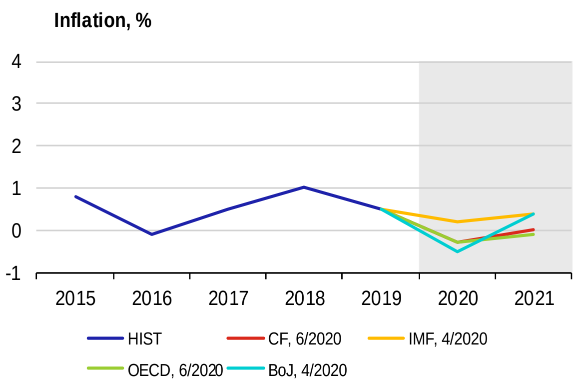
	CF	IMF	OECD	BoE
2020	0.9	1.2	0.7	0.6
2021	1.3	1.5	0.6	0.5

II.4 Japan

2020 Q2 should be the worst for the Japanese economy. The new CF expects a reversal in GDP growth dynamic from Q3 towards a gradual return to its pre-crisis levels. However, even in the worst quarter, the fall in GDP from the pre-crisis level should be more moderate in Japan than in the other large economies (the USA, the UK, euro area). But Japanese GDP is not likely to reach the pre-crisis level even at the end of 2021. According to CF, price growth should renew in 2021 Q2 and inflation should leave the deflation band a quarter later. Consumer price inflation will reach the level observed in 2020 Q1 at the end of 2021. The May PMI in manufacturing declined (38.4), being the worst since May 2009. By contrast, the PMI in services (26.5) improved slightly from April but is still in a strong contraction band.



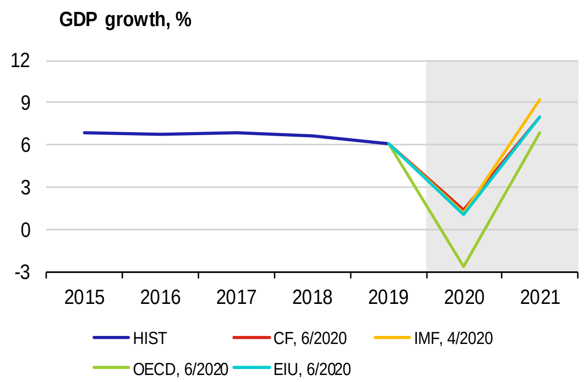
	CF	IMF	OECD	BoJ
2020	-5.3	-5.2	-6.0	-4.0
2021	2.6	3.0	2.1	3.4

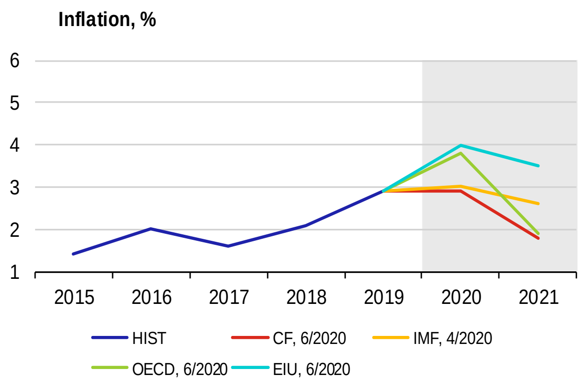


	CF	IMF	OECD	BoJ
2020	-0.3	0.2	-0.3	-0.5
2021	0.0	0.4	-0.1	0.4

II.5 China

The sharp annual decline of 6.8% in Chinese economic growth in Q1 reflects mainly a large decrease of 4.4% in consumption. The contribution of investment and net exports was also negative in Q1. But the deepest decline in the contribution of net exports can be expected in Q2 due to falling demand from the USA and the EU, the two largest Chinese export destinations. Increased government expenditure on consumption and investment will have an opposite effect in the rest of this year. CF analysts expect the Chinese economy to grow annually by 1.4% and 8% in 2020 and 2021, respectively. As to price developments, anti-inflationary pressures reflecting weak domestic demand and low energy commodity prices will manifest themselves on the one hand, on the other there will be the effect of inflationary negative supply effects, among other things due to the spread of African swine fever, and also the weakening exchange rate of the renminbi to the dollar. The CF outlook expects consumer prices to grow by 2.9% this year and slow to 1.8% next year.



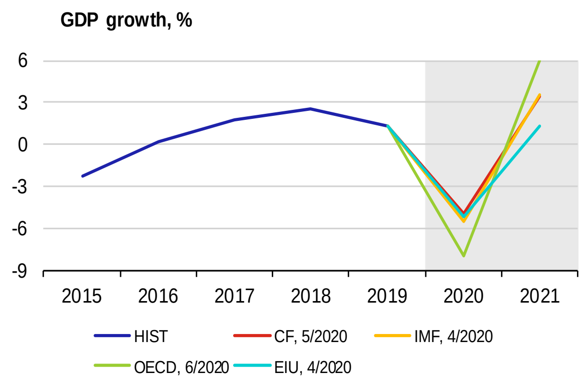


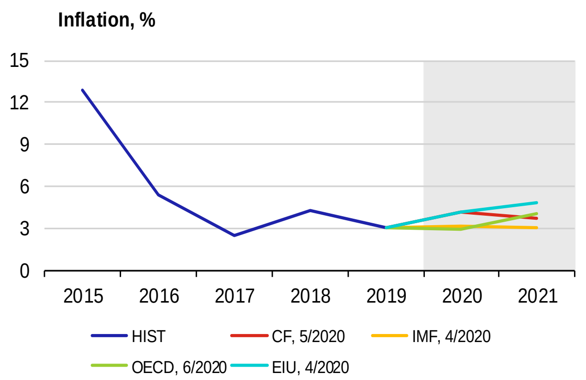
	CF		IMF		OECD		EIU	
2020	1.4	↘	1.2		-2.6	↘	1.0	→
2021	8.0	→	9.2		6.8	↗	8.0	↘

	CF		IMF		OECD		EIU	
2020	2.9	↘	3.0		3.8	↗	4.0	↘
2021	1.8	↘	2.6		1.9	→	3.5	↘

II.6 Russia

The May PMI suggests a turning point. Although the PMI is still in the in a sizeable economic contraction band, it improved compared to April, especially in services. The PMI in manufacturing rose from 31.3 to 36.2 in May but the decrease in output and export orders remains pronounced. The low levels of the PMI in April were confirmed by the April industrial production data, which recorded an annual decrease of 6.6%. Declines were recorded by both manufacturing (10%) and mining (3.2%). Following a dramatic drop to 12.2, the PMI in services rose to 35.9 in May. The Russian economy is still being hit strongly by the COVID-19 epidemic. However, the rouble maintained its appreciation trend due to the improved oil market situation. The rouble appreciated from RUB 74 to the dollar in early May to RUB 70 to the dollar, temporarily being even stronger. The central bank left the key rate unchanged.





	CF		IMF		OECD		EIU
2020	-5.0	↘	-5.5		-8.0	↘	-5.2
2021	3.4	↗	3.5		6.0	↗	1.3

	CF		IMF		OECD		EIU
2020	4.2	↘	3.1		2.9	↘	4.2
2021	3.7	→	3.0		4.0	→	4.8

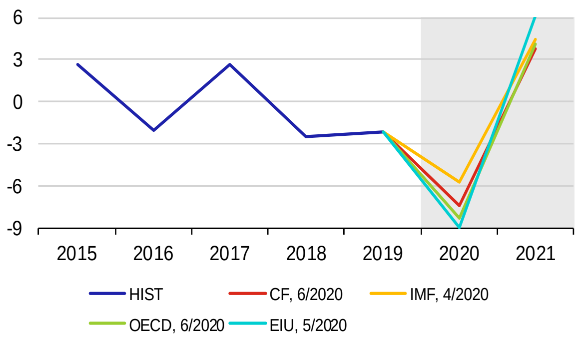
II.7 Developing countries in the spotlight

Argentina, like the rest of the world, is combating the COVID-19 epidemic. It introduced a nation-wide quarantine on 20 March, which should last until 28 June. However, unlike most other countries, the country is burdened with massive debt and negotiations with lenders. The quarterly economic growth rate stood at -1.44 in 2019 Q4 and an even deeper decline is expected for 2020 Q1. Annual inflation slowed slightly to 45.6% in April and leading indicators are suggesting a sharp fall in economic activity in the same month. The central bank (BCRA) introduced capital restrictions and started to cut sharply the key interest rate in the second half of 2019. The last time it lowered the rate was in March, to 38%. The Argentinian peso is depreciating sharply, approaching ARS 70 to the dollar.

Argentina ceased to fulfil its obligations towards its creditors on 22 May. Negotiations are thus underway regarding an instalment amounting to USD 65 million. However, even if an agreement is reached, Argentina will not be out of the woods. It will still have high debt in dollars without access to capital markets, an economy in recession, inflation approaching 50% and major depreciation pressure on its currency. The BCRA's hands are tied; on the one hand, it is "printing money" to finance the government, whereby it has lost control over inflation, while on the other, it is keeping capital restrictions in effect. Ultimately, the Argentinian currency is appreciating in real terms, aggravating further the real economy. After the restrictions are abolished, it will also lose control over the rates and the currency, which is likely to depreciate strongly, fanning the flames of inflation further.

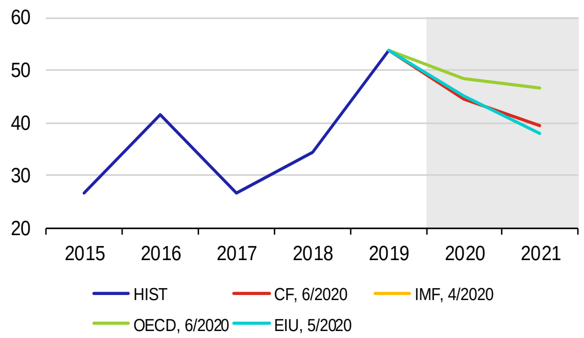
Most institutions expect economic activity to decrease by at least 5.5%, with growth rebounding next year, which however will not offset the previous decline. The EIU is estimating that Argentina will reach the peak of the GDP level observed in 2017 at the end of 2024. Inflation will remain stubbornly high in 2021, too. CF is estimating that the key interest rate will drop even further, to less than 27% on average in 2021. The Argentinian peso will depreciate further, attacking ARS 100 against the dollar in 2021.

GDP growth, %



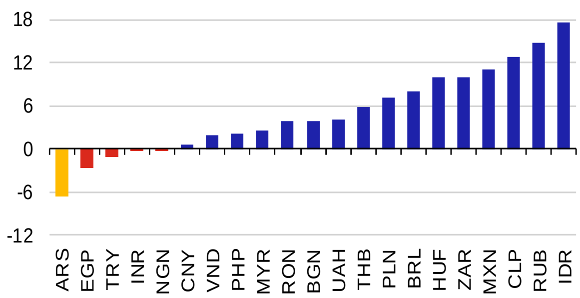
	CF	IMF	OECD	EIU
2020	-7.4	-5.7	-8.3	-9.0
2021	3.8	4.4	4.1	6.1

Inflation, %



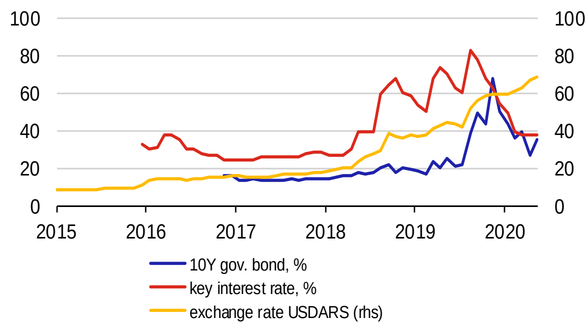
	CF	IMF	OECD	EIU
2020	44.6	0.0	48.5	45.2
2021	39.3	0.0	46.7	37.9

Currency performance vis-à-vis USD



% change over 1/4/2020 to 10/6/2020 period

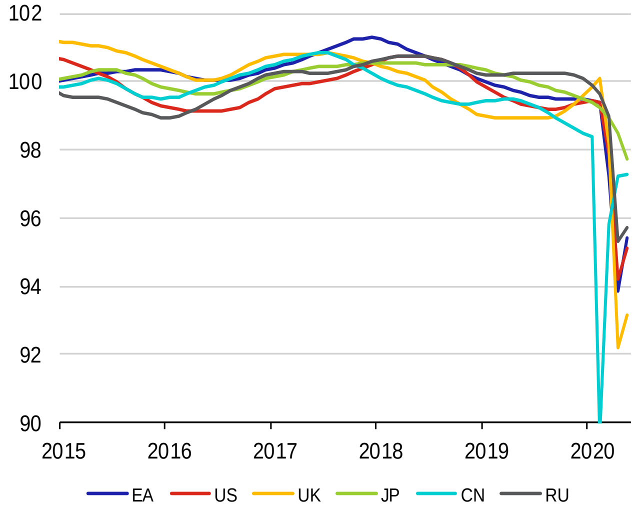
Selected indicators



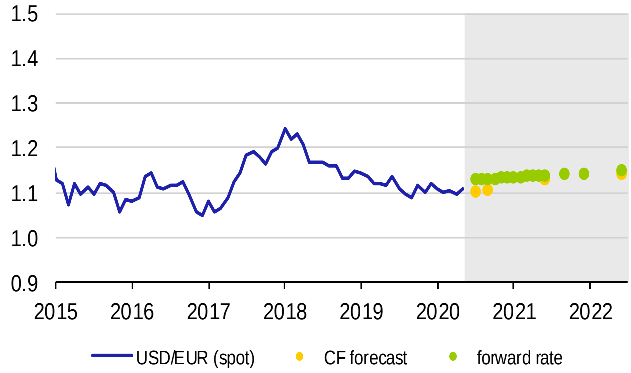
	10Y gov. bond, %	interest rate, %	USD/ARS
3/2020	39.68	38.00	63
4/2020	27.18	38.00	67
5/2020	35.80	38.00	69

