Global Economic Outlook

October 2021

Czech National Bank —— Global Economic Outlook —— October 2021

CNB CZECH NATIONAL BANK

Cut-off date for data
15 October 2021

CF survey date
11 October 2021

GEO publication date
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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.

Contact
gev@cnb.cz

Authors

Luboš Komárek	Editor-in-chief, I. Introduction
Petr Polák	Editor, II.3 United States, V. Focus
Filip Novotný	II.1 Euro area, II.2 Spain
Michaela Ryšavá	II.4 United Kingdom
Martin Kábrt	II.5 Japan
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Oxana Babecká	II.7 Russia
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I. Introduction

The number of Covid-19 cases has been rising this autumn as expected, but the global epidemic situation is better for now than it was a year ago. In its latest forecast, the International Monetary Fund nonetheless identified spread of the Delta variant, still low vaccine access in poorer countries (96% of the population in low-income countries remain unvaccinated) and persisting supply-side complications as the biggest risks to the global economy. Longer-than-expected supply chain disruptions, coupled with massive government fiscal stimuli and deferred consumption (particularly in advanced countries), are being reflected in rising inflation. The growth in price pressures thus seems more lasting and broad-based than expected just a few months ago. A sharp rise in energy prices on world markets is amplifying these inflation pressures.

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

GDP	EA	DE	US	UK	JP	CN	RU
2021	5.1	2.8	5.7	6.9	2.3	8.2	4.0
2022	4.4	4.4	4.1	5.1	3.0	5.5	2.8

Inflation	EA	DE	US	UK	JP	CN	RU
2021	2.3	3.0	4.4	2.3	-0.2	1.2	6.0
2022	2.0	2.2	3.4	3.3	0.5	2.1	4.1

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

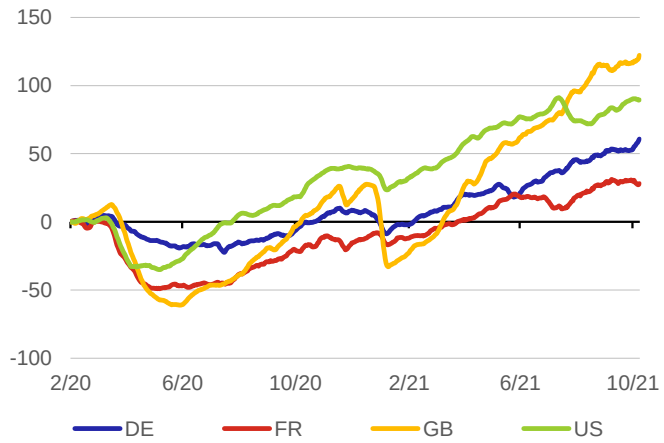
Central banks are beginning to respond to the elevated inflation levels. Key central banks are only gradually turning more hawkish in their rhetoric, but rates have already been hiked in some countries. The Fed is expected to start tapering its bond purchases at its November meeting and to end them by mid-2022. The ECB is still emphasising the temporary nature of the inflation pressures, but a debate is going on inside the central bank on the risks of the rising inflation (there are growing differences of opinion between the hawks and the doves) and on the future of quantitative easing after the PEPP pandemic programme ends in March 2022.

The October GDP growth outlooks saw changes for all the economies under review except Japan. The USA and the euro area as a whole will fare better this year, while the outlook for Germany is worse. This shows that the current global problems are affecting each economy differently. According to the IMF, advanced countries will grow by 5.2% in 2021 and 4.5% in 2022. The expected rates of growth in emerging markets and developing countries are slightly higher at 6.4% and 5.1% respectively.

The consumer price inflation outlooks for both this year and the next were generally revised up again compared to September. The September inflation levels in the USA and Germany were the highest since 2007 and 1993 respectively. The exception from the trend of rising inflation in the period ahead is China, where the inflation outlook was revised downwards.

According to the October CF, **the US dollar** will weaken against the currencies of the advanced countries monitored (the euro, sterling and the yen) at both the one- and two-year horizons. It will fluctuate against the rouble and the renminbi. The CF forecast for **the Brent crude oil price** one year ahead moved slightly higher to almost USD 71/bbl (range: USD 55–85/bbl) compared to the previous month. **The outlook for market rates** is rising for both the 3M USD LIBOR and the 3M EURIBOR, but the 3M EURIBOR remains negative.

Job offers in storage and supply services, in %



Source: Indeed.com
Note: Seasonally adjusted; weekly data; pre-pandemic February 2020 used as base.

The chart in the current issue complements the picture of battered supply chains by showing job offers in storage and supply services. This sector is experiencing severe shortages of warehouse workers as well as lorry drivers. This is resulting in overburdened logistics routes, especially in sea transport. Exhausted capacity has reduced operations at the UK's biggest port, Felixstowe. The pressure on transport is not easing despite constant growth in international transport prices (see the relevant chart in GEO 06/2021).

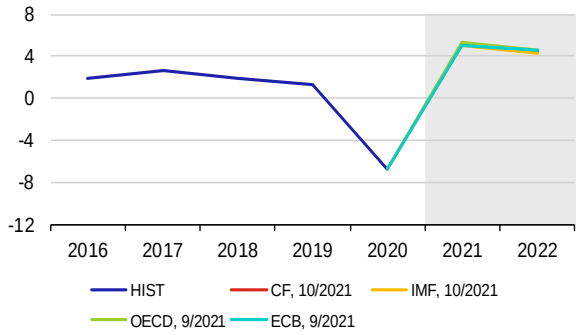
The current issue also contains a thematic article: "The end of the LIBOR era in financial markets: What lies ahead?". The article focuses on financial markets and the future of benchmark rates, as 2021 is the last year when major interbank rates will be used in trades on the London exchange. The article outlines the reasons for the rate reform and looks at what will follow.

II.1 Euro area

At the start of the heating season, the euro area was hit by a surge in gas and electricity prices, which is adversely affecting both households and firms. Coupled with persisting supply chain tightness (delays in supplies and high transport prices in particular), this factor will adversely affect economic performance for the rest of this year. Depending on sectors, the disruptions to material and component supplies may drag on well into 2022. Chip supplies have been hit particularly hard, to the extent that car output in Germany dropped by a third year on year in August. The month-on-month fall in euro area industrial production in August is thus a warning signal. Industrial output fell by a sizeable 4.1% in Germany alone. Following strong GDP growth (2.2% q-o-q) in Q2, growth will be fuelled in Q3 mainly by the reopening of the services sector after the coronavirus-induced shutdowns at the start of 2021, amid supply problems in industry. The economy will slow further in Q4. The coronavirus epidemic remains under control thanks to the relatively high vaccination coverage and acquired immunity of the European population, so any rise in cases should no longer lead to broad-based shutdowns.

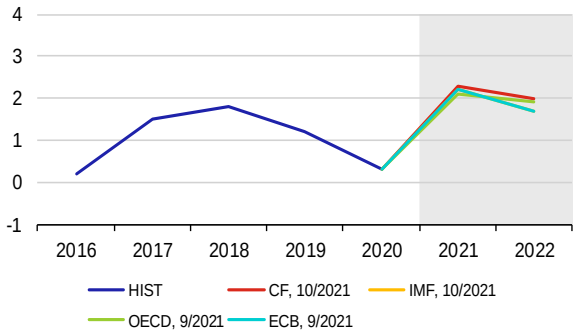
Expected GDP growth in the euro area this year has increased slightly, while the outlook for 2022 remains unchanged. However, the situation varies across countries. German GDP growth for 2021 was revised down relatively sharply, to 2.8%, for the second consecutive month, The growth forecast for the Spanish economy this year also shifted significantly lower due to a sharp downward revision of GDP growth in Q2. By contrast, France and Italy will enjoy growth of around 6% this year. The said economies are expected to grow by about 4% in 2022. GDP growth in Spain will even exceed 6%. At the same time, the inflation forecast for both 2021 and 2022 moved higher again. According to the CF panellists, euro area inflation will peak close to 4% in November this year. Next year, inflation in the euro area will slow.

GDP growth, %



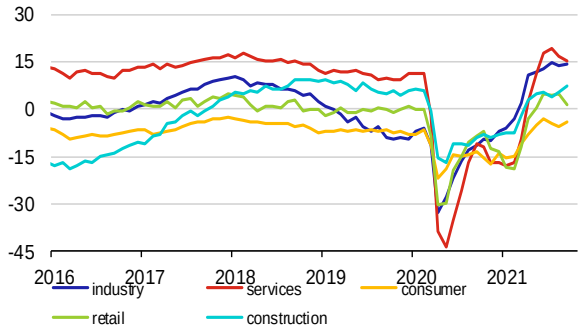
	CF	IMF	OECD	ECB
2021	5.1	5.0	5.3	5.0
2022	4.4	4.3	4.6	4.6

Inflation, %



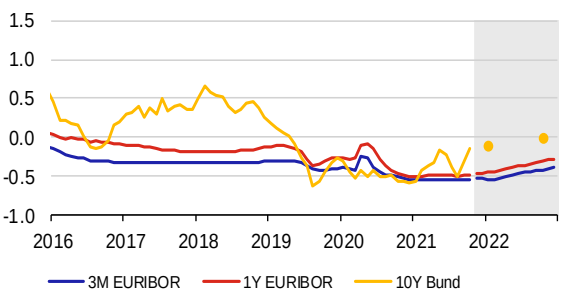
	CF	IMF	OECD	ECB
2021	2.3	2.2	2.1	2.2
2022	2.0	1.7	1.9	1.7

ESI leading indicators



	industry	services	consum.	retail	constr.
7/21	14.5	18.9	-4.4	4.4	4.0
8/21	13.8	16.8	-5.3	4.6	5.5
9/21	14.1	15.1	-4.0	1.3	7.5

Interest Rates, %



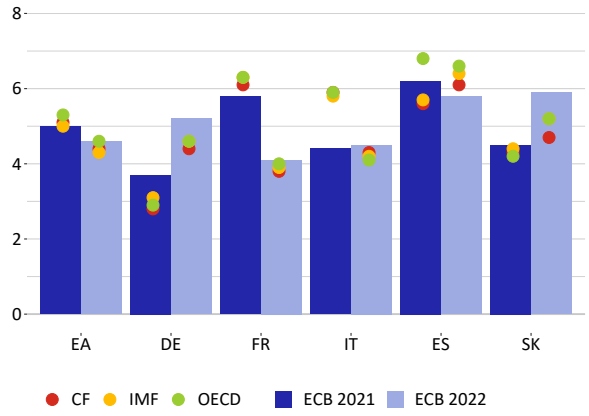
	9/21	10/21	1/22	10/22
3M EURIBOR	-0.55	-0.55	-0.54	-0.41
1Y EURIBOR	-0.49	-0.48	-0.44	-0.31
10Y Bund	-0.30	-0.14	-0.10	0.00

II.2 The euro area in the spotlight – Spain

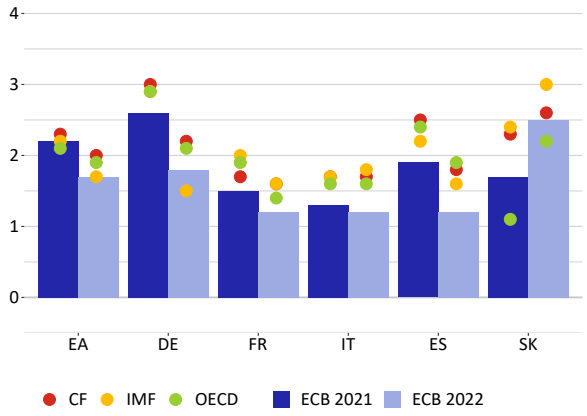
The restart of tourism during the summer months will cause Spain's economic situation to improve in 2021 Q3. However, a broader economic recovery will depend on a visible improvement in foreign trade. GDP growth for Q2 was revised down sharply in September, the revised figure implying quarter-on-quarter growth of just 1.1% (the same as in France, but less than in Germany and Italy) instead of the initially announced 2.8%. The revision was largely due to the services sector, which was hit hardest by the anti-pandemic measures. The external sector contributed negatively to the overall growth in Q2, as imports grew faster than exports. Investment simultaneously declined quarter on quarter. By contrast, household and government consumption rose. However, the household and corporate sectors will both be adversely affected by growth in costs, especially the recent surge in energy prices. Producer prices grew by almost a fifth year on year in August and consumer price inflation also accelerated, reaching 4% in September. Unlike in many other euro area economies, growth in industrial production remained positive in August. Spanish industry has thus been performing well so far. However, it has not been spared delays in material and component supplies and rising input prices.

The CF analysts revised Spanish economic growth in 2021 significantly downwards and slightly raised that in 2022. GDP growth will be 5.6% this year and accelerate to 6.1% next year, with some analysts predicting growth of as much as 7%. Household consumption is expected to rise sharply. The inflation outlook for both this year and the next is higher, at 2.5% and 1.8% respectively. However, the Spanish central bank expects lower rates of consumer price inflation in its forecasts.

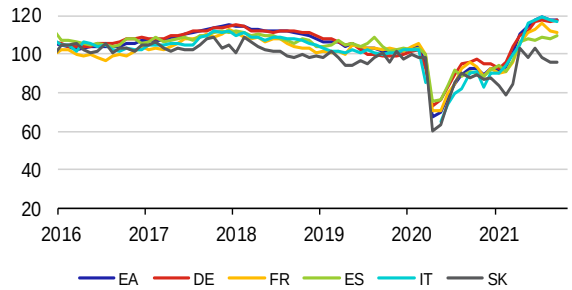
GDP growth in selected euro area countries in 2021 and 2022, %



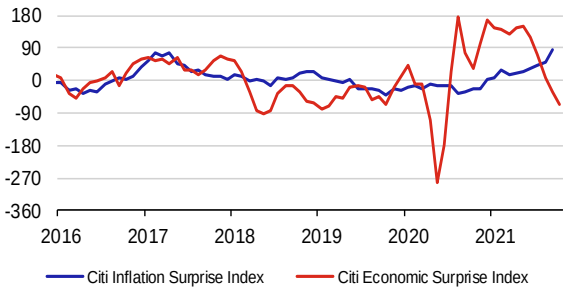
Inflation in selected euro area countries in 2021 and 2022, %



ESI leading indicators



Economic and inflation surprises in the euro area, %



	EA	DE	FR	ES	IT	SK
7/21	119.0	117.5	116.4	108.9	119.6	97.9
8/21	117.6	117.2	112.4	107.7	117.7	95.8
9/21	117.8	118.0	111.1	109.4	116.8	96.2

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

	5y5y	SPF
8/21	1.68	1.82
9/21	1.75	1.82
10/21	1.82	n.a.