III. Leading indicators and outlook of exchange rates

OECD Composite Leading Indicator

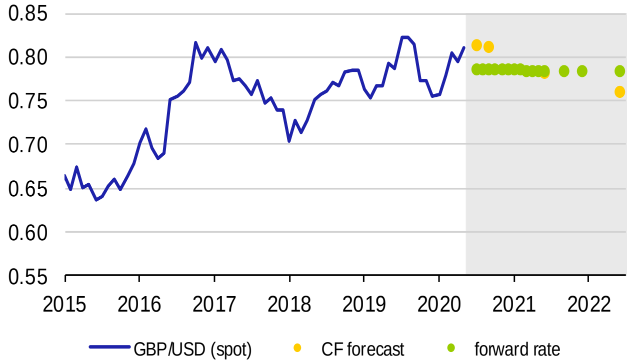


The US dollar (USD/EUR)



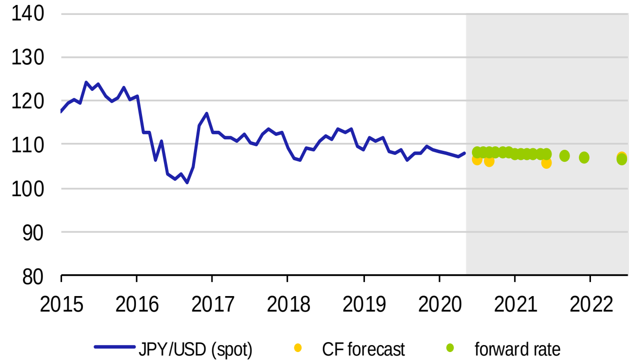
	8/6/20	7/20	9/20	6/21	6/22
spot rate	1.130				
CF forecast		1.105	1.106	1.129	1.144
forward rate		1.130	1.132	1.139	1.150

The British pound (GBP/USD)



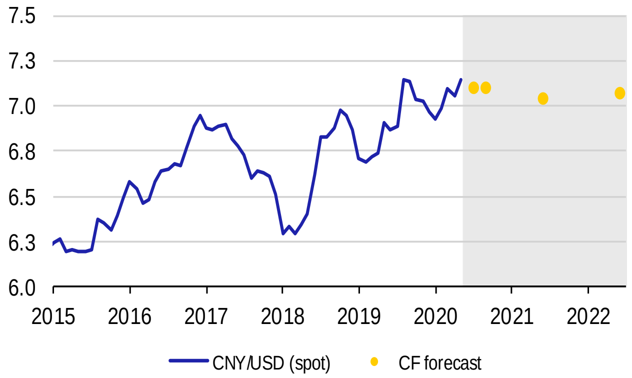
	8/6/20	7/20	9/20	6/21	6/22
spot rate	0.787				
CF forecast		0.814	0.811	0.782	0.760
forward rate		0.786	0.786	0.785	0.783

The Japanese yen (JPY/USD)



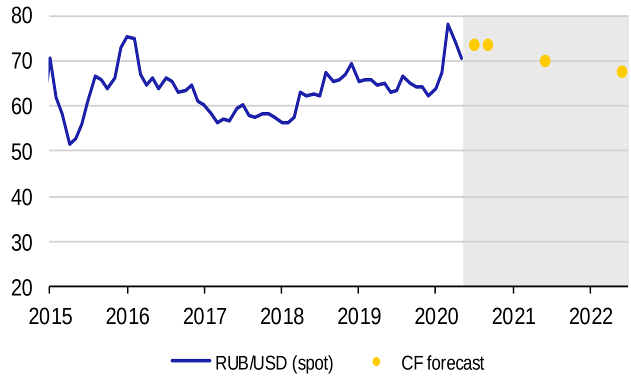
	8/6/20	7/20	9/20	6/21	6/22
spot rate	108.6				
CF forecast		106.8	106.1	106.0	107.2
forward rate		108.4	108.3	107.6	106.7

The Chinese renminbi (CNY/USD)



	8/6/20	7/20	9/20	6/21	6/22
spot rate	7.075				
CF forecast		7.097	7.099	7.038	7.068

The Russian rouble (RUB/USD)



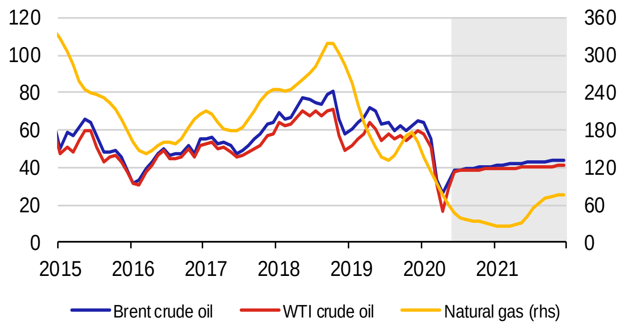
	8/6/20	7/20	9/20	6/21	6/22
spot rate	68.50				
CF forecast		73.51	73.30	69.93	67.56

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.1 Oil

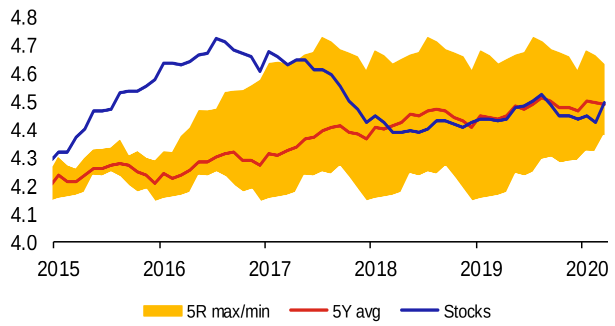
The Brent oil price bottomed out close to USD 20/bbl in late April. Market sentiment has improved significantly since then and the price exceeded USD 40/bbl in early June. The oil glut peaked in April and the situation has been improving quickly since May. The supply side reflected the sizeable voluntary output limits by OPEC+ and the unexpectedly strong decline in extraction in North America in response to the low oil prices and storage capacity constraints. On the demand side, oil price growth was supported by a normalisation of the situation in China and a gradual recovery in economies in other parts of the world due to the mitigation of measures to curb the spread of the COVID-19 epidemic. The EIA is estimating that global supplies grew at an average rate of 9.5 million barrels a day from January to May but should start to decline in June (down by 2.5 million barrels a day on average until the end of 2021). The improved situation on the physical oil market is also evidenced by a sharp decrease in the slope at the beginning of futures curves for oil prices (the unwinding of supercontango). This reduces the profitability of oil storage and stocks stored in tankers at sea will be the first to decline. Nevertheless, the high level of oil stocks and abundant spare extraction capacity should prevent a more pronounced oil price increase especially at the shorter horizon. The EIA thus assumes an average Brent oil price at USD 37/bbl in 2020 H2 and its growth to USD 48/bbl on average in 2021. The market curve at the start of June was signalling faster growth in the Brent crude oil price in the remainder of the year (to USD 40/bbl on average) and, conversely, weaker growth in 2021 (to USD 42.5/bbl on average). The June CF's forecast of around USD 45/bbl at the one-year horizon is between the above values. A faster return of shale extraction in the USA or a renewed slowdown of the global economy due to a possible return of a second wave of the epidemic remain a downward risks to oil prices.

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

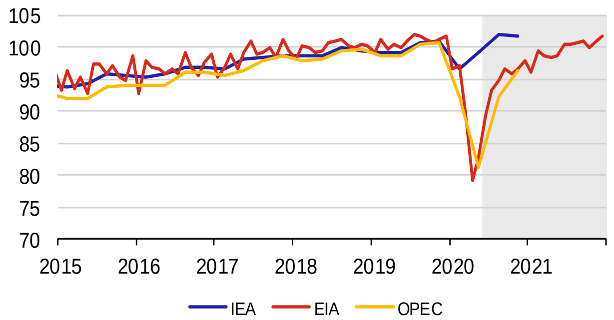


	Brent	WTI	Natural gas
2020	40.74	37.94	61.26
2021	42.62	40.20	49.92

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

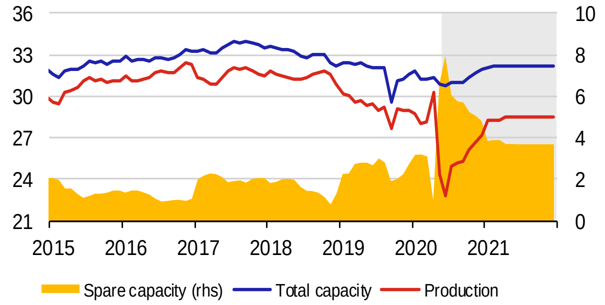


Global consumption of oil and oil products (mil. barrel / day)



	IEA	EIA	OPEC
2020	99.89	92.54	90.57
2021		99.71	

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



	Production	Total capacity	Spare capacity
2020	26.47	31.26	4.79
2021	28.44	32.17	3.73

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.

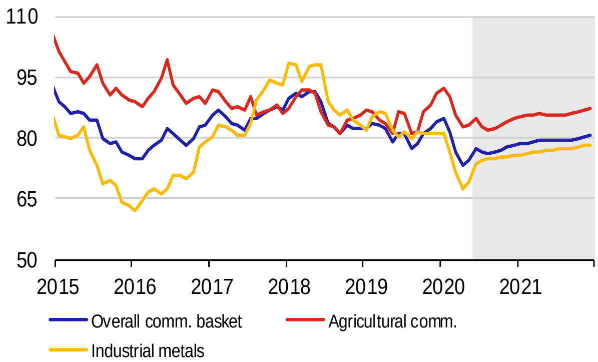
IV.2 Other commodities

The COVID-19 pandemic also affected prices of natural gas and coal. According to the World Bank data, the average price of gas in Europe recorded the lowest level since 1973 in May and a further decline can be expected for long-term contracts, whose price takes into account oil prices with a roughly six-month lag. Current spot prices of gas are reflecting low demand for gas and electricity by industrial firms, a high level of inventories after an unusually warm winter and also global surplus LNG production capacity. Coal prices also declined further in May, reaching the lowest level since 2016.

Most prices of industrial metals (and also rubber and cotton) reversed to growth already in late March, with the largest increase since then being recorded by the price of copper. Prices of nickel, tin and zinc recorded smaller growth. Only prices of aluminium and lead reversed to growth in mid-May. The price of iron ore also started to grow strongly at the beginning of May due to a significantly improved situation in Chinese manufacturing.

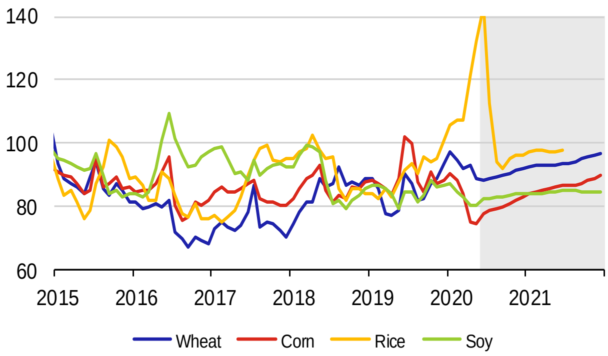
By contrast, price developments in the category of food commodities were very heterogeneous. The price of rice has been rising since the start of the year but it recorded a jump in the second half of April, which was repeated to a greater extent in early June. The price of wheat rose sharply in the second half of March, but all the increases were erased before mid-May and its gradual growth renewed later. Prices of maize and soy and the price of sugar showed a downward trend from the start of the year and from the second half of February respectively until the end of April, reversing later to growth. The price of coffee started to broadly decline in mid-April, while the price of cocoa rose only slightly in the same period. The price of pork showed strong growth from mid-April to mid-May and started to decrease later. The price of beef showed similar developments with a delay of about 14 days.

Non-energy commodities price indicies



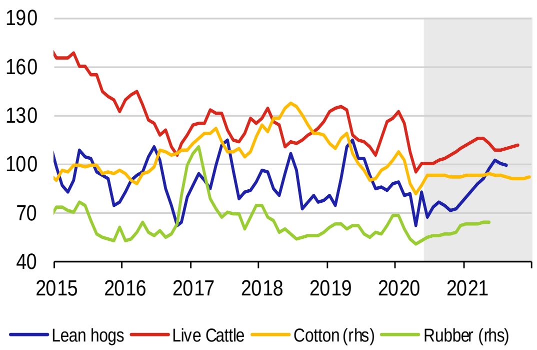
	Overall	Agricultural	Industrial
2020	77.5	84.8	74.1
2021	79.4	86.0	77.1

Food commodities



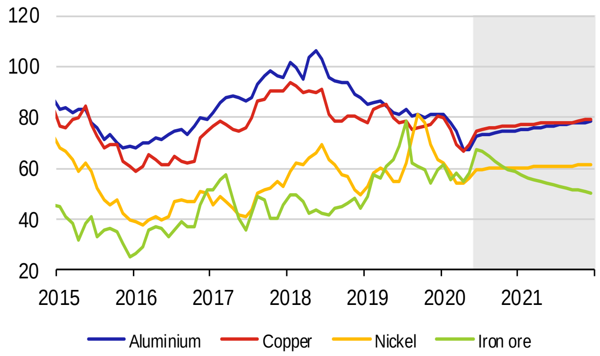
	Wheat	Corn	Rice	Soy
2020	91.4	81.3	108.8	83.3
2021	94.2	86.7	97.6	84.7

Meat, non-food agricultural commodities



	Lean hogs	Live Cattle	Cotton	Rubber
2020	75.2	107.4	65.0	41.1
2021	92.5	111.7	64.8	45.5

Basic metals and iron ore



	Aluminium	Copper	Nickel	Iron ore
2020	73.8	74.4	58.7	60.6
2021	76.9	78.0	60.8	53.5

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.

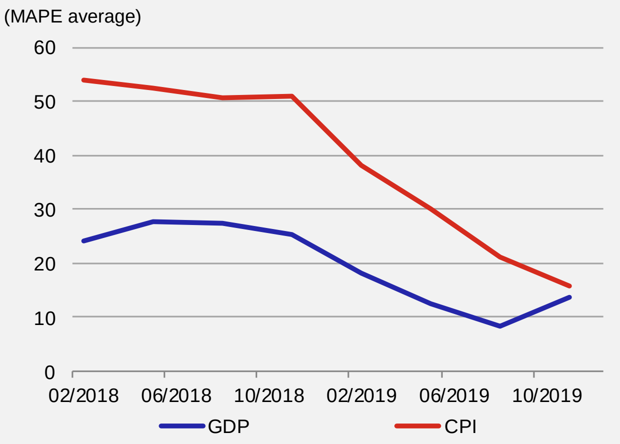
Annual assessment of the forecasts included in GEO.[1]

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 optimistic with their economic outlooks for 2019. Their forecasts for GDP growth expected higher levels on average. Similarly, expected consumer price inflation was higher in most cases than the subsequent outcomes. Likewise, the short-term interest rate outlooks for the euro area and the USA at the one-year horizon were also overestimated. As regards the exchange rates of the monitored currencies against the dollar, forecasters expected a weaker dollar compared to what transpired. The price of crude oil was also slightly overestimated in the forecasts on average over the entire assessment period.

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), 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 2019. 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 2018. 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. The general nature of the outlooks is quite obvious – the shorter the forecast horizon, the more precise the forecasts (see Chart 1).

Chart 1 – Gradual improvement of forecasts for 2019



Note: All monitored institutions and all six countries

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 2019 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:

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

[1] 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.

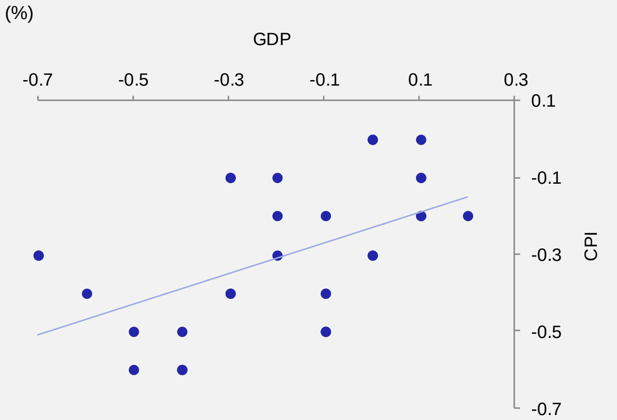
Assessment of the accuracy of the GDP growth and CPI inflation forecasts for 2019

GEO currently monitors actual and predicted GDP growth and CPI inflation in the euro area, the USA, the UK, Japan, China and Russia.[2] 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, the Bank of Japan (BoJ) and the Bank of England (BoE). For China and Russia, 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 are either monthly (CF and the EIU) or quarterly (the IMF, OECD, ECB, Fed and BoJ). Assessed are quarterly forecasts, i.e., the February, May, August and November forecasts.

Slightly lower GDP growth came as a surprise in most countries under review in 2019. Charts in Annex 1 show the deviations of the GDP growth forecasts for the monitored countries from the subsequent outcomes. On average, the analysts expected economic activity to be slightly better than the outcome, except the UK for which the forecasts materialised. The forecasts for economic growth in the UK were relatively sober compared to the other countries already in early 2018 due to the uncertainty related to Brexit. In the end, however, the UK economy grew faster than the euro area economy in 2019. Conversely, the outlooks for economic growth in the euro area were characterised by the greatest errors among the countries included in the comparison and also the largest variability.[3] The outlooks for the euro area were overestimated in 2018. Following a sizeable slowdown in growth in 2018, the outlooks were revised downwards in 2019. Optimism was on the rise for the United States in 2018, but was also revised downwards in the second half of 2019. The Fed's forecast for the US economy was accurate on average. The most accurate forecast for Japan also originated from the Bank of Japan. By contrast, CF, the IMF and the OECD had more optimistic forecasts for economic growth in Japan. The situation was similar for the forecasts for the USA. The monitored forecasts for economic growth in China and Russia were also slightly overestimated. Moreover, China was, as usual, characterised by the lowest variability of forecasted growth rates. In the end, GDP growth was 0.3 percentage point lower than the expected 6.4%.

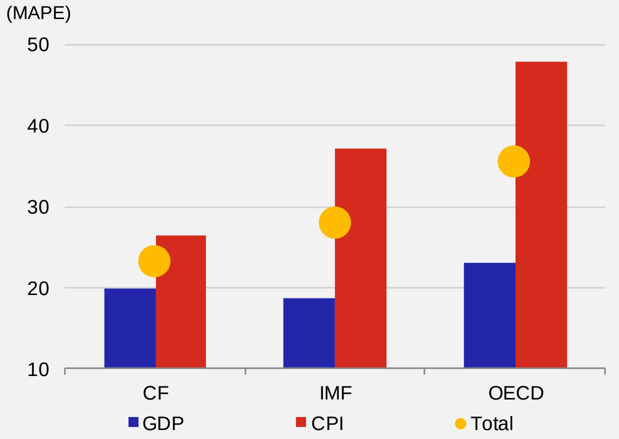
As was the case of GDP growth, higher inflation was also expected on average in 2019 compared to what transpired (see Annex 2). However, this did not apply to China and Russia, where the analysts expected lower inflation already in early 2018. A positive relationship between economic growth and inflation forecast errors was thus visible only in the remaining monitored countries, i.e. the euro area, the United States, the United Kingdom and Japan (see Chart 2). The largest variability of inflation forecasts was manifest for Japan and Russia. The Fed managed to provide, on average, the most accurate forecast for US inflation (as was the case of GDP, see above). Already at the start of 2018, inflation in the euro area was expected at a mere 1.6% in 2019, which is well below the ECB's inflation target. Nevertheless, actual inflation was at significantly lower levels in the end.

Chart 2 – Relationship between the GDP and CPI deviations



Note: CF forecasts for the assessed countries excluding Russia and China.

Chart 3 – 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.

[2] The frequency of monitoring the economies of Brazil and India decreased from monthly to half-yearly in January 2019. In April 2019, on the occasion of the 100th issue of GEO, a regular section entitled "Developing countries in the spotlight" was created and the "Euro area" section was extended to include the previously separate section on Germany.

[3] Variability is measured in the analysis by standard deviation.

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 3). CF namely provided the most accurate forecast for inflation in all monitored countries, whose outlooks had a higher degree of error than the outlooks for GDP growth. However, no general conclusions can be drawn from the results for a single year, as the accuracy of forecasts usually changes over time and across institutions.[4] Nevertheless, the charts of deviations of GDP growth and inflation show general developments, where the forecasts become gradually more accurate as the forecast horizon shortens. The Fed and the Bank of England had more accurate inflation forecasts, which are the domain of central banks, than other monitored institutions.

Assessment of the accuracy of the forecasts for foreign interest rates

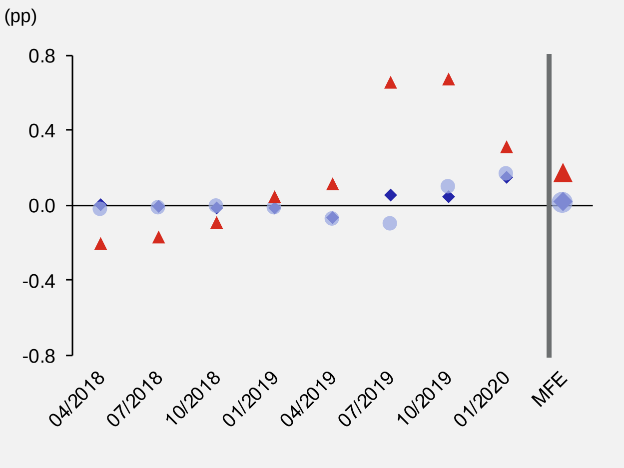
In GEO, interest rate outlooks are monitored for the euro area and the USA only. The monitored outlooks for three-month interest rates are derived from futures. By contrast, the outlooks for long-term (ten-year) government bond yields are taken from CF. In the assessment we additionally use alternative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

Expectations regarding short-term interest rates at the one-year horizon were higher than the outcome (see Chart 4 and 5). 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 4). The three-month EURIBOR remained at a stable level slightly below -0.3% until June 2019. Then it declined gradually by 0.1 percentage point to a new level where it remained until March this year. It became more volatile later, due to the coronavirus pandemic. The three-month rates initially declined further but later grew relatively quickly.

The US key interest rates normalised (increased) faster than the three-month CF expectations in 2018. However, due to a worsening economic situation, the Fed started to lower interest rates in August 2019, which was not expected at the one-year or three-month horizons. On April 2019, CF expected the short-term interest rates to be at 2.4% at the three-month horizon, with the market outlook even being 2.6%. The Fed continued to lower the rates by the standard 25 basis points in September and October. At the end of the period under review (in March 2020), the Fed lowered the rates sharply in two steps, to zero in response to the negative impacts of the unexpected shock taking the form of a global spread of the coronavirus. The forecast error both at the three-month and one-year horizons thus increased significantly. The accuracy of market outlooks for three-month interest rates differed only negligibly from CF outlooks for both economies under review.

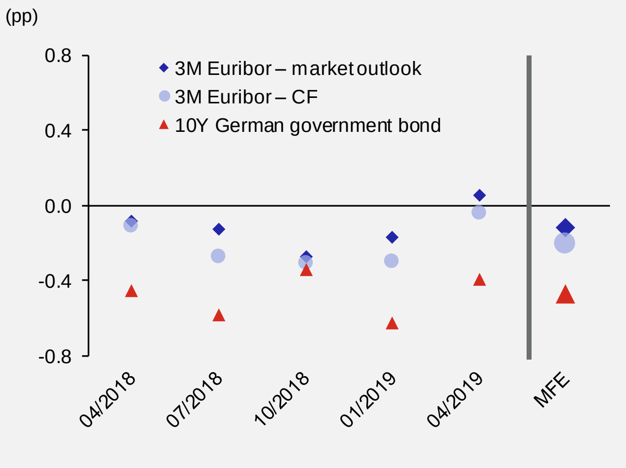
The forecasts for ten-year government bond yields at the one-year horizon were also slightly overestimated on average for both the USA and the euro area. As for the short-term (three-month) outlooks, they were furthest from reality in the second half of 2019. This was because the outlooks for this period had deteriorated but the actual yields had not declined as much as had been expected. 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.