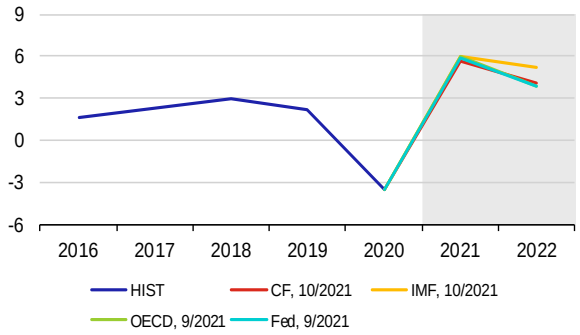
II.3 United States

The US economic recovery is being slowed by a lack of logistics capacity. Sea transport problems are affecting the whole world. Huge demand for transport of raw materials and goods after economies have reopened is not only causing transport prices to rise, but is also putting great pressure on logistics centres, particularly ports. Data show that the situation is worst in the port of Los Angeles, which has had to start working around the clock. President Biden's call on logistics firms to raise their capacity confirmed the seriousness of the situation. In addition to logistics, the White House is looking for ways to change its ambitious draft rescue plan so that it passes through Congress.

The new CF outlook forecasts real GDP growth of 5.7% this year, which is again lower than a month ago. The latest IMF and OECD outlooks, as well as the projection of the US Fed, are more optimistic about US economic growth. All have been revised downwards but still predict growth of 6% and 5.9% respectively this year. The outlooks for next year differ more. The Fed's new forecast of 3.8% growth is the most pessimistic, while the IMF outlook of 5.2% is the most optimistic. The September data on new jobs (194,000) were lower than expected again, but unemployment fell by 0.4 pp to 4.8% and employment rose by 0.2 pp. Wages rose by 9.5% in August. Leading indicators still imply optimism, as the services PMI remains in the expansion band (54.9) and the industrial PMI is even slightly higher (60.7).

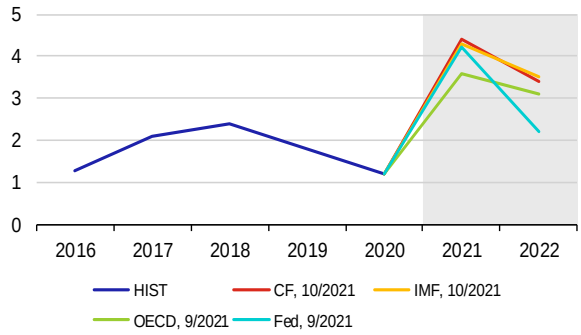
Inflation in the USA remains high, while the views expressed at the Fed's September meeting turned more hawkish again. Consumer price inflation grew by 5.4% year on year in August, driven by growth in prices of food (4.6%), services (2.9%) and especially energy (24.8%). Rapid growth was also recorded for industrial producer prices (8.6%), particularly those of finished products (11.7 %). The CF outlook for both this year and the next was revised upwards again. The highest growth figure for this year (4.4%) is predicted by the CF analysts, while the lowest (3.6%) is expected by the OECD. The outlooks for next year expect consumer price inflation of 2.2%–3.5%.

GDP growth, %



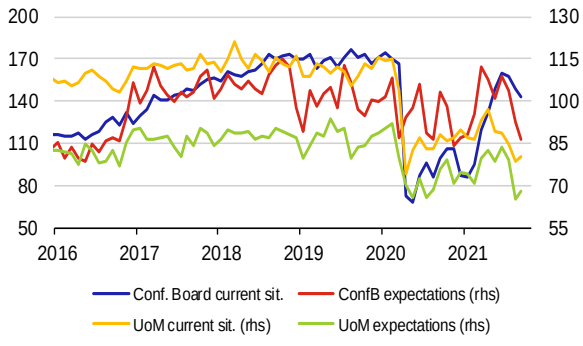
	CF	IMF	OECD	Fed
2021	5.7	6.0	6.0	5.9
2022	4.1	5.2	3.9	3.8

Inflation, %



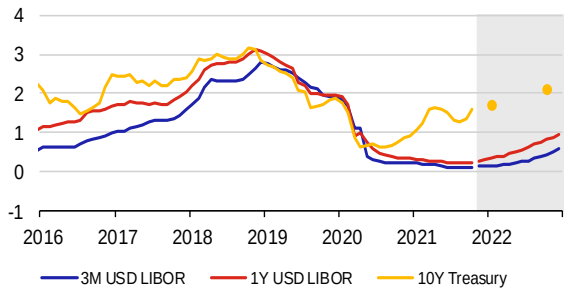
	CF	IMF	OECD	Fed
2021	4.4	4.3	3.6	4.2
2022	3.4	3.5	3.1	2.2

Leading indicators



	ConfB curr.	ConfB exp.	UoM curr.	UoM exp.
7/21	157.2	103.8	84.5	79.0
8/21	148.9	92.8	78.5	65.1
9/21	143.4	86.6	80.1	68.1

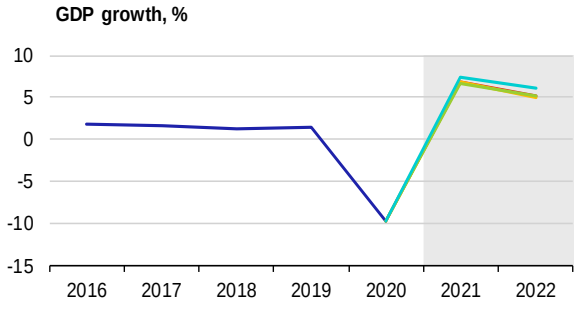
Interest Rates, %



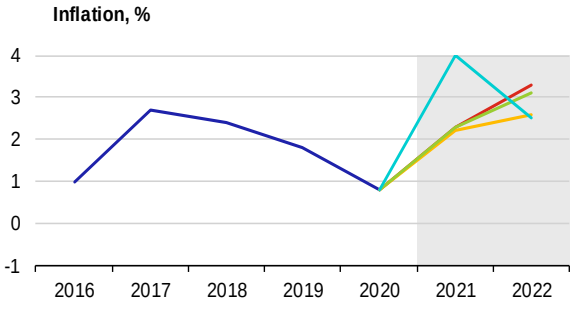
	9/21	10/21	1/22	10/22
USD LIBOR 3M	0.12	0.12	0.16	0.45
USD LIBOR 1R	0.23	0.23	0.34	0.83
Treasury 10R	1.37	1.61	1.70	2.10

II.4 United Kingdom

The post-Brexit UK-EU relationship is worsening and a trade war is looming due to London's demands for major changes to the Northern Ireland Protocol. Moreover, the UK is facing a huge shortage of drivers, which is strongly affecting the economy: from problems with supplies at filling stations to empty shelves in supermarkets and higher prices of goods. Despite the situation in the country and strong inflation pressures, the BoE kept its key interest rate at 0.1% and the amount of QE at GBP 895 billion in September. However, Governor Andrew Bailey emphasised that the BoE is ready to raise the interest rate by the end of 2021 if necessary to contain the persisting higher inflation, which is mainly a result of rising prices of energy and goods. Prime Minister Boris Johnson is presenting the post-Brexit and post-pandemic turmoil as a chance to reset the UK economy. GDP growth is now predicted (by CF, the IMF and the OECD) at just below 7% for 2021 and slightly above 5% for 2022. The composite PMI rose slightly to 54.9 in September but still implies weak growth in private sector activity, mainly due to serious supply chain disruptions.



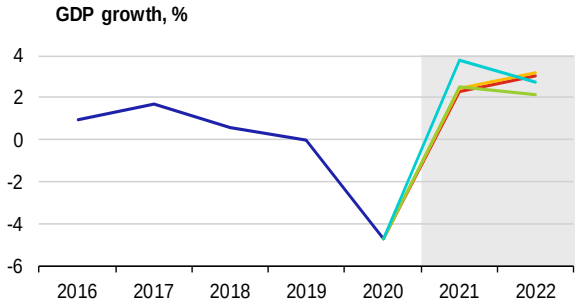
	CF	IMF	OECD	BoE
2021	6.9	6.8	6.7	7.3
2022	5.1	5.0	5.2	6.0



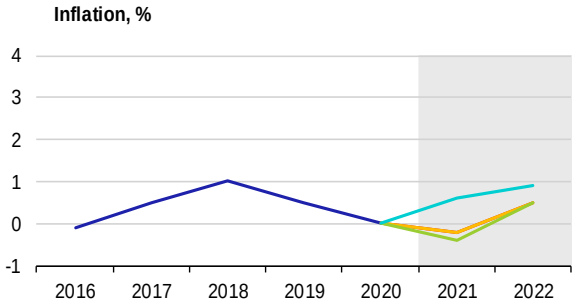
	CF	IMF	OECD	BoE
2021	2.3	2.2	2.3	4.0
2022	3.3	2.6	3.1	2.5

II.5 Japan

New prime minister Fumio Kishida is planning to change the course of Japanese economic policy by emphasising more inclusive growth and more equal wealth distribution. The ruling party is widely expected to win the elections at the end of October, but surveys have so far been indicating relatively low popularity of the new prime minister. The BoJ's Tankan survey showed a continued slight improvement in business sentiment in 2021 Q3. The percentage of engineering firms regarding business conditions as favourable even reached its highest level since 2018. Despite a slight improvement, sentiment in services and among smaller firms is still far below pre-pandemic levels. A gradual retreat of the pandemic from its high summer levels led to the state of emergency being lifted and government restrictions being eased. Global inflation pressures continue to affect producer prices only; consumer prices are still falling year on year.



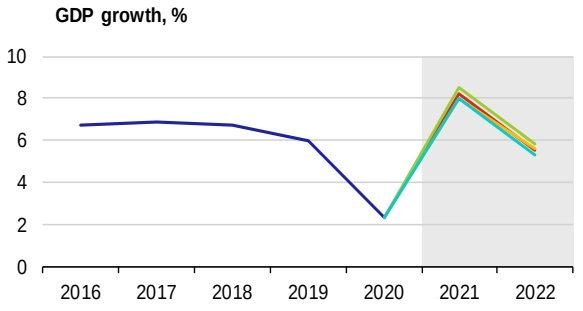
	CF	IMF	OECD	BoJ
2021	2.3	2.4	2.5	3.8
2022	3.0	3.2	2.1	2.7



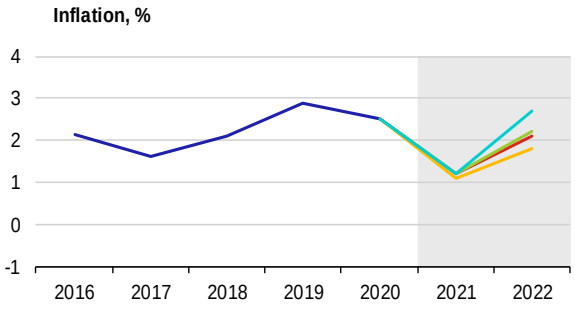
	CF	IMF	OECD	BoJ
2021	-0.2	-0.2	-0.4	0.6
2022	0.5	0.5	0.5	0.9

II.6 China

The growth of the Chinese economy slowed year on year from 7.9% to 4.9% in Q3 due to a longer-lasting adverse epidemic situation and shortages of key production inputs. The spread of the coronavirus Delta variant and strict quarantine measures, along with government regulatory measures restricting the business of some firms, are adversely affecting private consumption and investment. The global shortage of semiconductors and other parts is also slowing industrial production, which has been hit by a surge in energy commodity prices and power outages affecting millions of households and firms in recent weeks. This is reflected in annual producer price inflation, which reached its highest level since 2008 in August (9.5%). According to the CF analysts' October outlook, the Chinese economy will grow year on year by 8.2% in 2021 and 5.5% in 2022. Consumer price inflation will average 1.2% this year and accelerate to 2.1% next year.



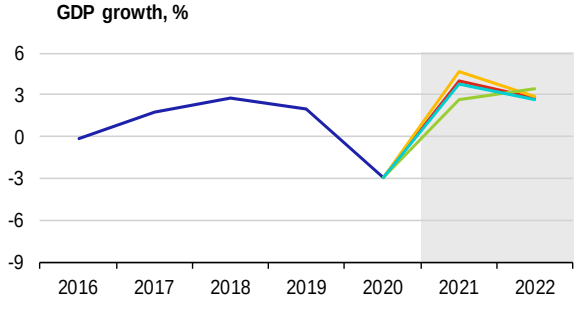
	CF	IMF	OECD	EIU
2021	8.2	8.0	8.5	8.0
2022	5.5	5.6	5.8	5.3



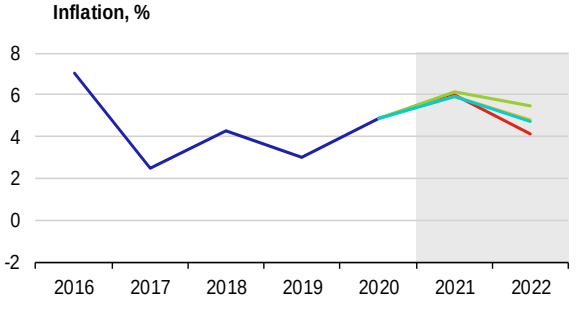
	CF	IMF	OECD	EIU
2021	1.2	1.1	1.2	1.2
2022	2.1	1.8	2.2	2.7

II.7 Russia

The Russian economy is benefiting from commodity market developments. Russia's current account ran a record-high surplus of USD 40.8 billion in Q3. The trade surplus has been regularly increasing since recording a marked drop at the start of 2020. The current acceleration is due to a surge in exports driven by oil, oil products and natural gas. Exports have grown in both amount and price. As a result, the trade surplus rose to USD 56.8 billion – comparable to the end-2018 level. The Russian currency has also received a boost. By the middle of the month, the rouble had appreciated to almost RUB 70/USD, its strongest level since July 2020. Moreover, it is being supported by expectations of another rate hike. The Ministry of Economic Development presented a new forecast in which it expects GDP growth of 4.2% this year and 3% in the next three years. According to this forecast, inflation will slow to 5.8% at the end of 2021 and return to the 4% target in the following years, despite having risen to 7.4% in September.