Chart 4a – Forecast errors for interest rates for the euro area (three-month outlooks)



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

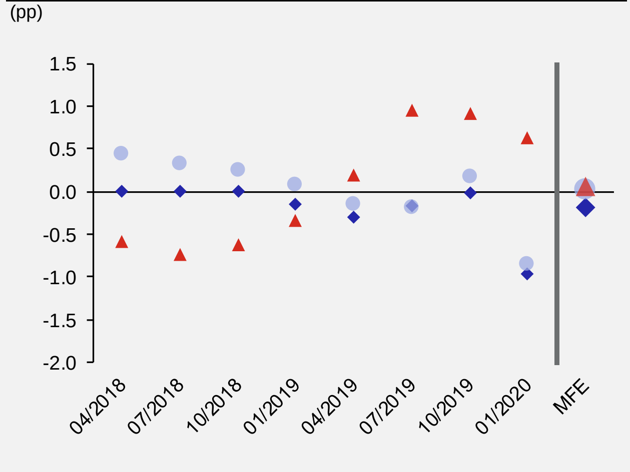
Chart 4b – Forecast errors for interest rates for the euro area (one-year outlooks)



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

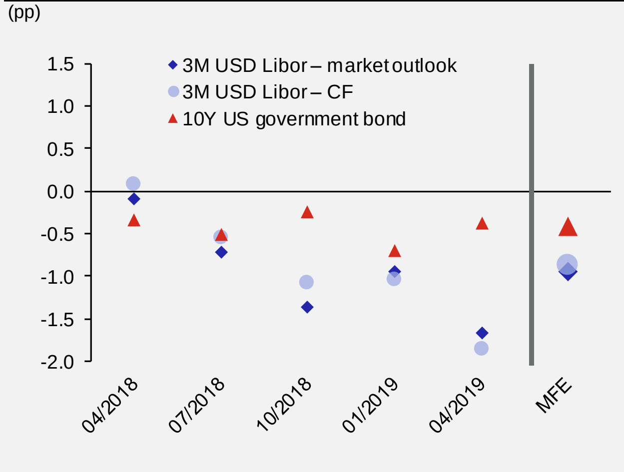
[4] A longer period of forecasts has been assessed e.g. in Novotný and Raková (2010) Assessment of Consensus Forecasts Accuracy: The Czech National Bank Perspective. WP CNB.

Chart 5a – Forecast errors for interest rates for the USA (three-month outlooks)



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

Chart 5b – Forecast errors for interest rates for the USA (one-year outlooks)



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

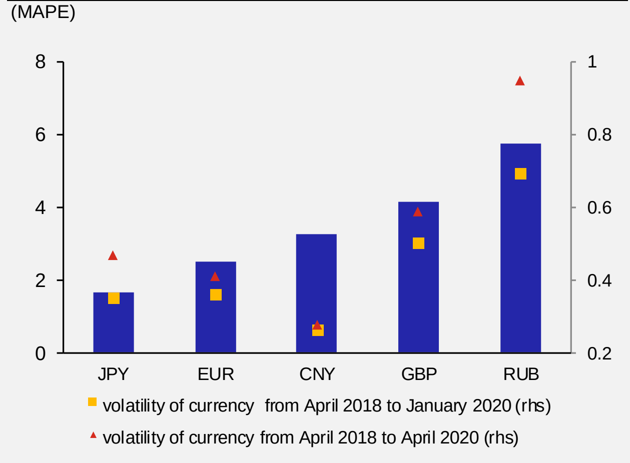
Assessment of the accuracy of the forecasts for the dollar exchange rate

On average, the deviations of the monitored exchange rates were negligible in the three-month outlooks (see Annex). 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 also provided for the euro, the Japanese yen and, since 2017, sterling. They are based on covered interest rate parity and represent the current ability to hedge the future exchange rate rather than the outlook. One-year outlooks for the pound derived from market contracts were slightly more accurate than CF outlooks. On the other hand, the CF forecast for the yen at the one-year outlook was on average accurate. As regards the exchange rate of the euro against the dollar, the accuracy of both sources of outlooks was the same on average.

The deviations of three-month outlooks were similar across currency pairs. The greatest error regarding the expectations of a weaker dollar at the three-month horizon occurred at the start of the period under review, i.e., in April and July 2018. Overall, the deviations of three-month outlooks for the eurodollar were relatively low in the period under review. However, the deviations were slightly higher for one-year outlooks.

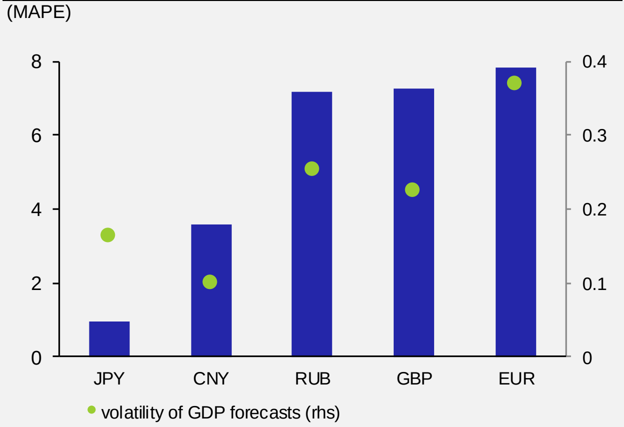
The forecast of the exchange rate of the Japanese yen was the most accurate of all the currency pairs at both the three-month and one-year horizons. This was the same in last year's assessment. By contrast, the forecasts for the Russian rouble at the three-month horizon and for the euro at the one-year horizon were the least accurate (see Chart 6). The accuracy of forecasts was largely due to observed volatility of the currencies under review, which moreover increased in the context of the coronavirus crisis. It was the highest for the Russian rouble and the pound. The annual outlooks for exchange rates were the least accurate in countries which had the highest volatility of GDP forecasts, i.e. the above mentioned euro area.

Chart 6a – Forecast errors for the exchange rates of selected currencies against the dollar (three-month outlooks)



Note: MAPE is the mean absolute percentage error.

Chart 6b – Forecast errors for the exchange rates of selected currencies against the dollar (one-year outlooks)

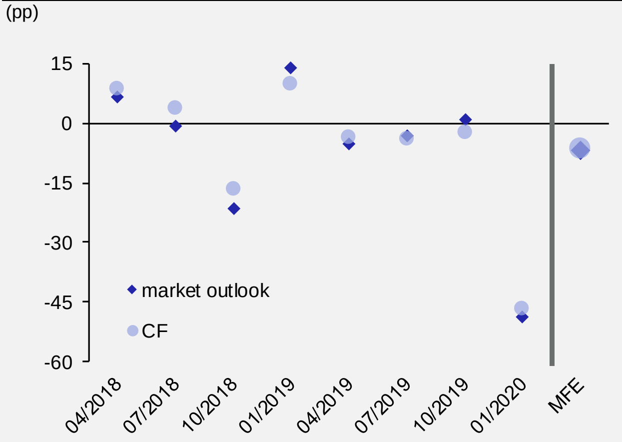


Note: MAPE is the mean absolute percentage error.

Assessment of the accuracy of the Brent crude oil price forecasts

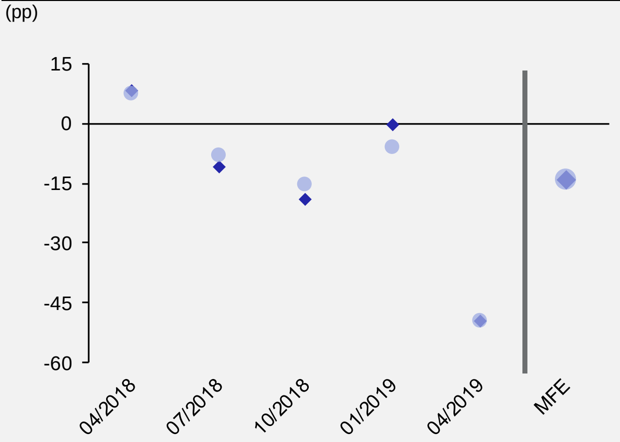
The accuracy of the Brent crude oil price forecasts based on both futures contracts and CF was on average the same. GEO regularly describes both types of outlooks. Both these sources slightly overestimated on average the actual price of oil both at the three-month and one-year horizons. Nevertheless, the forecasted higher oil price than the outcome was largely due to the collapse of the oil price in April 2020, when it fell to USD 16/bbl. Without this shock, which was due to a sharp fall in demand after the outbreak of the coronavirus pandemic, the accuracy of forecasts for the Brent crude oil price in the period under review can be assessed as successful on average (see Chart 7). The relative ease of the oil price forecast was due to its stability for almost the entire period under review. Except for the above mentioned fall in the oil price in early March 2020, the oil price fluctuated within the range from USD 80 to 50/bbl.

Chart 7a – Forecast errors for the Brent oil price (three-month outlooks)



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

Chart 7b – Forecast errors for the Brent oil price (one-year outlooks)



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

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. This is one of the reasons why several institutions' forecasts are monitored in GEO. More time would be needed to assess them more accurately. The accuracy of CF forecasts has long be comparable with the available alternative forecasts, being even the highest for 2019. 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.[5]

Table 1 – Outcome of selected variables compared with average expectations

Economic activity	lower
Inflation	lower
US dollar	stronger
Interest rates	lower
Oil prices	lower

Note: Comparison for 2019

The year 2019 fell short of expectations virtually for all assessment indicators (see Table 1). Signs of a cooling down in the economies under review started to come gradually in mid-2019, as evidenced, e.g., in worsening industrial production data. The main perceived risks were increasing protectionism in global trade and the execution of Brexit. In 2019, CF and other monitored institutions thus started to gradually lower their economic growth and inflation outlooks for both the currently assessed year 2019 and 2020. The outbreak of the coronavirus pandemic in early 2020 will have an additional strongly negative shock impact on the global economy going beyond these gradually deteriorating expectations.

[5] 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.

Keywords

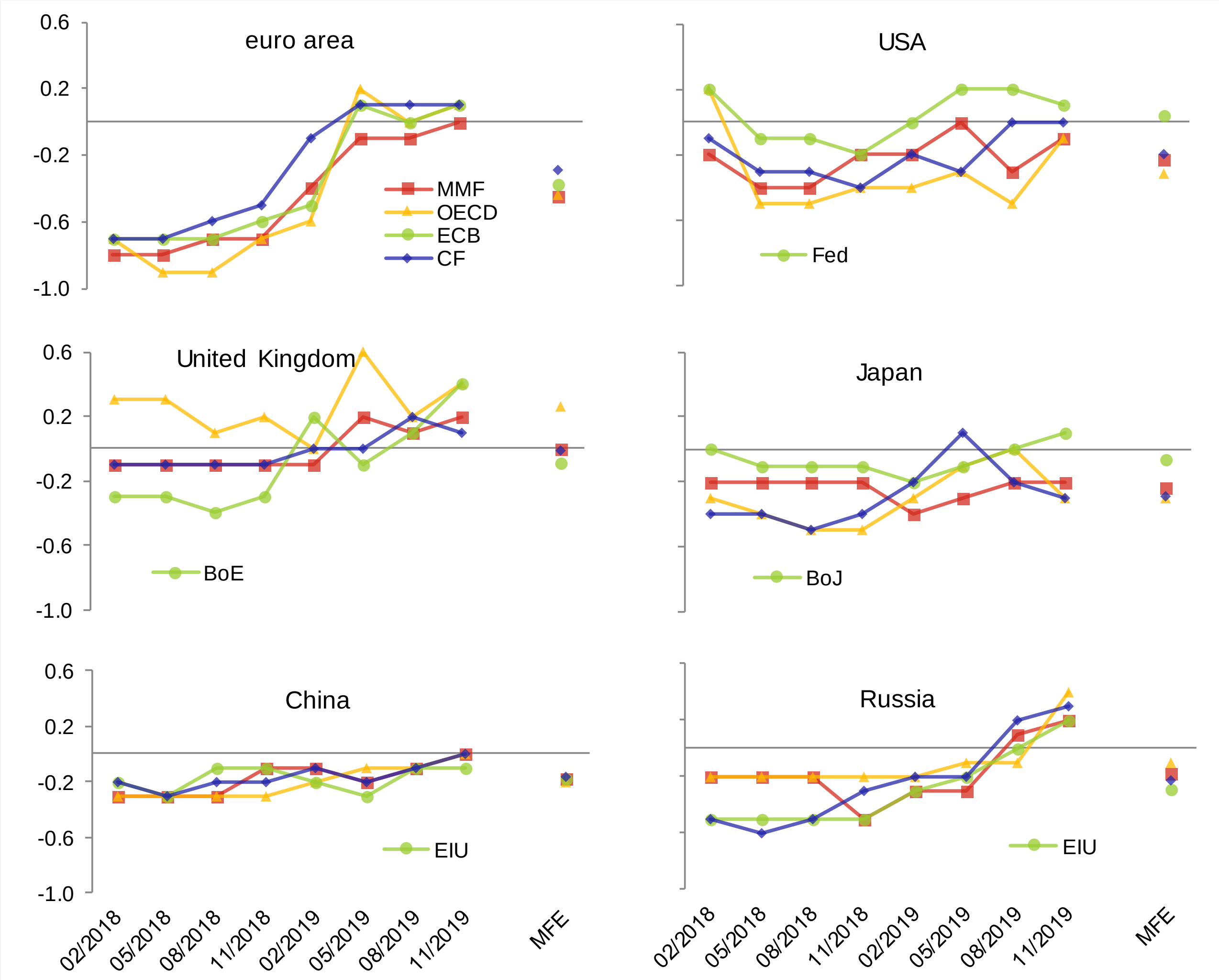
forecast error, economic outlook, Consensus Forecasts