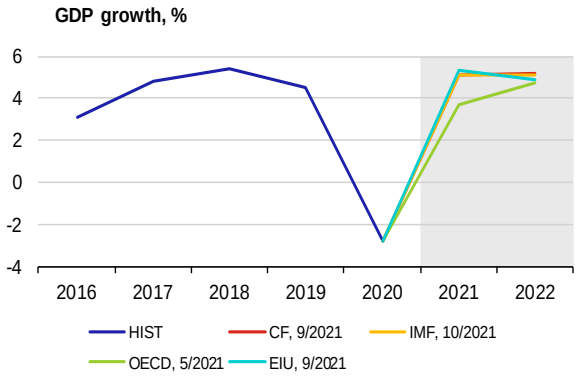
	CF	IMF	OECD	EIU
2021	4.0	4.7	2.7	3.8
2022	2.8	2.9	3.4	2.7



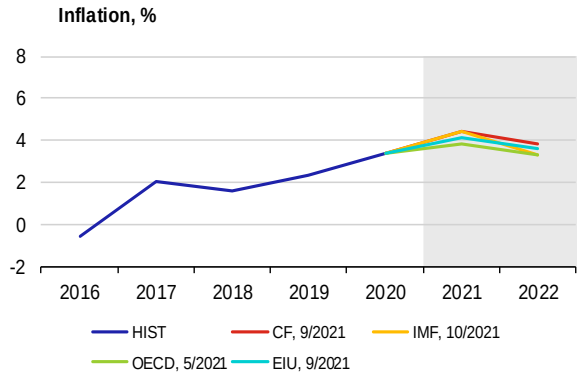
	CF	IMF	OECD	EIU
2021	6.0	5.9	6.1	5.9
2022	4.1	4.8	5.5	4.7

II.8 Poland

At its meeting on 6 October, the Monetary Policy Council of the Polish central bank decided to raise interest rates to 0.5%. According to a preliminary estimate, annual consumer price inflation accelerated further from 5.5% in August to a record 5.9% in September. In month-on-month terms, consumer prices rose by 0.7% in September (0.3% in August). This mainly reflected growth in energy prices, but was also due to an economic recovery in the form of growth in households' disposable income. Retail sales growth rose year on year to 10.7% in August (8.9% in July) on the back of a rally in sales in almost all segments (automotive, household equipment, textile, clothing and footwear). Industrial production also grew year on year in August (by 13.2%, as against 9.5% in July) as mining and quarrying returned to growth and manufacturing picked up. On the other hand, business confidence in the Polish economy in September was the worst since April 2021.



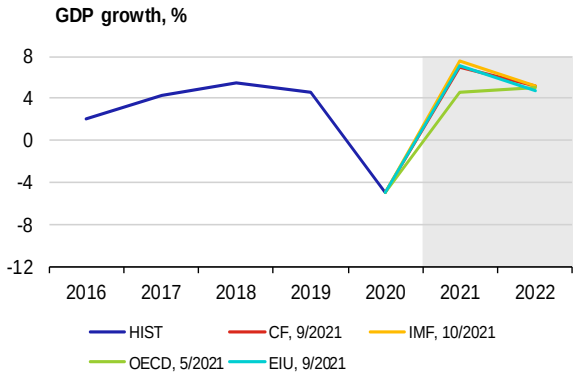
	CF	IMF	OECD	EIU
2021	5.1	5.1	3.7	5.3
2022	5.2	5.1	4.7	4.9



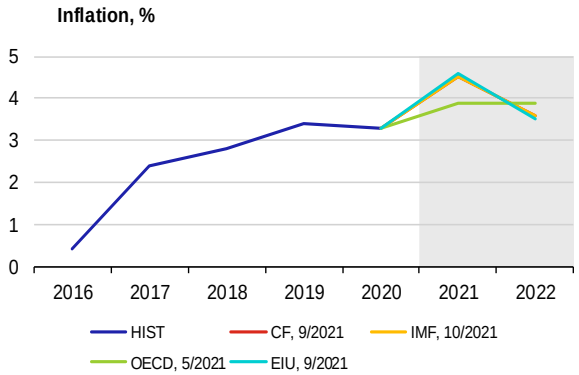
	CF	IMF	OECD	EIU
2021	4.4	4.4	3.8	4.1
2022	3.8	3.3	3.3	3.6

II.9 Hungary

At its meeting on 21 September, the Monetary Council of the Hungarian central bank (MNB) decided to raise the policy rate for the fourth consecutive time (from 1.50% to 1.65%). The continued aim of the MNB is to supress the persisting inflation pressures, re-anchor inflation expectations and reduce inflation risks amid a strong economic recovery and rapid growth in wages and core inflation (4.0% year on year in September). Annual consumer price inflation accelerated from 4.9% in August to 5.5% in September and was thus above the MNB's September forecast. According to GKI Economic Research, business confidence in the Hungarian economy has grown to its highest level since November 2019 (from 6.1 in August to 6.5). By contrast, according to a preliminary estimate, industrial production rose by just 0.6% year on year in August (10.2% in July), the worst result since January 2021.



	CF	IMF	OECD	EIU
2021	7.0	7.6	4.6	7.1
2022	5.1	5.1	5.0	4.7



	CF	IMF	OECD	EIU
2021	4.5	4.5	3.9	4.6
2022	3.6	3.6	3.9	3.5

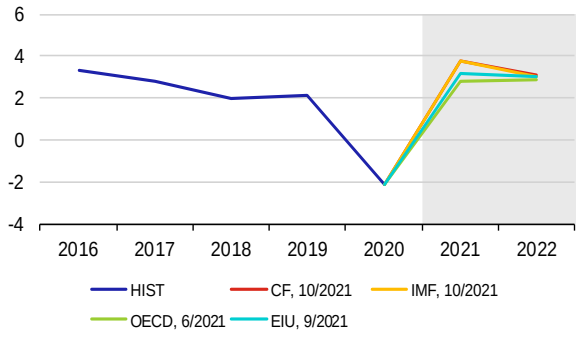
II.10 Denmark

The Danish government lifted most of its anti-epidemic measures in September due to high vaccination coverage. At the same time, though, it declared its readiness to intervene quickly if the situation were to worsen significantly. Life in Denmark and its economy is thus returning to normal relatively quickly. The Danish economy didn't perform badly in 2020 either, contracting by just 2.1%, although the share of services exceeds 75%. In 2021 Q2, it grew by 9.8% year on year, the fastest pace since 1992. The quarter-on-quarter growth was also high at almost 3%. The Danish economy has thus returned to its pre-pandemic level and is expected to grow by 3%–4% this year and the next. The consumer and business confidence indices are similarly positive.

Consumer price inflation has long been low and stable. Inflation was 0.8% in 2019 and 0.3% in 2020 and is expected to be relatively low at around 1.5% in 2021 and beyond. However, growth in costs is also apparent in the Danish economy due to the impacts of the receding pandemic, although, given the structure of the economy, the contribution of these factors is not very significant. Annual consumer price inflation accelerated from 1.8% in August to 2.2% in September. This was due largely to growth in energy prices. Prices of housing and services, transport and food rose more quickly as well. Prices in restaurants and hotels also went up as a result of the lifting of anti-epidemic measures. The growth in inflation pressures was also linked with higher employment, which boosted household consumption expenditure.

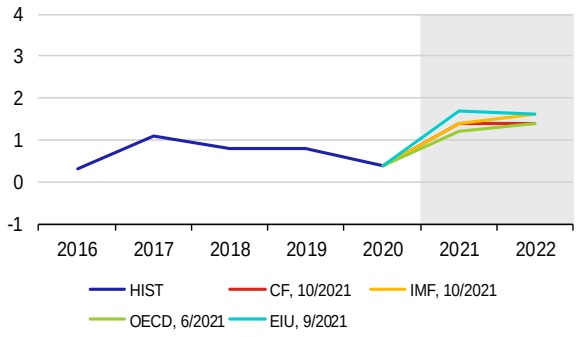
The monetary policy of the Danish central bank (DNB) is aimed at keeping the currency stable against the euro. To stop the Danish krone firming due to strong investor demand, the DNB introduced negative interest rates in 2012 and has maintained this stance ever since. The current key rate is -0.6%, which is keeping mortgage rates and government bond yields at record lows. This policy is contributing significantly to household demand for home ownership and thus fostering high growth in house prices, which have been rising constantly for several years now and are currently at record levels.

GDP growth, %



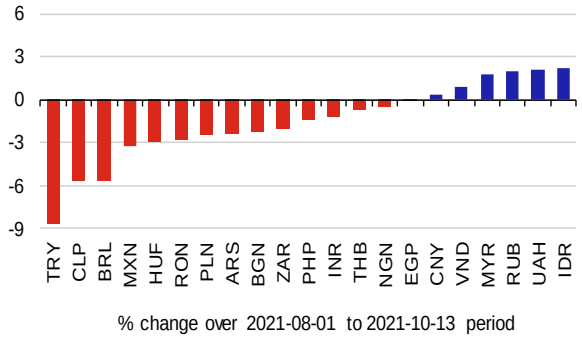
	CF	IMF	OECD	EIU
2021	3.8	3.8	2.8	3.2
2022	3.1	3.0	2.9	3.0

Inflation, %



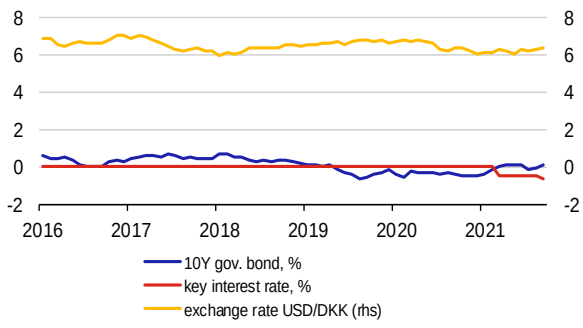
	CF	IMF	OECD	EIU
2021	1.4	1.4	1.2	1.7
2022	1.4	1.6	1.4	1.6

Currency performance vis-à-vis USD



% change over 2021-08-01 to 2021-10-13 period

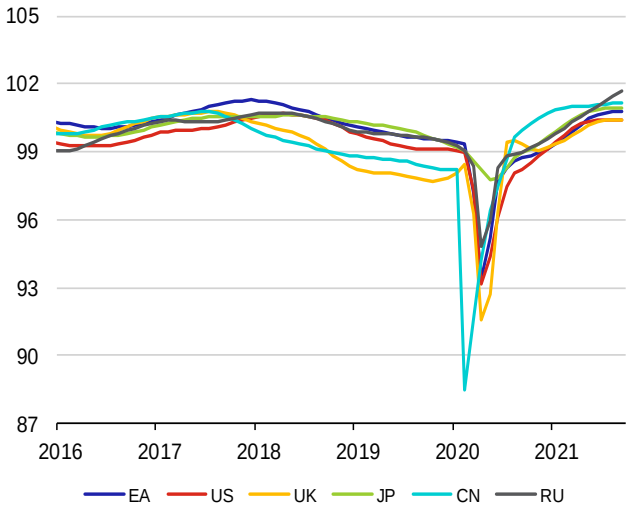
Selected indicators



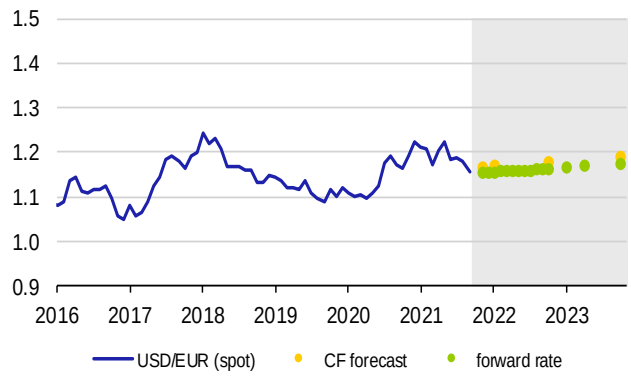
	10Y gov. bond, %	interest rate, %	USD/DKK
7/2021	-0.14	-0.50	6.27
8/2021	-0.07	-0.50	6.30
9/2021	0.10	-0.60	6.42

III. Leading indicators and outlook of exchange rates

OECD Composite Leading Indicator

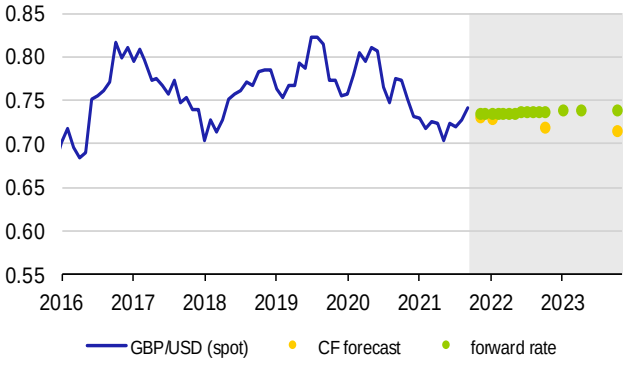


The US dollar (USD/EUR)



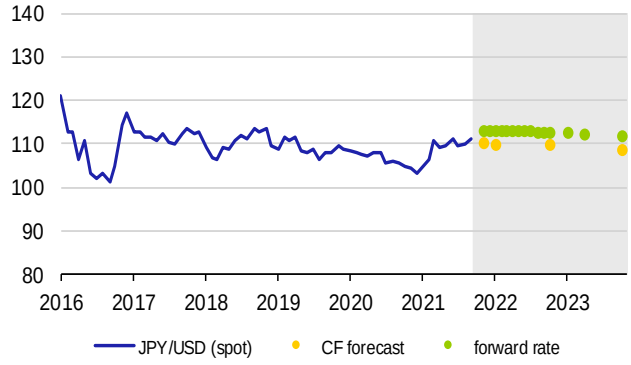
	11/10/21	11/21	1/22	10/22	10/23
spot rate	1.157				
CF forecast		1.170	1.172	1.181	1.192
forward rate		1.156	1.158	1.165	1.178

The British pound (GBP/USD)



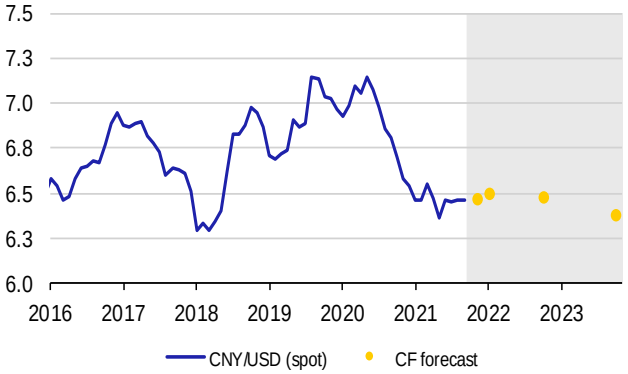
	11/10/21	11/21	1/22	10/22	10/23
spot rate	0.734				
CF forecast		0.731	0.729	0.720	0.716
forward rate		0.736	0.735	0.738	0.740

The Japanese yen (JPY/USD)



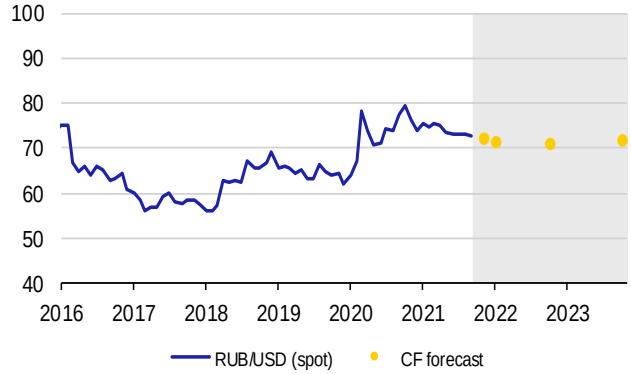
	11/10/21	11/21	1/22	10/22	10/23
spot rate	113.3				
CF forecast		110.2	110.1	110.0	108.8
forward rate		113.3	113.2	112.8	111.8

The Chinese renminbi (CNY/USD)



	11/10/21	11/21	1/22	10/22	10/23
spot rate	6.438				
CF forecast		6.474	6.506	6.479	6.383

The Russian rouble (RUB/USD)



	11/10/21	11/21	1/22	10/22	10/23
spot rate	71.69				
CF forecast		72.18	71.67	71.19	72.12

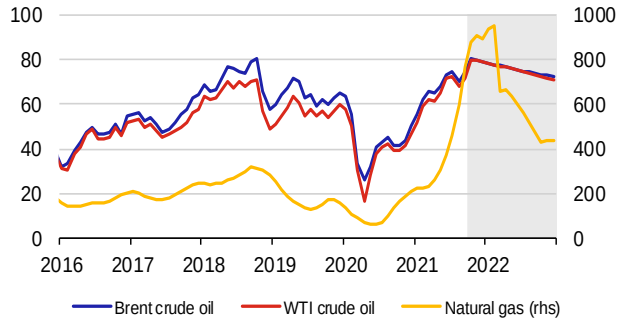
Note: Exchange rates as of last day of month. Forward rate does not represent outlook; it is based on covered interest parity, i.e. currency of country with higher interest rate is depreciating. Forward rate represents current (as of cut-off date) possibility of hedging future exchange rate.

IV.1 Oil

The Brent crude oil price began to surge again in the second half of September, nearing USD 85/bbl in mid-October, due to expected growth in demand for oil amid still limited OPEC+ output. The recovery of Asian economies from the pandemic and unexpectedly long production outages in the Gulf of Mexico after Hurricane Ida (totalling 35 million barrels) have increased tensions on the oil market. Subsequently, the natural gas price surge in Europe and Asia has created extra demand for oil, whose products may partly substitute gas in electricity and heat generation, especially in Asia. In early October, however, OPEC+ confirmed its original plan to raise output by 400,000 barrels a day every month, even though this plan had been formulated when oil market tensions were much lower. Purchases by China, where the government has ordered state-run power stations to secure supplies of energy commodities regardless of cost, are also pushing the oil price up. Demand from India is rising as well. A firming dollar prevented an even larger rise in oil prices in September. The oil market situation may worsen further in the winter if the weather in the northern hemisphere is colder than usual.

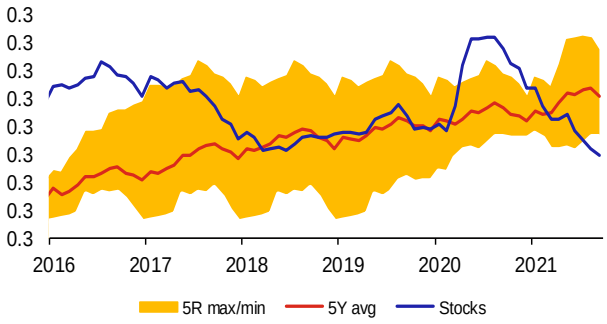
The EIA has revised its Brent crude oil price outlook for this quarter and the next markedly up (by about USD 10/bbl to USD 81/bbl and USD 78/bbl respectively) due to a faster fall in global inventories than it expected a month ago. In 2022, the EIA expects that growth in production from OPEC+, US tight oil and other countries will outpace slowing growth in oil demand and the Brent price will decline to an average of USD 72/bbl (USD 66/bbl in December 2022). The market curve in early October is signalling a somewhat weaker drop in prices (to around USD 72/bbl at the end of next year). The October CF forecast of USD 70.6/bbl one year ahead is roughly in the middle of the above outlooks.

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

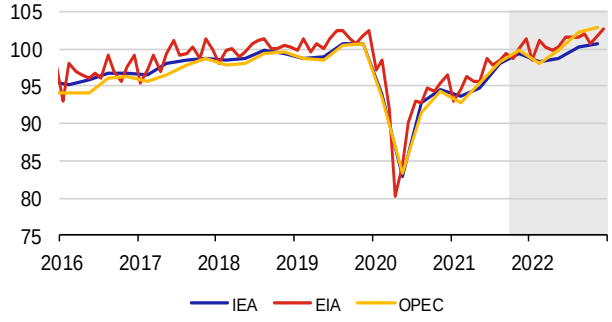


	Brent	WTI	Natural gas
2021	70.84	68.51	511.63
2022	75.30	74.79	610.68

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

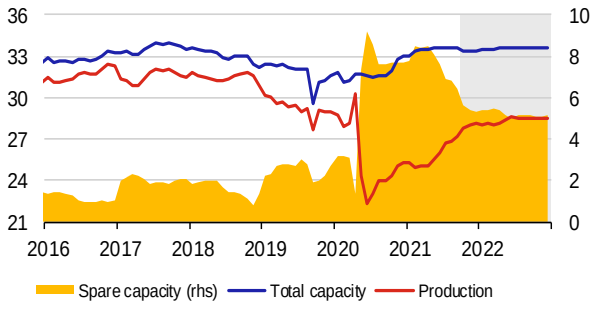


Global consumption of oil and oil products (mil. barrel / day)



	IEA	EIA	OPEC
2021	96.43	97.46	96.57
2022	99.45	100.96	100.73

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



	Production	Total capacity	Spare capacity
2021	26.36	33.46	7.11
2022	28.36	33.57	5.21

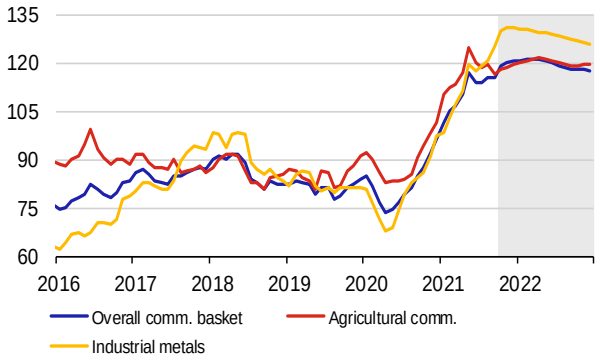
Source: Bloomberg, IEA, EIA, OPEC, CNB calculation
Note: Oil price at ICE, average gas price in Europe – World Bank data, smoothed by the HP filter. Future oil prices (grey area) are derived from futures and future gas prices are derived from oil prices using model. Total oil stocks (commercial and strategic)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

IV.2 Other commodities

Growth in prices of other energy commodities accelerated further in late September. Gas and coal prices reached new all-time highs in early October but fell back slightly by the middle of the month. The average price of natural gas in Europe rose by a further 48% month on month in September due to still well below-average inventories and strong demand, driven by record prices of emission allowances. LNG supplies are still heading mainly to Asia, where demand is also strong and prices have long been higher. Russian President Putin has promised to ease the gas shortage in Europe, but supplies are unlikely to grow until the Nord Stream II pipeline is launched. **The coal price rose by 20%** month on month in September and a further 36% in the first half of October. This was driven by strong demand from China, where power stations have low stocks as a result of previous weak hydroelectric generation due to drought and the wind-down of Chinese coal production. The global coal shortage was also caused by production shortfalls in its main exporters (Australia and Indonesia) due to bad weather. The high energy commodity prices are pushing electricity prices up in many countries.

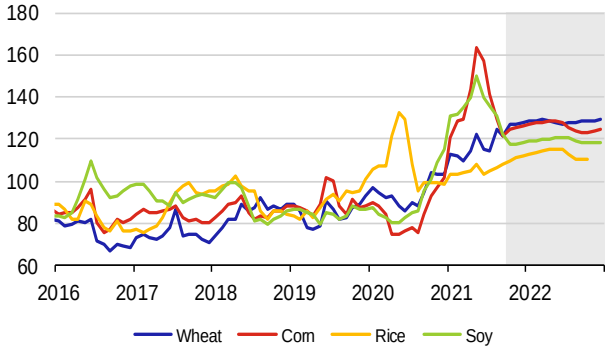
The average monthly non-energy commodity price index was almost flat in September but started to rise again in the first half of October. Growth in the base metals price sub-index was offset by a drop in the food commodity price sub-index in September, but prices of food commodities (mainly wheat, rice, sugar, coffee, cocoa and beef) began to creep up again in mid-October. In the base metals price sub-index, the price of aluminium continues to rise strongly due to weak production in China. The price of copper fell slightly in September but remains close to its May high, partly due to a further drop in stocks on the LME, testifying to still strong fundamentals. The price of iron ore has been falling sharply since August owing to a strengthening decline in steel production in China (due to reduced electricity supplies to steelworks).

Non-energy commodities price indicies



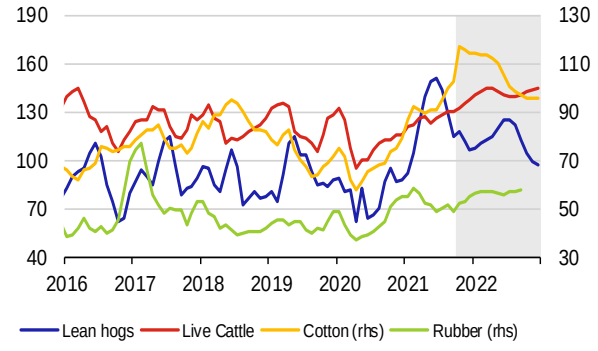
	Overall	Agricultural	Industrial
2021	113.3	117.3	117.7
2022	119.4	120.2	128.5

Food commodities



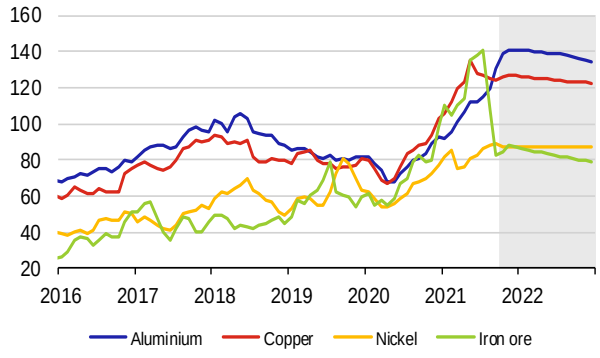
	Wheat	Corn	Rice	Soy
2021	119.0	134.3	106.7	130.8
2022	128.5	125.9	113.0	119.4

Meat, non-food agricultural commodities



	Lean hogs	Live Cattle	Cotton	Rubber
2021	123.3	128.0	98.7	52.6
2022	112.5	142.0	104.3	56.8

Basic metals and iron ore



	Aluminium	Copper	Nickel	Iron ore
2021	116.9	123.3	83.8	108.7
2022	138.1	124.1	87.3	82.5

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.

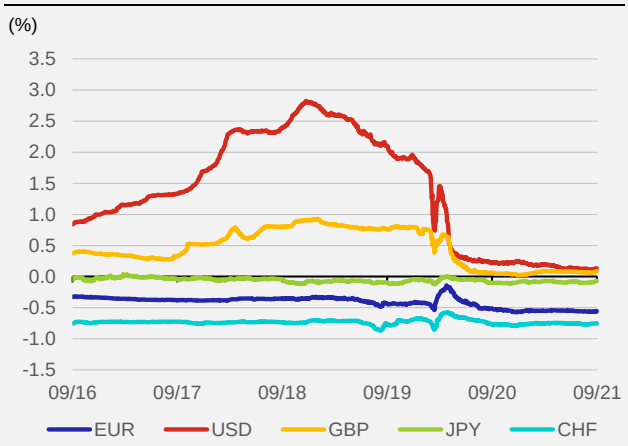
The end of the LIBOR era in financial markets: What lies ahead?[1]

Interest rates in the unsecured interbank market,[2] known as IBORs (interbank offered rates), have been in use for more than four decades. They are used in financial markets as reference rates for a wide range of financial instruments and related derivatives. However, cases of manipulation by some banks have greatly damaged their reputation. As a result, several reference rates have been reformed and plans have been introduced to wind down unreformed ones. As some important rates are set to end at the close of this year, this article summarises the current situation and the future of reference rates in financial markets.