JEL Classification

E66, E27, C18

Annex 1 – Forecast errors for GDP growth for 2019

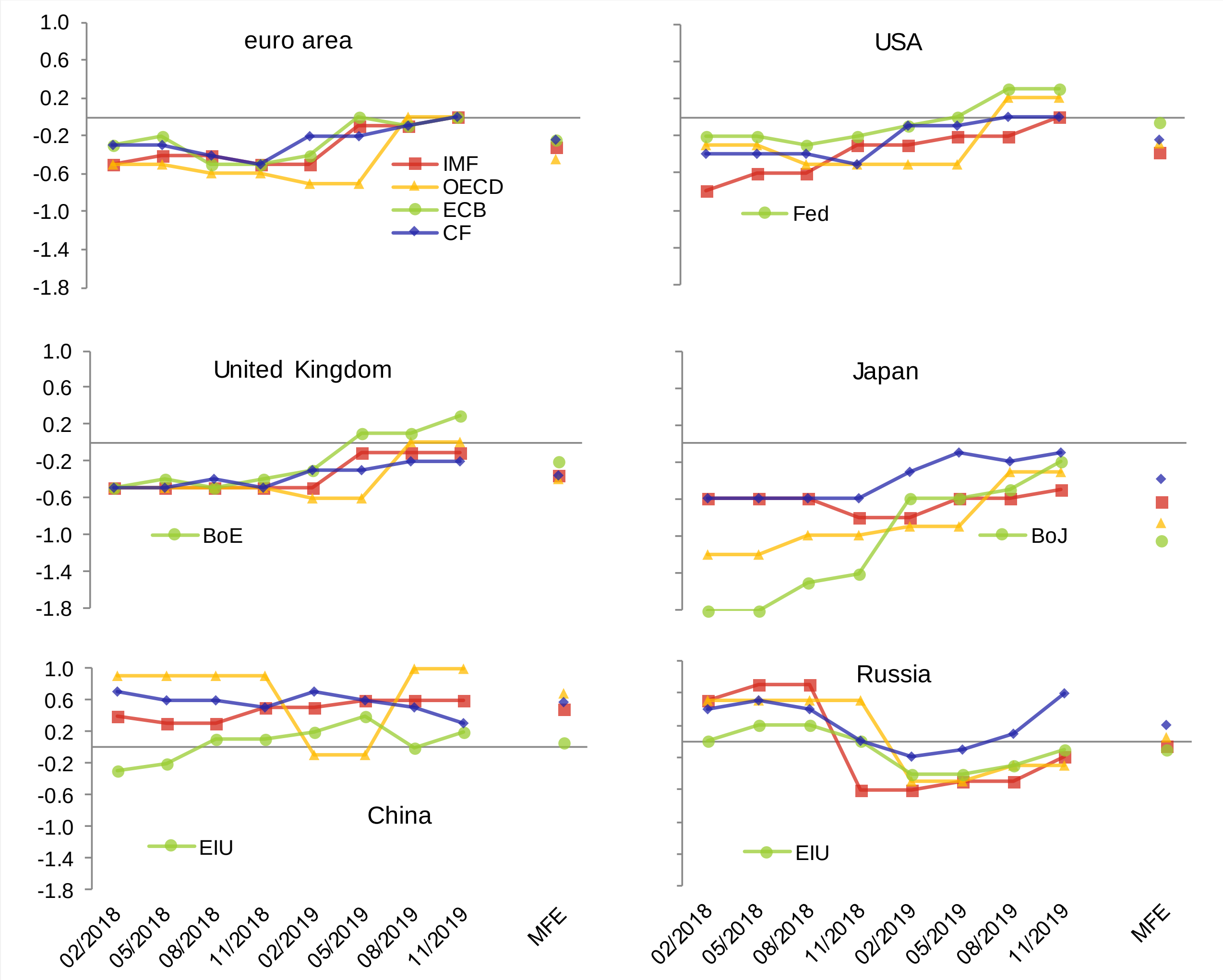
(percentage points)



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, BoE – Bank of England, BoJ – Bank of Japan, EIU – Economist Intelligence Unit. MFE is the mean forecast error for the given year.

Annex 2 – Forecast errors for consumer price inflation for 2019 (percentage points)

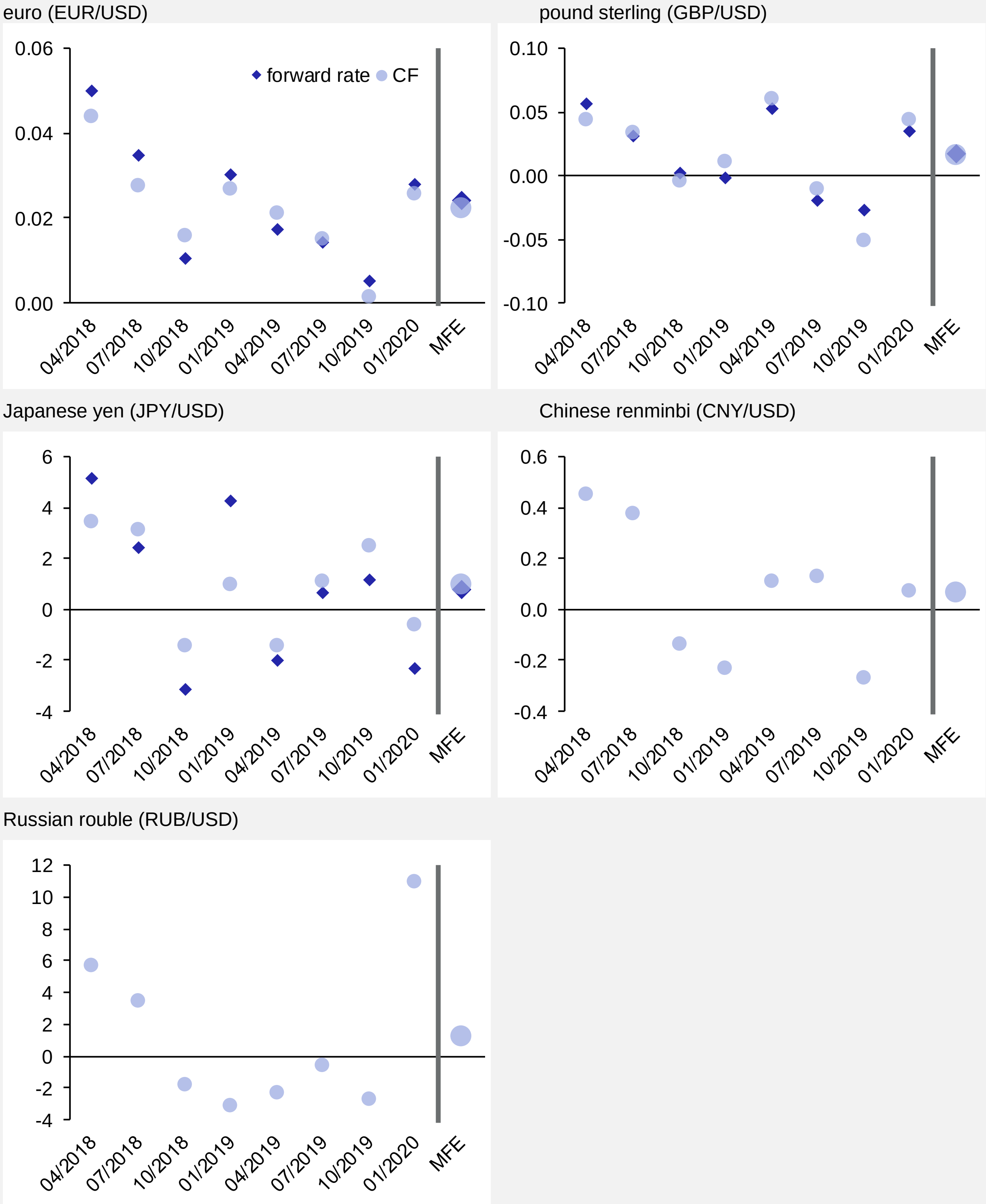
(percentage points)



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, BoE – Bank of England, BoJ – Bank of Japan, EIU – Economist Intelligence Unit. MFE is the mean forecast error for the given year.

Annex 3 – Three-month outlooks for exchange rates

(deviations from reality)

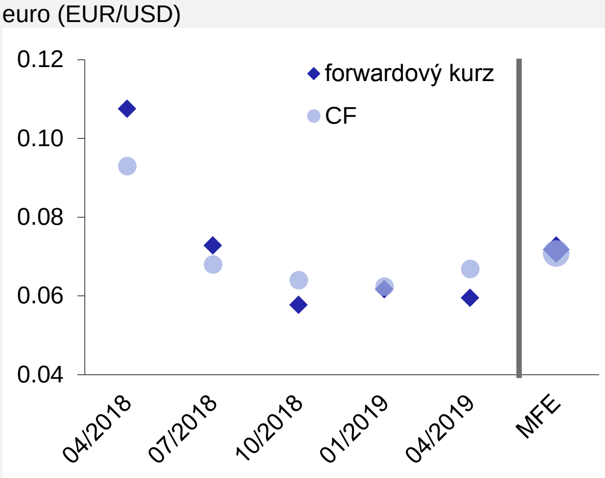


Note: CF – Consensus Forecasts. MFE is the mean forecast error for the monitored period.

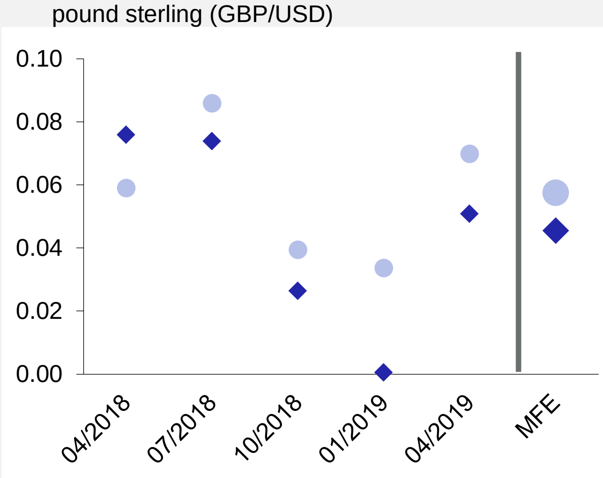
Annex 4 – One-year outlooks for exchange rates

(deviations from reality)

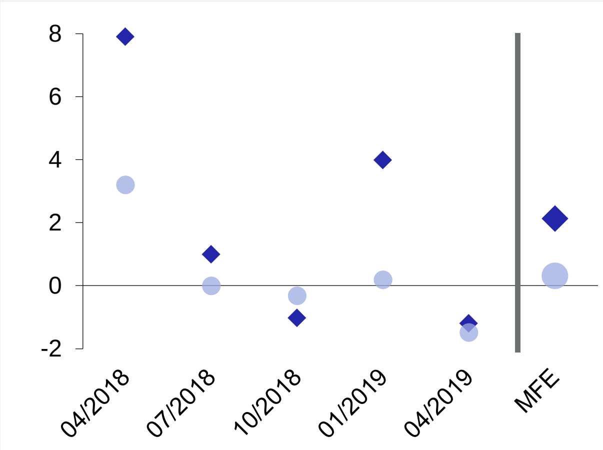
euro (EUR/USD)



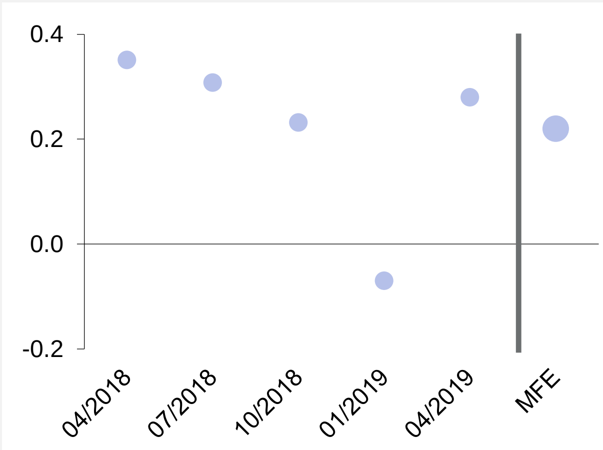
pound sterling (GBP/USD)



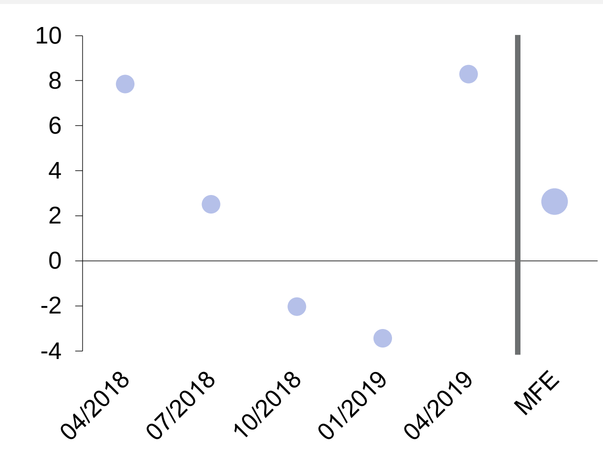
Japanese yen (JPY/USD)



Chinese renminbi (CNY/USD)



Russian rouble (RUB/USD)