The importance of reference rates

Along with the central bank's policy rate, the reference rate is one of the key pieces of information on the price of money in the financial markets. From a theoretical perspective is its level determined by the policy rate (set by the central bank) plus a money market premium.[3] Reference rates (sometimes also referred to as benchmark rates) form the basis for the pricing of financial products and related derivatives. Reference rates should reflect the situation across the financial market, so independence, the market principle and universality are key. Hence, the rates are calculated by an independent entity, they should reflect real funding costs in various markets, and such information is useful to all economic agents. Reference rates can be used in many ways. For example, banks can use them when quoting lending rates; this is transparent to borrowers as well. In addition, reference rates are used in more complex financial transactions and in pricing derivatives. Finally, the benchmark rate is a source of information for the central bank when deciding on monetary policy. The rate should on the one hand respond to monetary policy decisions while at the same time providing information on how easy or difficult it is for banks to obtain funds on the interbank market, i.e. what the costs of financing businesses and consumers are.

Chart 1 – 3M LIBOR reference rates



Source: Federal Reserve Bank of St. Louis
Note: 3M LIBOR for the given currencies.

Provided that they are undistorted and credible, reference rates provide useful and reliable information. If a reference rate is truly independent, its use in contracts is beneficial to both parties, as neither party can affect its value. Therefore, the methodology for calculating the rate is firmly fixed and the reference rate is publicly known.

Up to now, IBORs have been used as reference rates. However, these rates were usually calculated not on the basis of actual transactions but by choosing a select group of banks (i.e. not all market players) and asking each of them to estimate how much it would cost to borrow from the others[4]. The calculation method, which excludes the highest and lowest price from these estimates and then calculates the average of the rest, made it possible for banks to influence the rate. This practice made the headlines in 2008 (Mollenkamp, 2008). The most important and most frequently used rate in many currencies, was the London Interbank Offered Rate (LIBOR), especially the three-month tenor (see Chart 1)[5].

As well as derivatives, variable rate mortgages are linked to IBORs. This link gave rise to a large number of non-performing loans associated with the 2008 financial crisis. Another shortcoming of IBORs also became fully apparent during this crisis – their unsecured nature. In turbulent times, there was zero willingness to lend without collateral and this market was replaced by secured financial operations. The value of IBORs was only virtual and did not capture the reality of the market situation.

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[1] Author: Petr Polák. The views expressed in this article are those of the author and do not necessarily reflect the official position of the Czech National Bank. The author would like to thank Luboš Komárek, Martin Kábrt, Petr Frydrych, Ivana Matalíková and Ondřej Strádal for their valuable comments and suggestions.

[2] An unsecured money market is a market where financial institutions exchange short-term liquidity without the use of collateral. It includes not only "IBORs" segment, but also "ONIAs" which is the overnight segment.

[3] The rate set by the central bank usually forms the floor for IBOR rates. The reason for lower rates could be for example the excess of liquidity on markets or expectations about future cut of key rates by the central bank. In the Europe, there is paradoxically the key rate set by central bank higher than the interbank rates on financial markets.

[4] The calculation method is available at https://www.theice.com/publicdocs/ICE_LIBOR_Methodology.pdf

[5] Within Europe, the 3M EURIBOR is used more often than 3M EUR LIBOR and these two rates differ.

Rate manipulation and reform

The interest rate at which one bank is willing to lend to another reflects the borrower bank's soundness (liquidity and solvency). As the building blocks of the financial market, banks provide loans, that is, they organise funding for firms and individuals (households). To do so, they either use client deposits or borrow among themselves on the interbank market. Since financial institutions are obliged to act in a credible manner (as they primarily manage the funds of others), in the past the situation on the money market differed from the situation indicated by the declared rates. In particular, there was an undershooting of the offered rate, resulting in a reduction of the IBOR (Hou and Skeie, 2014).

An even bigger problem was that banks are also involved in setting IBORs and their own balance sheet positions are linked to them. This creates a moral hazard problem, as banks can make a profit using financial instruments, because the declared rate has a direct effect on their portfolios. For example, if a bank has interest rate swaps[6] in its portfolio where it pays fixed and receives floating (for example, to eliminate the interest rate risk on its mortgage portfolio), reducing the IBOR reduces its interest income and raising the IBOR increases it.

This system made the manipulation of rates possible. The discovered cases led to several scandals, after which the rates[7] had to be reformed to restore their credibility and signalling value. It is important to enhance that the banks communicated with each other and reported fraudulent numbers by purpose to the rate administrator and the banking supervision did not notice it. The key principle is that the new rates should be based not on estimates but on actual transactions. However, there is a problem with this: IBORs are, by definition, interbank market rates of unsecured deposits, but in reality there are not many actual interbank transactions, and there are even fewer transactions for calculating rates with various tenors. The solution is to extend the IBOR calculation base to more than just interbank transactions.

A benchmark reform was also recommended by the Financial Stability Board. An important aspect of this reform is to ensure the stability of capital market financing of the corporate sector. To this end, a benchmark regulation (BMR) was created under EU law which sets out rules for benchmark providers so as to ensure consistency and accuracy across the EU. The methods used to calculate the vast majority of IBORs have been changed so that they comply with the BMR and can continue to be used.

New reference rates

LIBOR rates are coming to an end because the current administrator, the ICE Benchmark Administration (IBA), has announced that it will not compel or persuade the banks on the LIBOR survey panel to submit the estimates needed to calculate the current reference rates after the end of 2021. With this decision, it is seeking to accelerate the transition to new alternative reference rates. The quotation of all rates for sterling, the Japanese yen, the Swiss franc and the euro and some US dollar tenors will cease at the end of 2021. In order to extend the transitional period, one-, three- and six-month rates will still be published in 2022 for the Japanese yen and sterling. However, these quotations will only apply to legacy contracts, not new business (FCA, 2021).

However, not all LIBOR rates will be wound up at the end of 2021. In certain cases, only some tenors are to end. For example, the one-week and two-month USD LIBOR settings will stop at the end of 2021. The one-year USD LIBOR will end in mid-2023, when the one-, three- and six-month settings will also cease to be representative. The well-known 3M USD LIBOR is also affected. It will be quoted until the middle of 2023, when it will cease to be representative. The question is, of course, how long it will take the financial markets to switch over fully to the new rates.

A large number of IBORs are continuing after having been reformed in recent years. Although new reference rates have emerged in many countries, the original IBORs have been maintained alongside them (for example, in Denmark, Norway, Sweden, Canada, Brazil and Russia).[8] The co-existence of the two rates allows for a smoother transition and increases stability. The main reason for maintaining IBORs is the need for financial markets to have a forward rate, as discussed below. However, this need limits the further development of overnight rates.

A new €STR benchmark is to replace the EONIA and EUR LIBOR European reference rates used up to now. After the UK FCA declared it would no longer require quotations for LIBOR rates, working groups were set up to create and publish new reference rates. While the working groups for other currencies tried to base these rates on existing risk-free rates, the euro working group declined to use the Euro Over Night Index Average (EONIA) because this rate was not

[6] An interest rate swap is an agreement to exchange cash flows denominated in a single currency which are derived from a fixed or floating rate. Party A undertakes to pay Party B the agreed fixed interest rate on the agreed principal for an agreed period on an agreed maturity date and Party B simultaneously undertakes to pay Party A an agreed variable interest rate on the agreed principal for the agreed period on the agreed maturity date.

[7] The best-known example is the large-scale manipulation of the London LIBOR, for which the courts imposed heavy fines on banks in 2012 (see, for example, https://www.bbc.com/news/business-20767984). According to the European Commission, the EURIBOR was manipulated at the very least between 2005 and 2008, for which it imposed high fines several years later (European Commission, 2013). The manipulation of EURIBOR also had an impact on end customers – see Rodríguez-López et al. (2021).

[8] For an overview see, for example, https://www.theia.org/sites/default/files/2020-09/20200924-iborsandarrstable.pdf and https://think.ing.com/articles/libor-report-global-ibor-overview/

compliant with the European BMR. A new rate, the Euro Short-Term Rate (€STR), was created. The €STR, developed by the ECB in 2017, is designed to capture how much a bank has to pay when borrowing money overnight from various financial counterparties without providing collateral. The counterparties may be banks, money market funds, investment and pension funds and other financial actors, including central banks. What this means in practice is that the €STR has a broader scope than the EONIA and the EUR LIBOR, as the latter are based solely on interbank transactions and voluntary reporting. This broader scope protects against manipulation, allowing the €STR to reliably reflect the price at which unsecured money is lent throughout the euro area. At the same time, unlike the EONIA rate, the €STR is calculated from transaction data which banks must report in compliance with the Money Market Statistical Reporting Regulation, i.e. in compliance with the BMR.

A big difference between the original benchmarks and the new alternative reference rates is the time perspective. The essence of the interbank IBORs was their forward-looking nature – it was clear in advance what the rate was and thus that the rates also included credit risk. This cannot be the case with the alternative rates, as they are calculated retrospectively on the basis of completed overnight transactions and thus with a considerable lag. However, this also gives rise to uncertainty for parties to transactions that include these rates, as it is not clear in advance what the rate will be. The new rates, which are calculated using overnight transactions, are a better estimate of the risk-free rate, as the overnight tenor limits counterparty credit risk.

Table 1 – Overview of selected alternative reference rates and IBORs.

(units)

Currency	IBOR	IBOR administrator	ARR	ARR administrator	Type
EUR	EURO Interbank Offered Rate (EURIBOR), LIBOR	European Money Markets Institute (EMMI), IBA	Euro Short term rate (€STR)	European Central bank	Unsecured
USD	LIBOR	IBA	Secured Overnight Financing Rate (SOFR)	Federal Reserve Bank of New York (NY Fed)	Secured
GBP	LIBOR	IBA	Sterling Overnight Index Average (SONIA)	Bank of England	Unsecured
JPY	Tokyo Interbank Offered Rate (TIBOR)	Japanese Bankers Association TIBOR JBATA	Tokyo Overnight Average Rate (TONA)	Bank of Japan	Unsecured
CHF	London Interbank Offered Rate (LIBOR)	ICE Benchmark Administration (IBA)	Swiss Average Rate Overnight (SARON)	SIX Swiss Exchange	Secured
CAD	Canadian Dollar Offered Rate (CDOR)	Refinitiv	Canadian Overnight Repo Rate Average (CORRA)	Bank of Canada	Secured
AUD	Bank Bill Swap Rate (BBSW)	Australian Securities Exchange (ASX)	Reserve Bank of Australia Interbank Overnight Cash Rate (AONIA)	Reserve Bank of Australia (RBA)	Unsecured

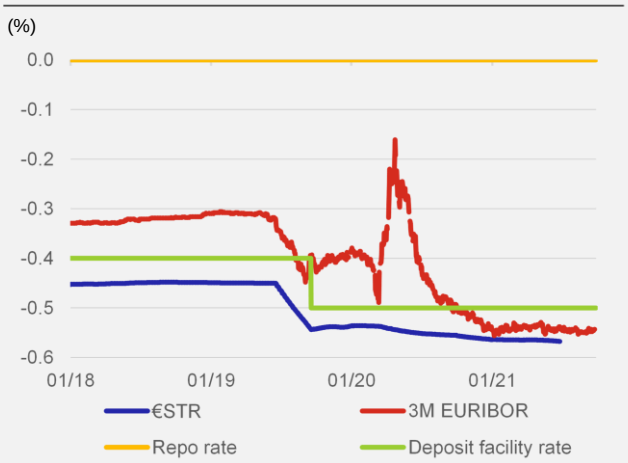
Source: Author
Note: ARR = alternative reference rate

The transition to the new rates therefore differs across currencies and jurisdictions; in some cases, there has been a transition to secured rates. The administrator chooses between a rate based on secured or unsecured transactions,

depending on the market (see Table 1). Secured risk-free rates are based on transactions which are asset-backed by the securities. Unsecured rates therefore involve a slightly higher transaction risk due to the lack of security. The benchmark reform is intended to save the unsecured rates market after it was greatly weakened during the 2008 financial crisis. As part of the reform focuses on the calculation of reference rates on completed transactions, the rates for the US dollar and the Swiss franc, for example, are calculated from secured transactions, taking into account the depth of the market.

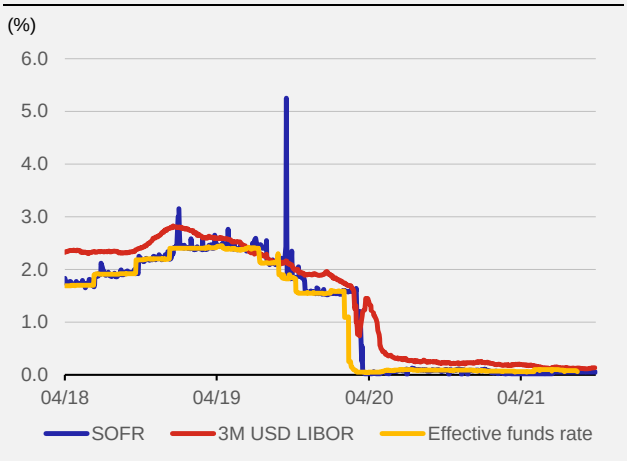
The change in rates has an impact on all financial institutions, as the rates are used for accounting purposes. According to the IFRS and AIS international financial reporting rules, future cash flows should be taken into account, especially in the calculation of provisions and the fair value measurement of balance sheet items. Reference rates are often used for discounting. Institutions are thus obliged to use these rates for accounting purposes even if they do not have any instruments directly based on or derived from IBORs in their balance sheets. The fact that the rates are being changed must be suitably reflected both in one-off repricing and in future reporting (PwC, 2018).

Chart 2 – History of key rates for EUR



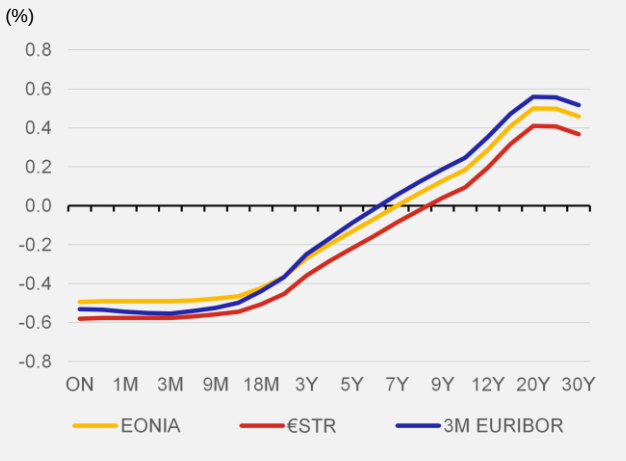
Source: Bloomberg

Chart 3 – History of key rates for USD



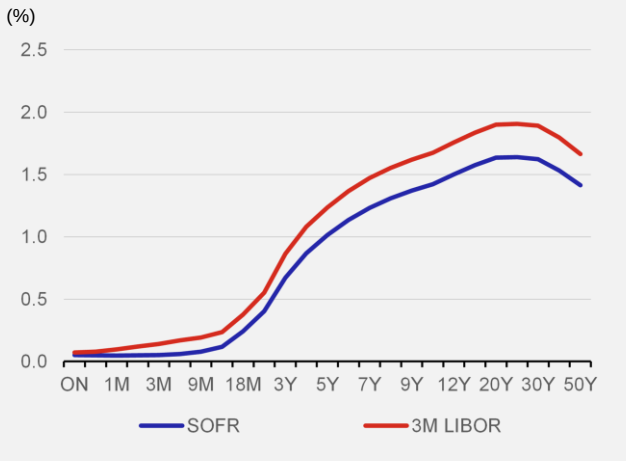
Source: Federal Reserve Bank of St. Louis

Chart 4 – Outlook for key rates for EUR



Source: Refinitiv

Chart 5 – Outlook for key rates for USD



Source: Refinitiv

Charts 2 and 3 capture the histories of key rates for the euro and the US dollar, while Charts 4 and 5 show the outlooks for key rates. The new reference rates, which are also very short, are very close to the rate announced by the central bank, which usually forms the floor for very short (overnight) rates[9]. The chart also shows how big the risk and liquidity premium is between overnight and three-month rates. The volatility of these rates is lower than that for rates with longer tenors.

An instant change is not possible given the existing contracts, and a rapid switch would destabilise the financial markets. The transition to the new rates was announced in advance and subsequently extended. As part of the reform, some tenors of the original benchmarks were also extended. At the same time, fallback rates are being introduced for contracts that will continue to apply after these rates cease to be quoted. These fallback rates are also being included in

[9] The exemption is the situation in the Europe, where the key interest rate of the ECB is 1 week repo rate.

new financial contracts. This involves a simplified calculation based on the historical relationship between the new and the original rates (spread).[10] Because the original IBORs have their own time structure (for example, three months), whereas the new benchmarks are based on overnight transactions, there is a need to create a comparable rate using a compounded adjusted reference rate (ARR). ARR is created with the help of interest rate swap indices, which add the tenor dimension to the overnight reference rates. The fallback rates will therefore equal the sum of the spread and the ARR. Like the underlying alternative benchmarks, fallbacks will be available with a lag, i.e. not in advance, but when the contract expires.

"Fallback language" is gradually being incorporated into financial contracts. Since the cessation of LIBOR rates was announced, market participants have been encouraged to check the extent to which their contracts are covered against the abolition of benchmarks. Fallback rates are important for a smooth transition and for financial market stability. Due to the high use of some LIBORs, these rates will also be calculated in 2022, but they can only be used for legacy contracts. Fallback rates are also based on 2020 International Swaps and Derivatives Association (ISDA) documents.[11]

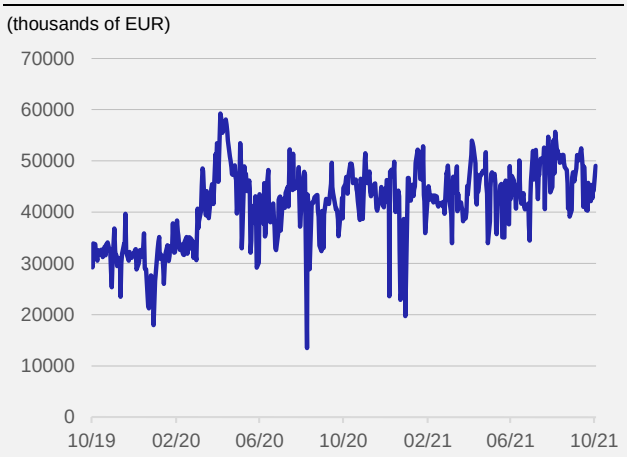
Euro reference rates

The situation as regards euro reference rates in Europe, where the most widely used EURIBOR reference rate remains in place, is interesting. The EUR LIBOR will end together with the others at the end of 2021. However, the market had and still has an alternative benchmark for the euro – the EURIBOR (Euro Interbank Offered Rate). The EURIBOR is a reference rate published by the European Money Markets Institute (EMMI) calculated for tenors ranging from one week to several months. It is therefore a forward-looking rate similar to LIBOR rates. In February 2019, the EMMI published a proposal to adjust the EURIBOR to make it compliant with the BMR. The adjustments primarily involved a hybrid approach to calculating the rate, combining the available transactions as far as possible with a model-based approach and estimates. This change made the EURIBOR eligible for further use from the perspective of the BMR.

The euro therefore has two rates, which raises the question of which to use. On the one hand, regulators are trying to motivate market participants to switch to risk-free rates, among them the €STR, but the EURIBOR is a valid and ongoing alternative. The euro working group found that most market participants view forward-looking rates as necessary. Based on this finding, a methodology was published for creating forward-looking rates based on the €STR. However, sufficient liquidity in the derivatives market would be needed to create such a rate. Thus, the only outcome was that if the EURIBOR were ever to be abolished, this method could be used to replace it in EURIBOR-linked contracts.

There are no plans to end the EURIBOR yet, but this option cannot be ruled out. So far, regulators support maintaining the EURIBOR precisely because of its forward-looking nature. However, the question is whether the hybrid methodology used to calculate it is sustainable. Before announcing the end of the LIBOR, the FCA discussed this methodology and concluded that it was unsustainable given the shortage of transactions. A similar fate for EURIBOR cannot be ruled out. All will depend on how much each rate will be used in the financial markets.

Chart 6 – €STR volumes



Source: Bloomberg

Conclusion

The end of 2021 will mark the end of an era for LIBOR reference rates. Although these rates will not be phased out completely until a little later on, this is a historic milestone for new business, as it will no longer be possible to use LIBOR rates in new derivatives. The transition to the new rates appears to be going smoothly, as financial market data are indicating no increase in volatility in either the original IBORs or the new rates.

There are three main differences between the new reference rates and the original LIBORs. The first is that the new reference rates are based on completed transactions, not on surveys and expert estimates. The second important difference is the time perspective. Unlike the original LIBOR rates, the new rates are not forward-looking. The third difference relates to the time structure. The new benchmark rates are much closer to risk-free rates in that they do not include a risk premium or a liquidity premium, unlike IBORs with longer tenors. This difference, or spread, is then used for the simplified calculation of fallback rates.

[10] The spread is calculated on the basis of the five-year median and represents the risk premium.

[11] https://www.isda.org/protocol/isda-2020-ibor-fallbacks-protocol/

The situation for the euro is specific, as the EURIBOR, which has the same characteristics as LIBOR rates, remains in place and the €STR has been created alongside it. Market participants can therefore choose which rate to use for their transactions. The forward-looking EURIBOR may one day be abolished. Given the current priorities (of the European Commission, for example), however, this situation is still nowhere in sight.

Sources

Duffie, D., & Stein, J. C. (2015). "Reforming LIBOR and other financial market benchmarks", Journal of Economic Perspectives, 29(2), 191–212.

Euro Working Group (2019), February

European Commission (2013), Antitrust: Commission fines banks € 1.49 billion for participating in cartels in the interest rate derivatives industry (Amended). Press release IP 13-1208_in, Brussels, 4 December. Available at https://ec.europa.eu/commission/presscorner/detail/en/IP_13_1208.

FCA (2021). "Further arrangements for the orderly wind-down of LIBOR at end-2021", Financial Conduct Authority, 29 September 2021, https://www.fca.org.uk/news/press-releases/further-arrangements-orderly-wind-down-libor-end-2021

Hou, D., & Skeie, D. R. (2014). LIBOR: Origins, economics, crisis, scandal, and reform. FRB of New York Staff Report, (667).

Mollenkamp, Carrick. 2008. "Bankers Cast Doubt on Key Rate Amid Crisis." Wall Street Journal, April 16, 2008.

PwC (2018). "Financial reporting impacts from replacement of LIBOR and other interbank offered rates", December 2018, 2018-04, https://www.pwc.com/gx/en/audit-services/ifrs/publications/pwc-financial-reporting-impacts-from-replacement-of-libor-and-other-interbank-offered-rates-pwc-in-depth.pdf

Rodríguez-López, A., Fernández-Abascal, H., Maté-García, J. J., Rodríguez-Fernández, J. M., Rojo-García, J. L., & Sanz-Gómez, J. A. (2021). Evaluating Euribor Manipulation: Effects on Mortgage Borrowers. Finance Research Letters, 40, 101795.

Keywords

Interbank rates, monetary policy, reference rates, LIBOR transformation

JEL Classification

E58, F31, F41

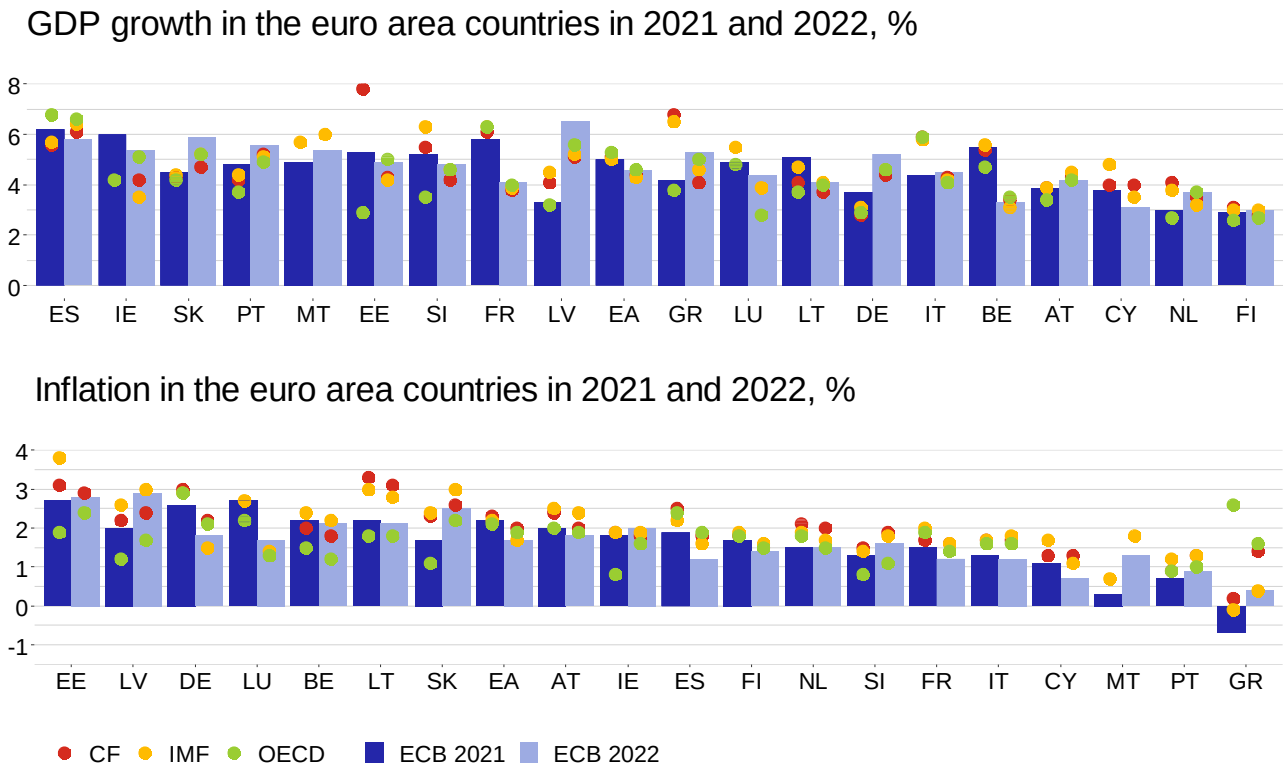
A1. Change in predictions for 2021

	GDP growth, %								Inflation, %							
	CF		IMF		OECD		CB / EIU		CF		IMF		OECD		CB / EIU	
EA	+0.1	2021/10 2021/9	+0.4	2021/10 2021/7	+1.0	2021/9 2021/5	+0.4	2021/9 2021/6	+0.1	2021/10 2021/9	+0.8	2021/10 2021/4	+0.3	2021/9 2021/5	+0.3	2021/9 2021/6
US	-0.2	2021/10 2021/9	-1.0	2021/10 2021/7	-0.9	2021/9 2021/5	-1.1	2021/9 2021/6	+0.1	2021/10 2021/9	+2.0	2021/10 2021/4	+0.2	2021/9 2021/5	+0.8	2021/9 2021/6
UK	+0.2	2021/10 2021/9	-0.2	2021/10 2021/7	-0.5	2021/9 2021/5	0	2021/8 2021/5	+0.1	2021/10 2021/9	+0.7	2021/10 2021/4	+1.0	2021/9 2021/5	+1.5	2021/8 2021/5
JP	0	2021/10 2021/9	-0.4	2021/10 2021/7	-0.1	2021/9 2021/5	-0.2	2021/7 2021/4	0	2021/10 2021/9	-0.3	2021/10 2021/4	-0.5	2021/9 2021/5	+0.5	2021/7 2021/4
CN	-0.2	2021/10 2021/9	-0.1	2021/10 2021/7	0	2021/9 2021/5	-0.5	2021/9 2021/8	-0.1	2021/10 2021/9	-0.1	2021/10 2021/4	-0.3	2021/9 2021/5	-0.1	2021/9 2021/8
RU	+0.2	2021/9 2021/8	+0.3	2021/10 2021/7	-0.8	2021/9 2021/5	+0.3	2021/10 2021/8	+0.3	2021/9 2021/8	+1.4	2021/10 2021/4	+0.2	2021/9 2021/5	+0.1	2021/10 2021/8