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

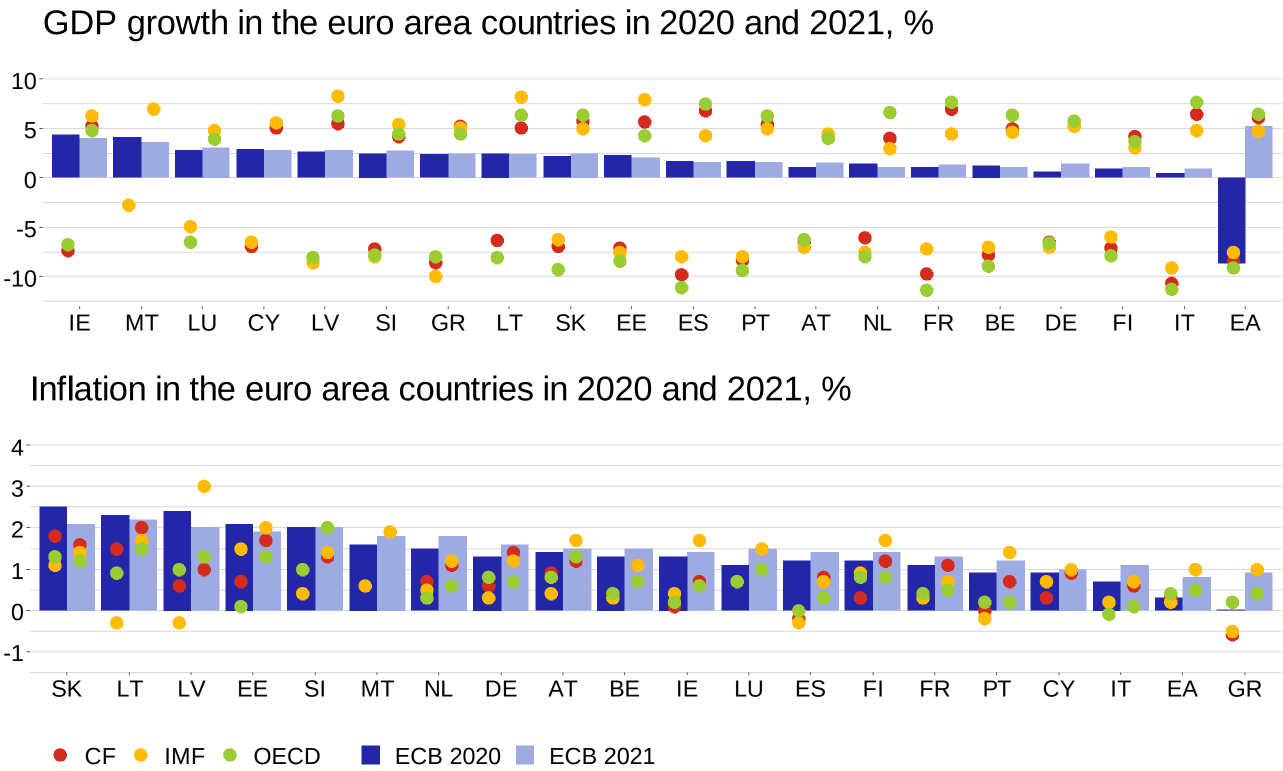
A1. Change in predictions for 2020

	GDP growth, %								Inflation, %							
	CF		IMF		OECD		CB / EIU		CF		IMF		OECD		CB / EIU	
EA	-0.5	2020/6 2020/5	-8.8	2020/4 2020/1	-9.9	2020/6 2020/3	-9.5	2020/6 2020/3	0	2020/6 2020/5	-1.2	2020/4 2019/10	-0.7	2020/6 2019/11	-0.8	2020/6 2020/3
US	-0.2	2020/6 2020/5	-7.9	2020/4 2020/1	-9.2	2020/6 2020/3	-8.5	2020/6 2019/12	+0.1	2020/6 2020/5	-1.7	2020/4 2019/10	-0.6	2020/6 2019/11	-1.1	2020/6 2019/12
UK	-1.1	2020/6 2020/5	-7.9	2020/4 2020/1	-12.3	2020/6 2020/3	-14.8	2020/5 2020/1	-0.1	2020/6 2020/5	-0.7	2020/4 2019/10	-1.5	2020/6 2019/11	-0.9	2020/5 2020/1
JP	+0.2	2020/6 2020/5	-5.9	2020/4 2020/1	-6.2	2020/6 2020/3	-4.9	2020/4 2020/1	+0.1	2020/6 2020/5	-1.1	2020/4 2019/10	-1.4	2020/6 2019/11	-1.5	2020/4 2020/1
CN	-0.1	2020/6 2020/5	-4.8	2020/4 2020/1	-7.5	2020/6 2020/3	0	2020/6 2020/4	-0.2	2020/6 2020/5	+0.6	2020/4 2019/10	+1.6	2020/6 2019/11	-0.6	2020/6 2020/4
RU	-1.2	2020/5 2020/4	-7.4	2020/4 2020/1	-9.2	2020/6 2020/3	-2.6	2020/4 2020/4	-0.6	2020/5 2020/4	-0.4	2020/4 2019/10	-1.1	2020/6 2019/11	-2.6	2020/4 2020/4

A2. Change in predictions for 2021

	GDP growth, %								Inflation, %							
	CF		IMF		OECD		CB / EIU		CF		IMF		OECD		CB / EIU	
EA	-0.5	2020/6 2020/5	-8.8	2020/4 2020/1	-9.9	2020/6 2020/3	-9.5	2020/6 2020/3	0	2020/6 2020/5	-1.2	2020/4 2019/10	-0.7	2020/6 2019/11	-0.8	2020/6 2020/3
US	-0.2	2020/6 2020/5	-7.9	2020/4 2020/1	-9.2	2020/6 2020/3	-8.5	2020/6 2019/12	+0.1	2020/6 2020/5	-1.7	2020/4 2019/10	-0.6	2020/6 2019/11	-1.1	2020/6 2019/12
UK	-1.1	2020/6 2020/5	-7.9	2020/4 2020/1	-12.3	2020/6 2020/3	-14.8	2020/5 2020/1	-0.1	2020/6 2020/5	-0.7	2020/4 2019/10	-1.5	2020/6 2019/11	-0.9	2020/5 2020/1
JP	+0.2	2020/6 2020/5	-5.9	2020/4 2020/1	-6.2	2020/6 2020/3	-4.9	2020/4 2020/1	+0.1	2020/6 2020/5	-1.1	2020/4 2019/10	-1.4	2020/6 2019/11	-1.5	2020/4 2020/1
CN	-0.1	2020/6 2020/5	-4.8	2020/4 2020/1	-7.5	2020/6 2020/3	0	2020/6 2020/4	-0.2	2020/6 2020/5	+0.6	2020/4 2019/10	+1.6	2020/6 2019/11	-0.6	2020/6 2020/4
RU	-1.2	2020/5 2020/4	-7.4	2020/4 2020/1	-9.2	2020/6 2020/3	-2.6	2020/4 2020/4	-0.6	2020/5 2020/4	-0.4	2020/4 2019/10	-1.1	2020/6 2019/11	-2.6	2020/4 2020/4

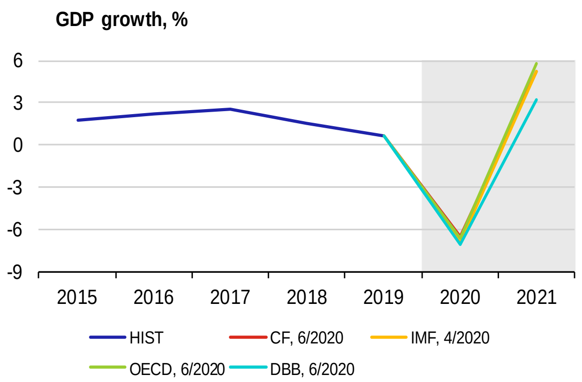
A3. GDP growth and inflation outlooks in the euro area countries



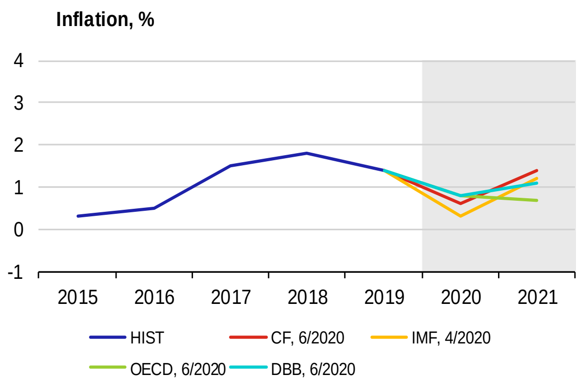
Note: Charts show institutions' latest available outlooks of for the given country.

A4. GDP growth and inflation in the individual euro area countries

Germany



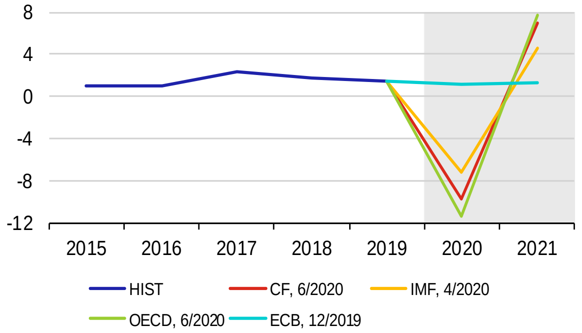
	CF	IMF	OECD	DBB
2020	-6.5	-7.0	-6.6	-7.1
2021	5.2	5.2	5.8	3.2



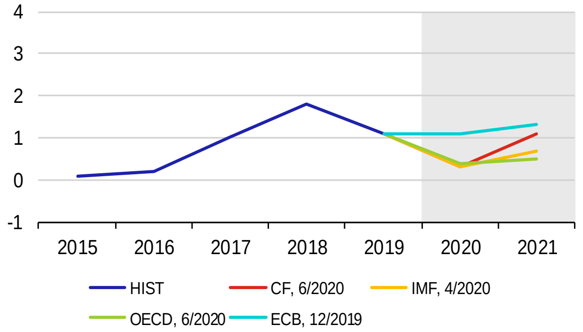
	CF	IMF	OECD	DBB
2020	0.6	0.3	0.8	0.8
2021	1.4	1.2	0.7	1.1

France

GDP growth, %



Inflation, %

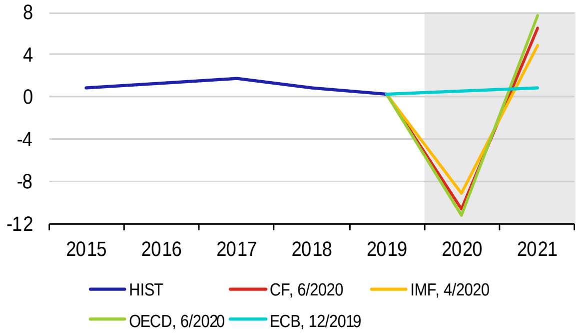


	CF	IMF	OECD	ECB
2020	-9.7	-7.2	-11.4	1.1
2021	7.0	4.5	7.7	1.3

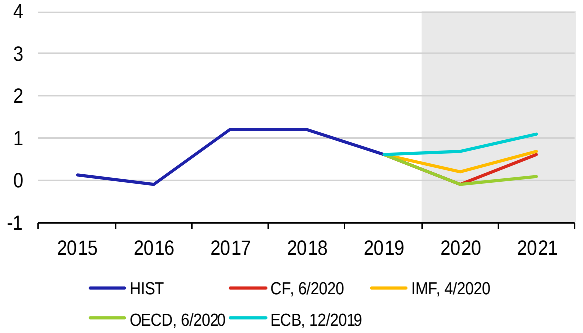
	CF	IMF	OECD	ECB
2020	0.3	0.3	0.4	1.1
2021	1.1	0.7	0.5	1.3

Italy

GDP growth, %



Inflation, %

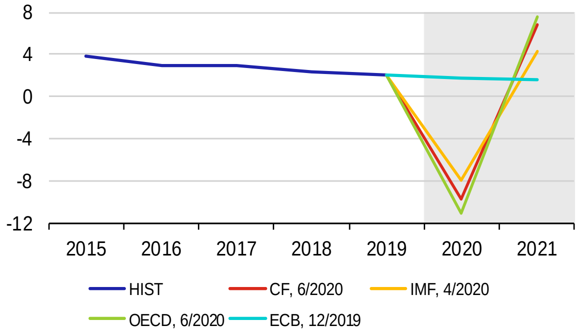


	CF	IMF	OECD	ECB
2020	-10.7	-9.1	-11.3	0.5
2021	6.5	4.8	7.7	0.9

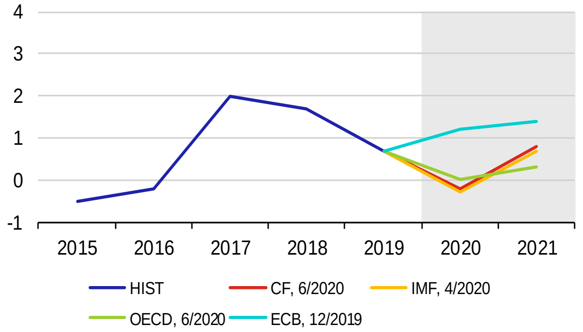
	CF	IMF	OECD	ECB
2020	-0.1	0.2	-0.1	0.7
2021	0.6	0.7	0.1	1.1