A2. Change in predictions for 2022

	GDP growth, %								Inflation, %							
	CF		IMF		OECD		CB / EIU		CF		IMF		OECD		CB / EIU	
EA	0	2021/10 2021/9	0	2021/10 2021/7	+0.2	2021/9 2021/5	-0.1	2021/9 2021/6	+0.3	2021/10 2021/9	+0.5	2021/10 2021/4	+0.6	2021/9 2021/5	+0.2	2021/9 2021/6
US	-0.2	2021/10 2021/9	+0.3	2021/10 2021/7	+0.3	2021/9 2021/5	+0.5	2021/9 2021/6	+0.3	2021/10 2021/9	+1.1	2021/10 2021/4	+0.4	2021/9 2021/5	+0.1	2021/9 2021/6
UK	-0.3	2021/10 2021/9	+0.2	2021/10 2021/7	-0.3	2021/9 2021/5	+0.2	2021/8 2021/5	+0.5	2021/10 2021/9	+0.7	2021/10 2021/4	+1.4	2021/9 2021/5	+0.5	2021/8 2021/5
JP	0	2021/10 2021/9	+0.2	2021/10 2021/7	+0.1	2021/9 2021/5	+0.3	2021/7 2021/4	0	2021/10 2021/9	-0.2	2021/10 2021/4	-0.1	2021/9 2021/5	+0.1	2021/7 2021/4
CN	-0.1	2021/10 2021/9	-0.1	2021/10 2021/7	0	2021/9 2021/5	+0.1	2021/9 2021/8	-0.1	2021/10 2021/9	-0.1	2021/10 2021/4	-0.2	2021/9 2021/5	+0.1	2021/9 2021/8
RU	0	2021/9 2021/8	-0.2	2021/10 2021/7	+0.6	2021/9 2021/5	+0.1	2021/10 2021/8	+0.1	2021/9 2021/8	+1.4	2021/10 2021/4	+1.0	2021/9 2021/5	-0.1	2021/10 2021/8

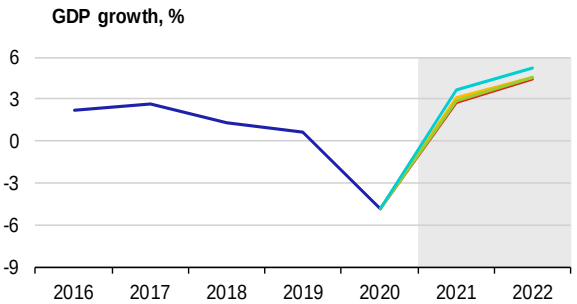
A3. GDP growth and inflation outlooks in the euro area countries



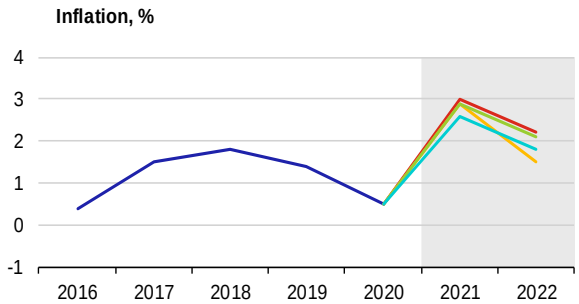
Note: Charts show institutions' latest available outlooks of for the given country.

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

Germany

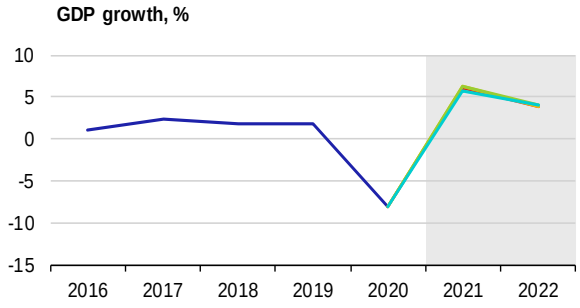


	CF	IMF	OECD	DBB
2021	2.8	3.1	2.9	3.7
2022	4.4	4.6	4.6	5.2

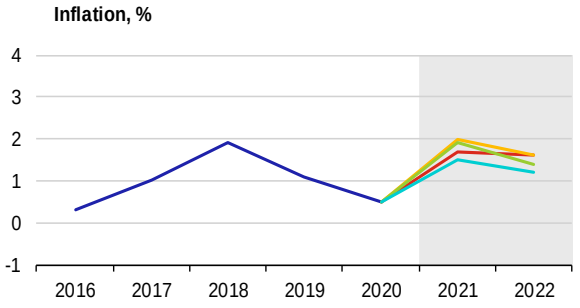


	CF	IMF	OECD	DBB
2021	3.0	2.9	2.9	2.6
2022	2.2	1.5	2.1	1.8

France

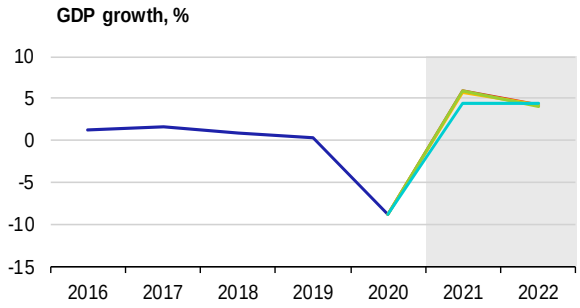


	CF	IMF	OECD	ECB
2021	6.1	6.3	6.3	5.8
2022	3.8	3.9	4.0	4.1

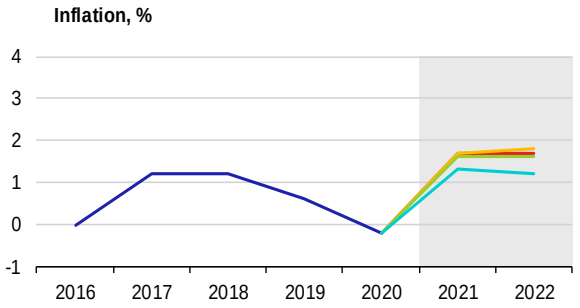


	CF	IMF	OECD	ECB
2021	1.7	2.0	1.9	1.5
2022	1.6	1.6	1.4	1.2

Italy

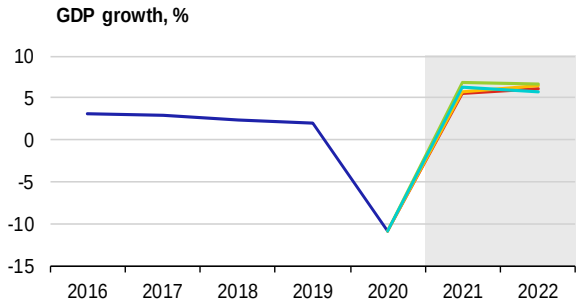


	CF	IMF	OECD	ECB
2021	5.9	5.8	5.9	4.4
2022	4.3	4.2	4.1	4.5

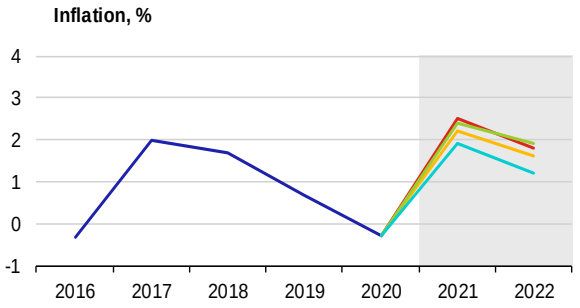


	CF	IMF	OECD	ECB
2021	1.7	1.7	1.6	1.3
2022	1.7	1.8	1.6	1.2

Spain



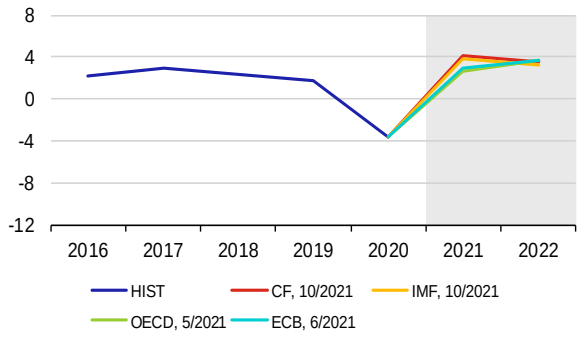
	CF	IMF	OECD	ECB
2021	5.6	5.7	6.8	6.2
2022	6.1	6.4	6.6	5.8



	CF	IMF	OECD	ECB
2021	2.5	2.2	2.4	1.9
2022	1.8	1.6	1.9	1.2

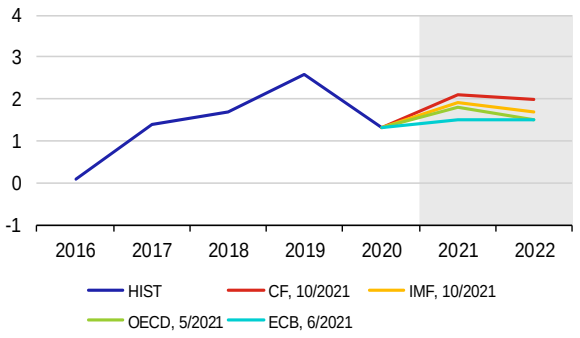
Netherlands

GDP growth, %



	CF	IMF	OECD	ECB
2021	4.1	3.8	2.7	3.0
2022	3.5	3.2	3.7	3.7

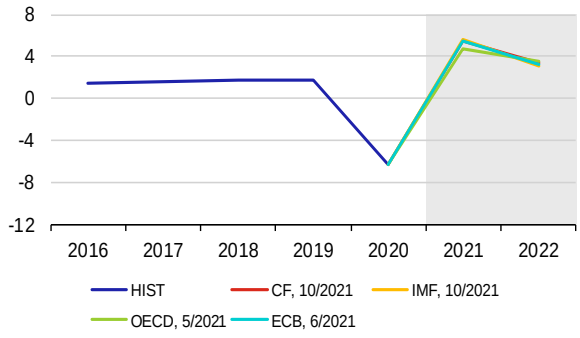
Inflation, %



	CF	IMF	OECD	ECB
2021	2.1	1.9	1.8	1.5
2022	2.0	1.7	1.5	1.5

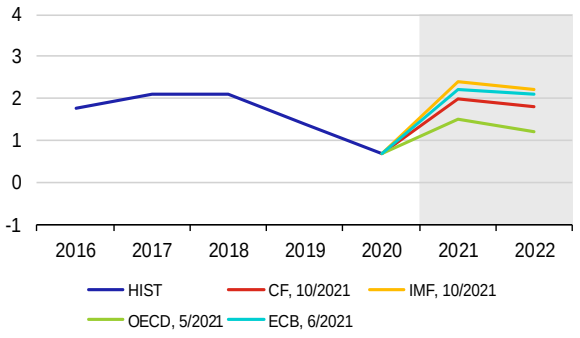
Belgium

GDP growth, %



	CF	IMF	OECD	ECB
2021	5.4	5.6	4.7	5.5
2022	3.4	3.1	3.5	3.3

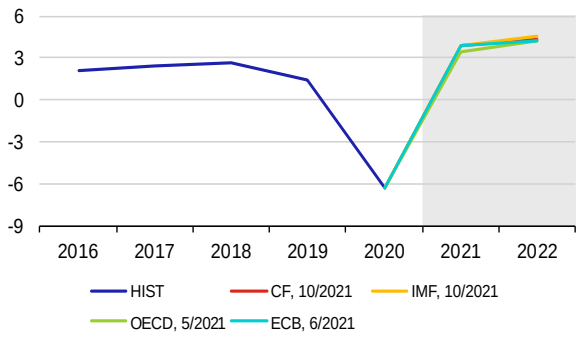
Inflation, %



	CF	IMF	OECD	ECB
2021	2.0	2.4	1.5	2.2
2022	1.8	2.2	1.2	2.1

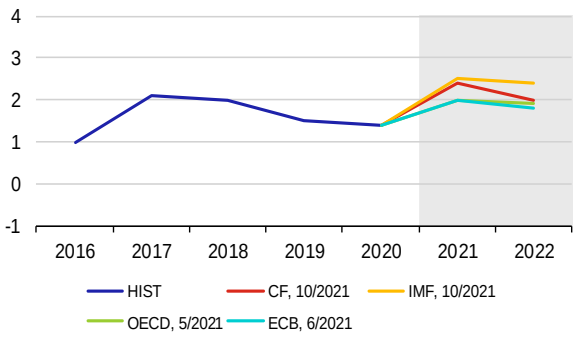
Austria

GDP growth, %



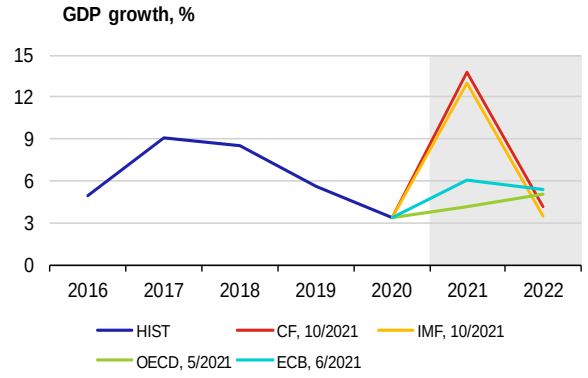
	CF	IMF	OECD	ECB
2021	3.9	3.9	3.4	3.9
2022	4.3	4.5	4.2	4.2