Spain

GDP growth, %



Inflation, %

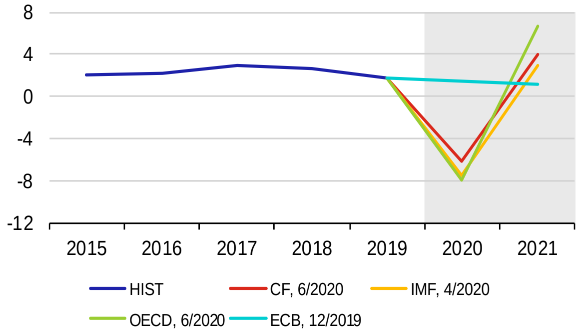


	CF	IMF	OECD	ECB
2020	-9.8	-8.0	-11.1	1.7
2021	6.8	4.3	7.5	1.6

	CF	IMF	OECD	ECB
2020	-0.2	-0.3	0.0	1.2
2021	0.8	0.7	0.3	1.4

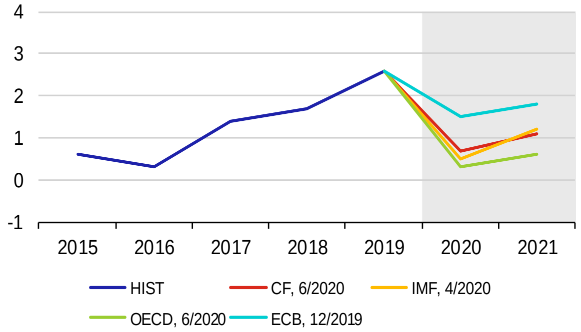
Netherlands

GDP growth, %



	CF	IMF	OECD	ECB
2020	-6.1	-7.5	-8.0	1.4
2021	4.0	3.0	6.6	1.1

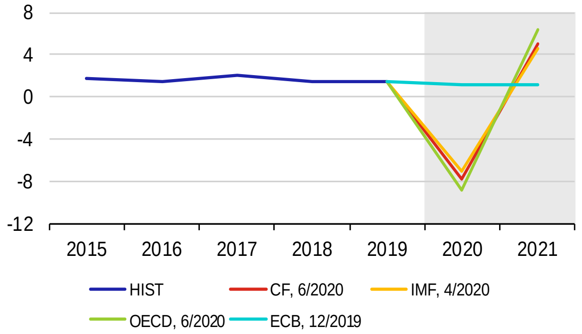
Inflation, %



	CF	IMF	OECD	ECB
2020	0.7	0.5	0.3	1.5
2021	1.1	1.2	0.6	1.8

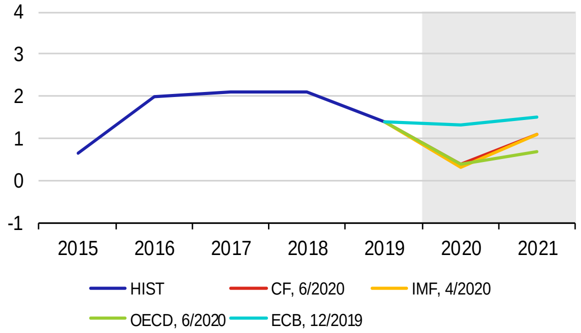
Belgium

GDP growth, %



	CF	IMF	OECD	ECB
2020	-7.8	-7.0	-8.9	1.2
2021	5.0	4.6	6.4	1.1

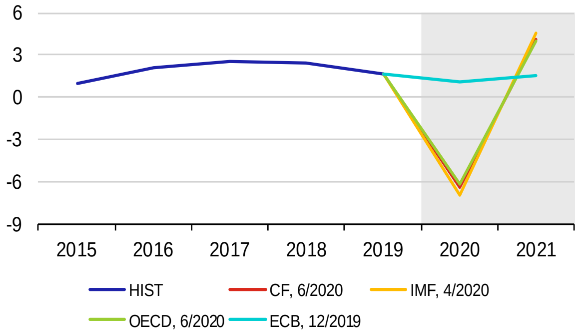
Inflation, %



	CF	IMF	OECD	ECB
2020	0.4	0.3	0.4	1.3
2021	1.1	1.1	0.7	1.5

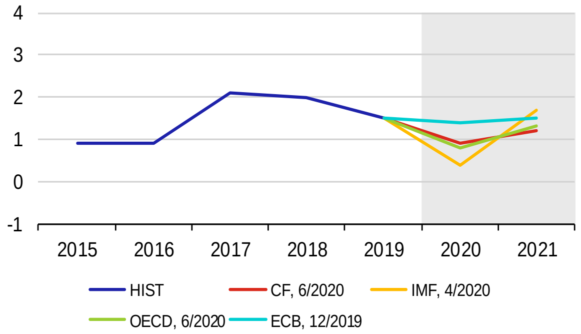
Austria

GDP growth, %



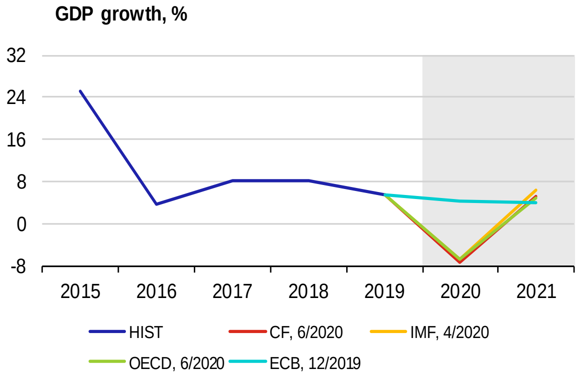
	CF	IMF	OECD	ECB
2020	-6.4	-7.0	-6.2	1.1
2021	4.1	4.5	4.0	1.5

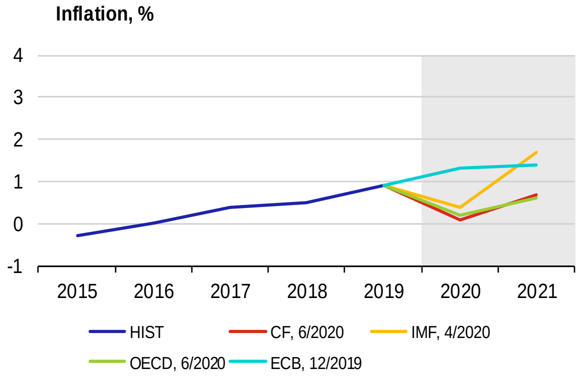
Inflation, %



	CF	IMF	OECD	ECB
2020	0.9	0.4	0.8	1.4
2021	1.2	1.7	1.3	1.5

Ireland

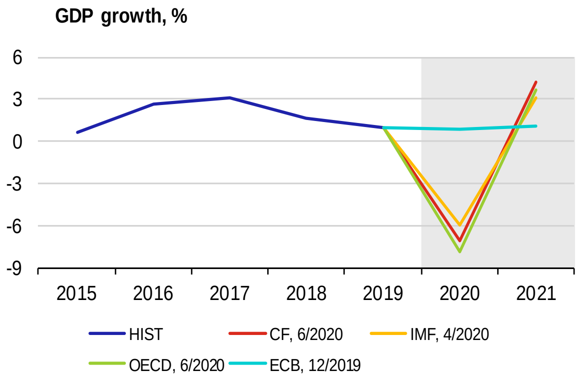


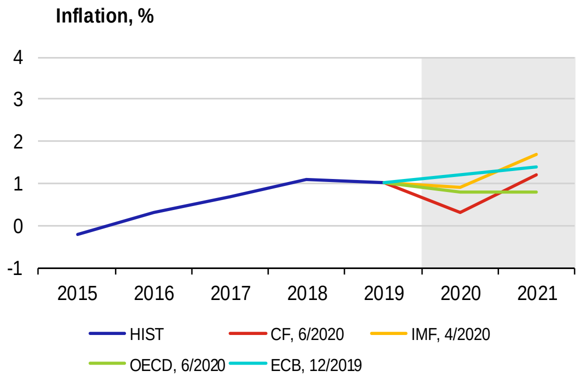


	CF	IMF	OECD	ECB
2020	-7.4	-6.8	-6.8	4.4
2021	5.2	6.3	4.8	4.0

	CF	IMF	OECD	ECB
2020	0.1	0.4	0.2	1.3
2021	0.7	1.7	0.6	1.4

Finland

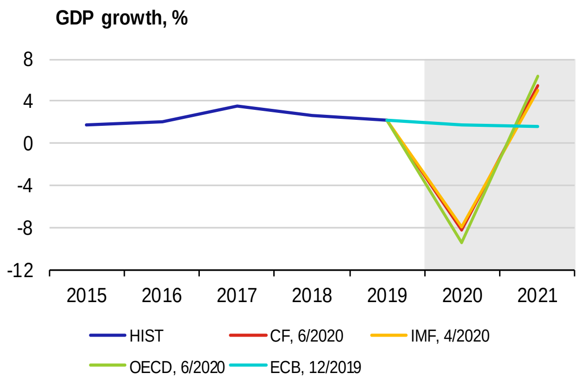


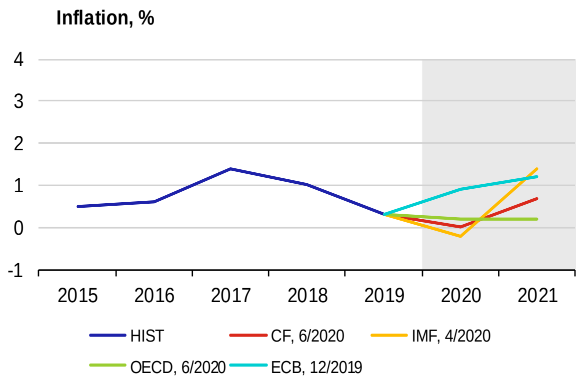


	CF	IMF	OECD	ECB
2020	-7.1	-6.0	-7.9	0.9
2021	4.2	3.1	3.7	1.1

	CF	IMF	OECD	ECB
2020	0.3	0.9	0.8	1.2
2021	1.2	1.7	0.8	1.4

Portugal



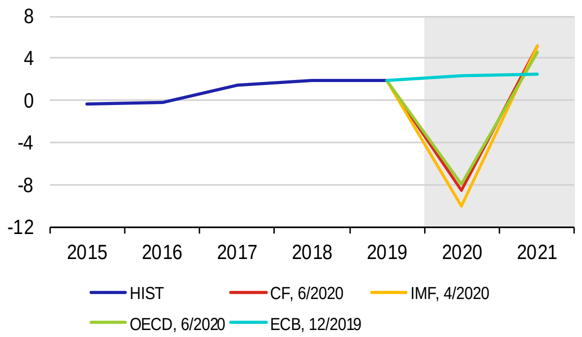


	CF	IMF	OECD	ECB
2020	-8.3	-8.0	-9.4	1.7
2021	5.4	5.0	6.3	1.6

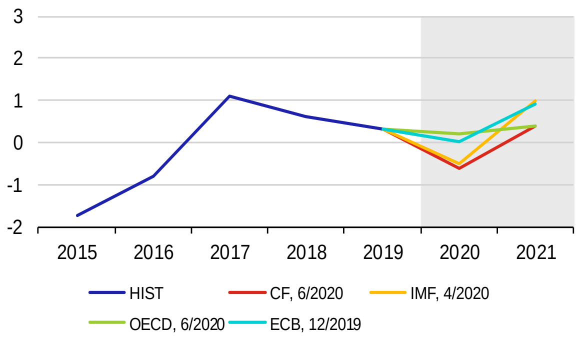
	CF	IMF	OECD	ECB
2020	0.0	-0.2	0.2	0.9
2021	0.7	1.4	0.2	1.2

Greece

GDP growth, %



Inflation, %

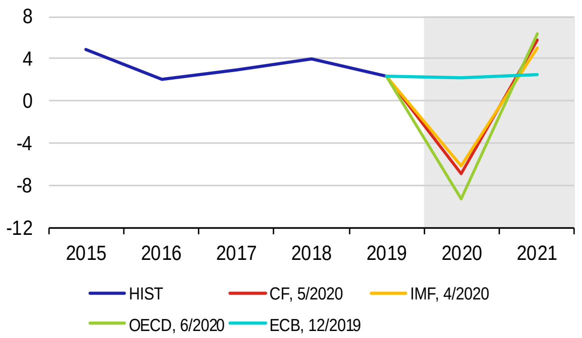


	CF	IMF	OECD	ECB
2020	-8.6	-10.0	-8.0	2.4
2021	5.2	5.1	4.5	2.5

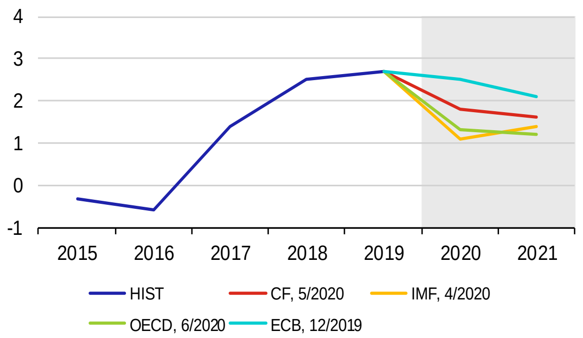
	CF	IMF	OECD	ECB
2020	-0.6	-0.5	0.2	0.0
2021	0.4	1.0	0.4	0.9

Slovakia

GDP growth, %



Inflation, %

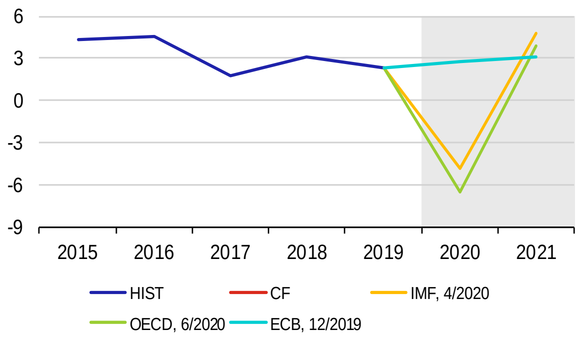


	CF	IMF	OECD	ECB
2020	-6.9	-6.2	-9.3	2.2
2021	5.8	5.0	6.4	2.5

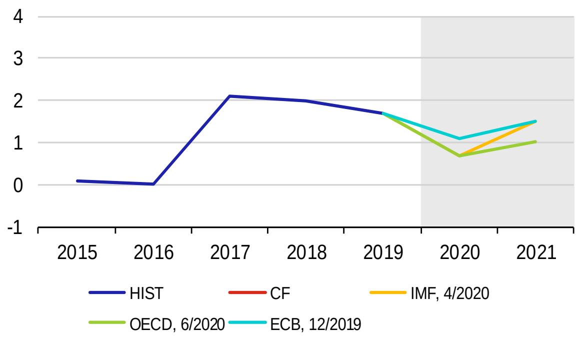
	CF	IMF	OECD	ECB
2020	1.8	1.1	1.3	2.5
2021	1.6	1.4	1.2	2.1

Luxembourg

GDP growth, %



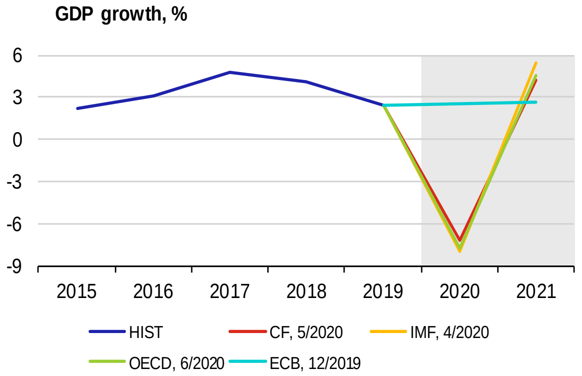
Inflation, %

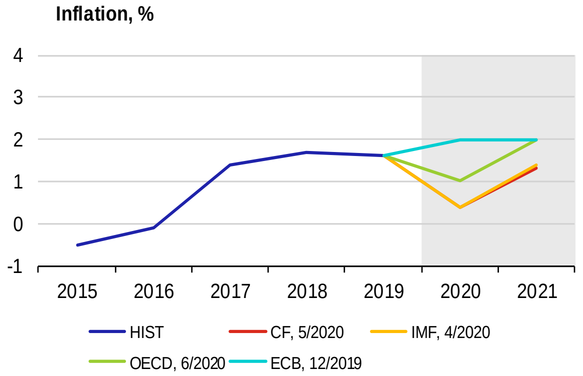


	CF	IMF	OECD	ECB
2020	n. a.	-4.9	-6.5	2.8
2021	n. a.	4.8	3.9	3.1

	CF	IMF	OECD	ECB
2020	n. a.	0.7	0.7	1.1
2021	n. a.	1.5	1.0	1.5

Slovenia

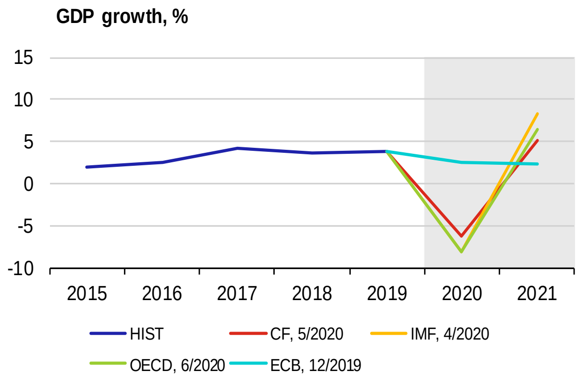


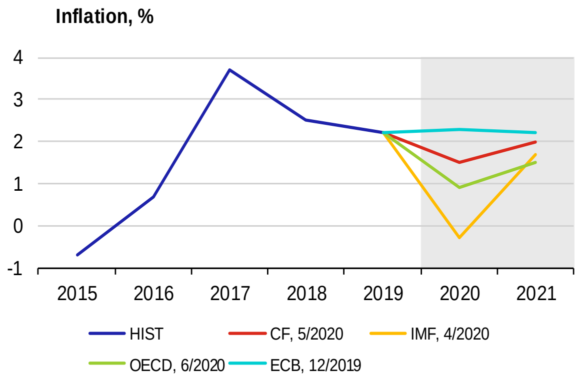


	CF	IMF	OECD	ECB
2020	-7.2	-8.0	-7.8	2.5
2021	4.2	5.4	4.5	2.7

	CF	IMF	OECD	ECB
2020	0.4	0.4	1.0	2.0
2021	1.3	1.4	2.0	2.0

Lithuania

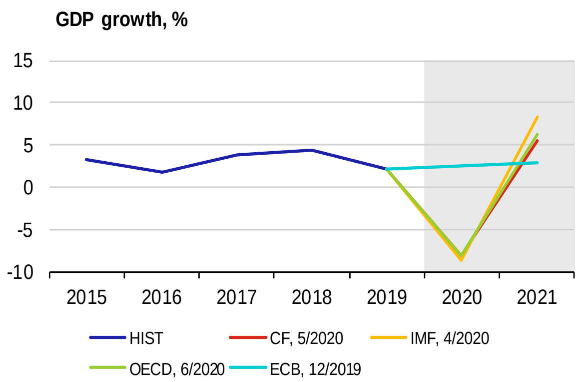


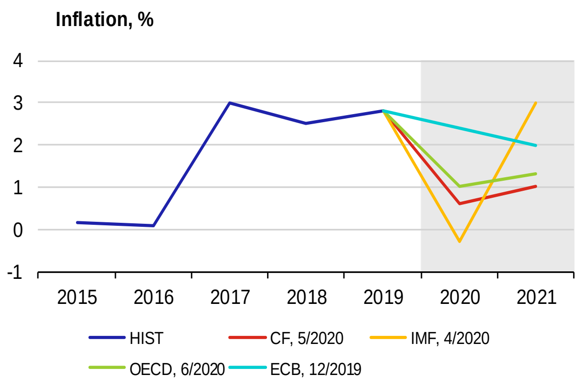


	CF	IMF	OECD	ECB
2020	-6.3	-8.1	-8.1	2.5
2021	5.1	8.2	6.4	2.4

	CF	IMF	OECD	ECB
2020	1.5	-0.3	0.9	2.3
2021	2.0	1.7	1.5	2.2

Latvia

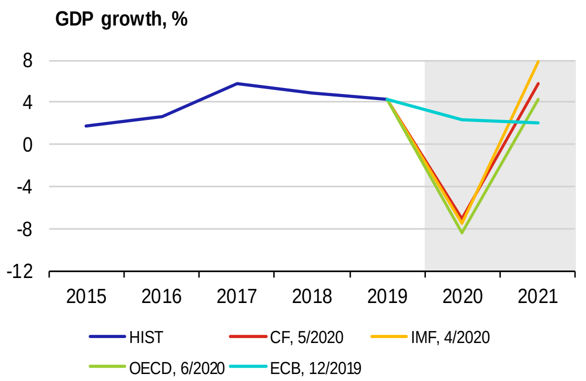


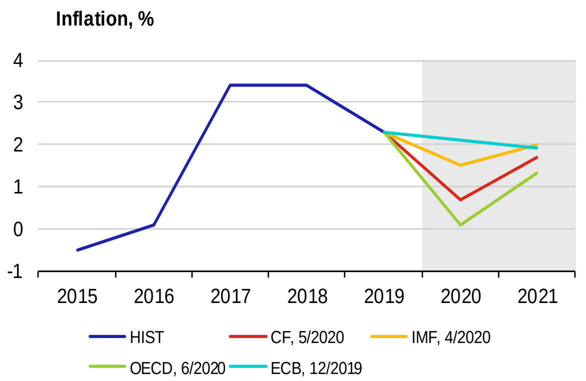


	CF	IMF	OECD	ECB
2020	-8.1	-8.6	-8.1	2.6
2021	5.5	8.3	6.3	2.8

	CF	IMF	OECD	ECB
2020	0.6	-0.3	1.0	2.4
2021	1.0	3.0	1.3	2.0

Estonia

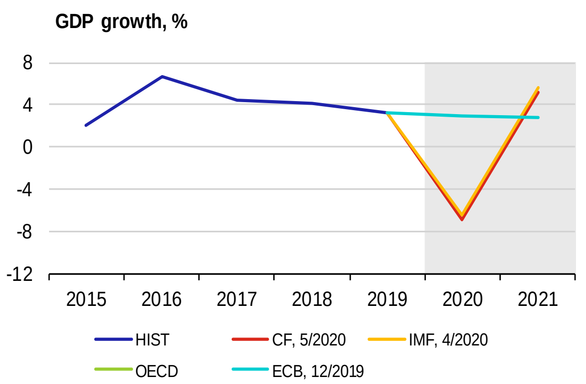


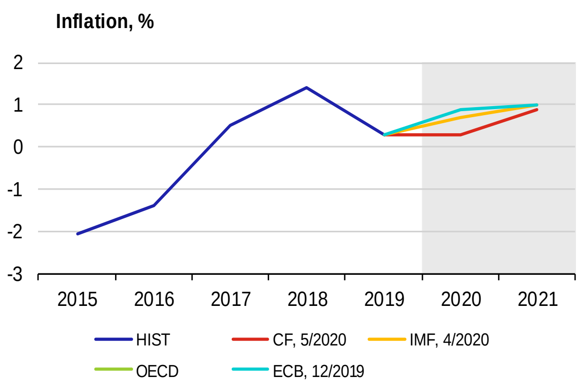


	CF	IMF	OECD	ECB
2020	-7.1	-7.5	-8.4	2.3
2021	5.7	7.9	4.3	2.0

	CF	IMF	OECD	ECB
2020	0.7	1.5	0.1	2.1
2021	1.7	2.0	1.3	1.9

Cyprus

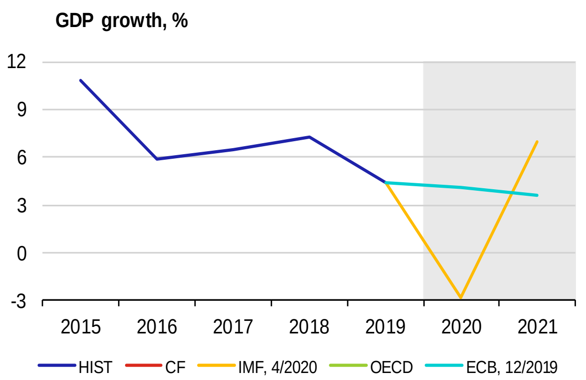


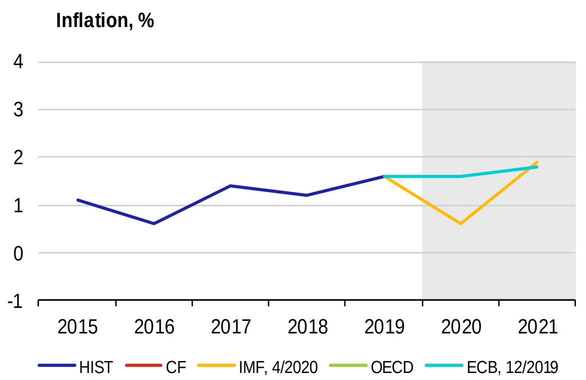


	CF	IMF	OECD	ECB
2020	-6.9	-6.5	n. a.	2.9
2021	5.1	5.6	n. a.	2.8

	CF	IMF	OECD	ECB
2020	0.3	0.7	n. a.	0.9
2021	0.9	1.0	n. a.	1.0

Malta





	CF	IMF	OECD	ECB
2020	n. a.	-2.8	n. a.	4.1
2021	n. a.	7.0	n. a.	3.6

	CF	IMF	OECD	ECB
2020	n. a.	0.6	n. a.	1.6
2021	n. a.	1.9	n. a.	1.8

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)
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
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
OPEC+	member countries of OPEC oil cartel and 10 other oil-exporting countries (the most important of which are Russia, Mexico and Kazakhstan)
PMI	Purchasing Managers' Index
pp	percentage point
PT	Portugal
QE	quantitative easing
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

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