Inflation, %

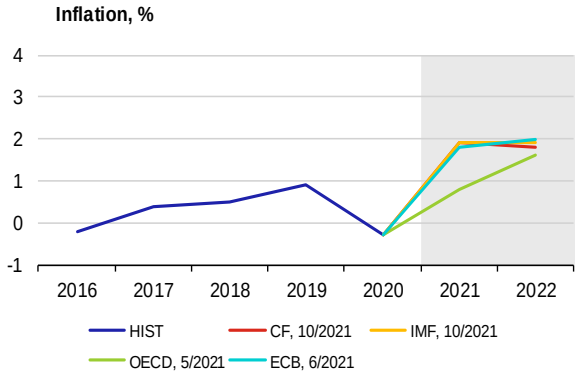


	CF	IMF	OECD	ECB
2021	2.4	2.5	2.0	2.0
2022	2.0	2.4	1.9	1.8

Ireland

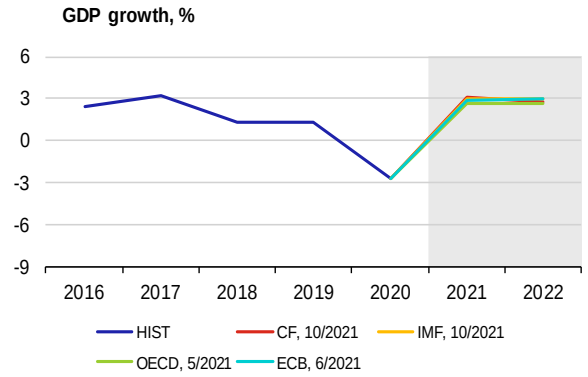


	CF	IMF	OECD	ECB
2021	13.8	13.0	4.2	6.0
2022	4.2	3.5	5.1	5.4

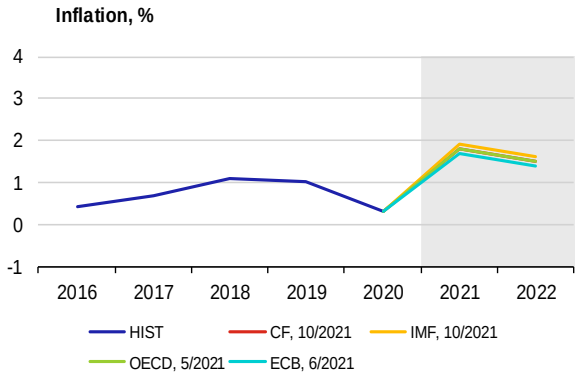


	CF	IMF	OECD	ECB
2021	1.9	1.9	0.8	1.8
2022	1.8	1.9	1.6	2.0

Finland

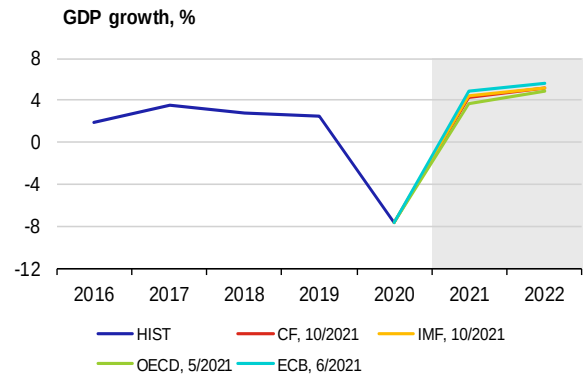


	CF	IMF	OECD	ECB
2021	3.1	3.0	2.6	2.9
2022	2.8	3.0	2.7	3.0

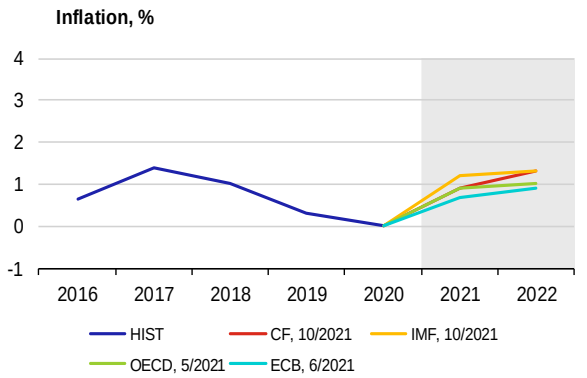


	CF	IMF	OECD	ECB
2021	1.8	1.9	1.8	1.7
2022	1.5	1.6	1.5	1.4

Portugal



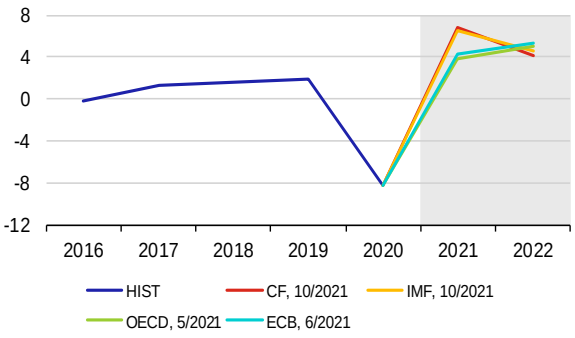
	CF	IMF	OECD	ECB
2021	4.2	4.4	3.7	4.8
2022	5.2	5.1	4.9	5.6



	CF	IMF	OECD	ECB
2021	0.9	1.2	0.9	0.7
2022	1.3	1.3	1.0	0.9

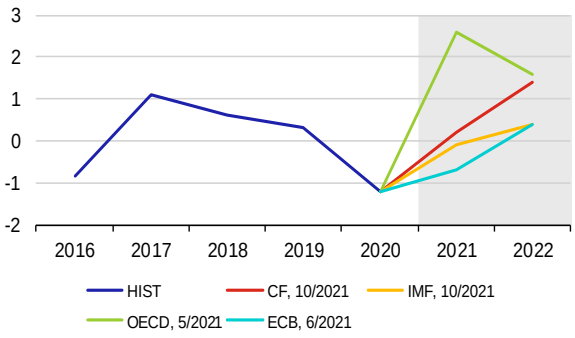
Greece

GDP growth, %



	CF	IMF	OECD	ECB
2021	6.8	6.5	3.8	4.2
2022	4.1	4.6	5.0	5.3

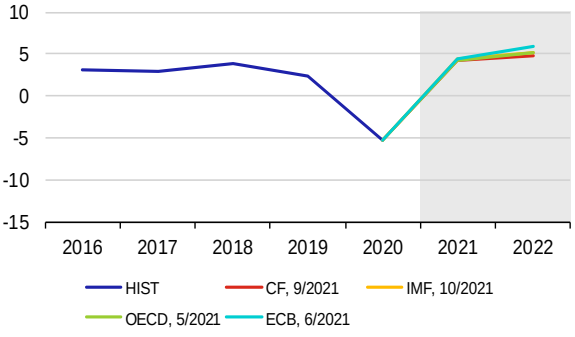
Inflation, %



	CF	IMF	OECD	ECB
2021	0.2	-0.1	2.6	-0.7
2022	1.4	0.4	1.6	0.4

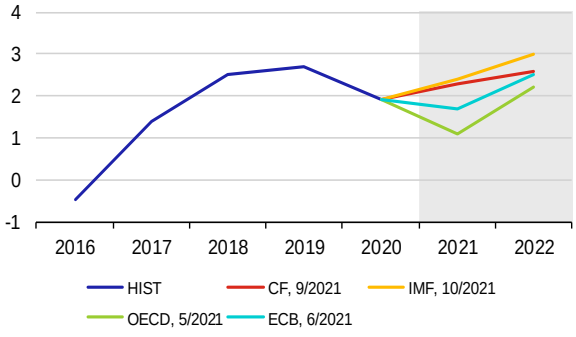
Slovakia

GDP growth, %



	CF	IMF	OECD	ECB
2021	4.3	4.4	4.2	4.5
2022	4.7	5.2	5.2	5.9

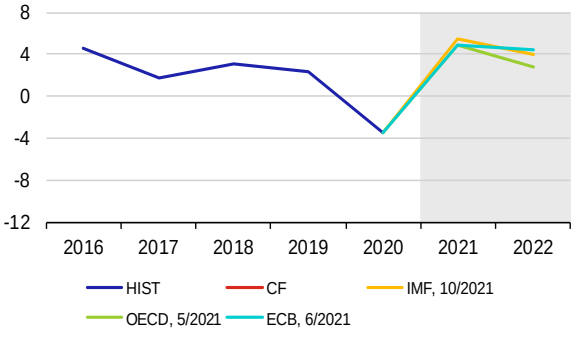
Inflation, %



	CF	IMF	OECD	ECB
2021	2.3	2.4	1.1	1.7
2022	2.6	3.0	2.2	2.5

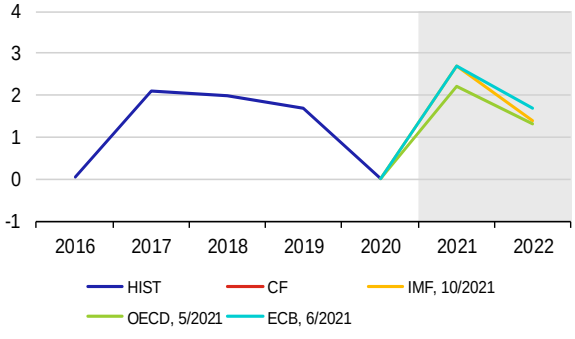
Luxembourg

GDP growth, %



	CF	IMF	OECD	ECB
2021	n. a.	5.5	4.8	4.9
2022	n. a.	3.9	2.8	4.4

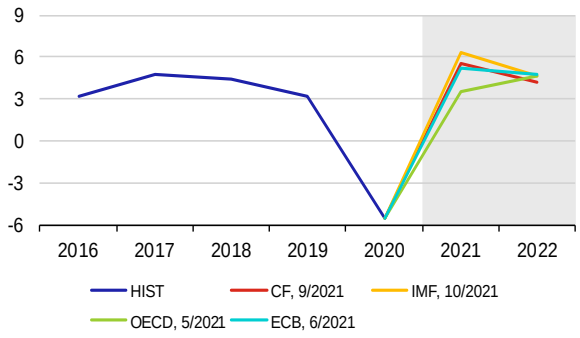
Inflation, %



	CF	IMF	OECD	ECB
2021	n. a.	2.7	2.2	2.7
2022	n. a.	1.4	1.3	1.7

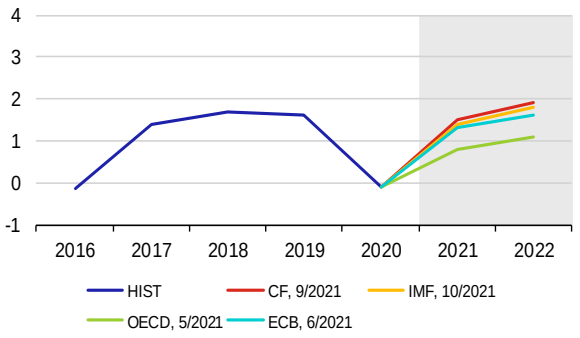
Slovenia

GDP growth, %



	CF	IMF	OECD	ECB
2021	5.5	6.3	3.5	5.2
2022	4.2	4.6	4.6	4.8

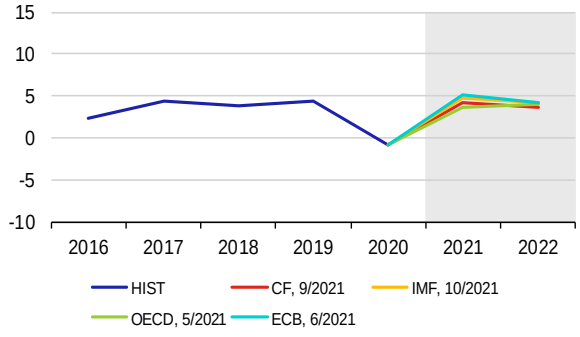
Inflation, %



	CF	IMF	OECD	ECB
2021	1.5	1.4	0.8	1.3
2022	1.9	1.8	1.1	1.6

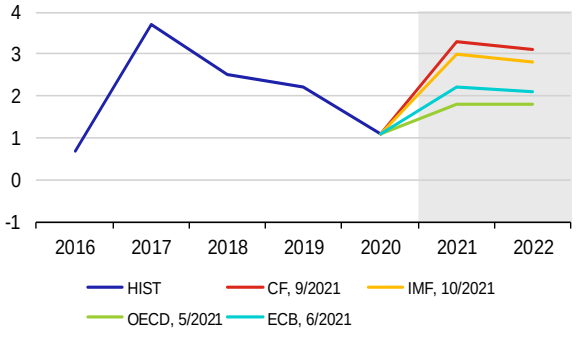
Lithuania

GDP growth, %



	CF	IMF	OECD	ECB
2021	4.1	4.7	3.7	5.1
2022	3.7	4.1	4.0	4.1

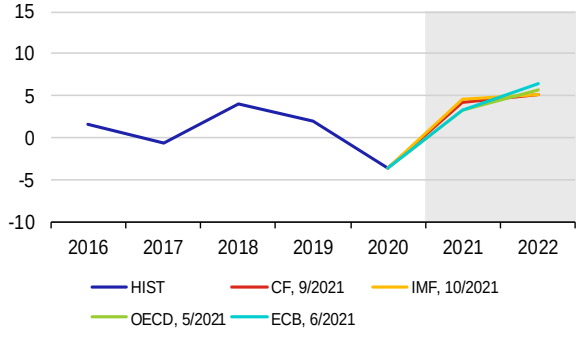
Inflation, %



	CF	IMF	OECD	ECB
2021	3.3	3.0	1.8	2.2
2022	3.1	2.8	1.8	2.1

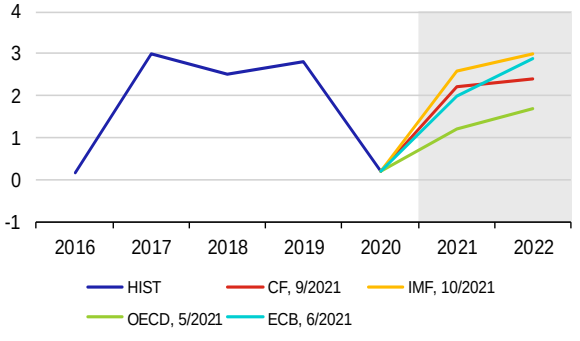
Latvia

GDP growth, %



	CF	IMF	OECD	ECB
2021	4.1	4.5	3.2	3.3
2022	5.1	5.2	5.6	6.5

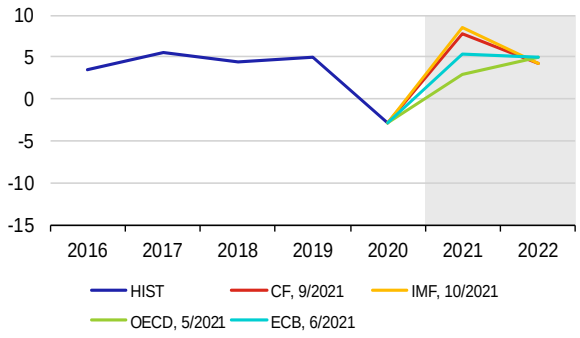
Inflation, %



	CF	IMF	OECD	ECB
2021	2.2	2.6	1.2	2.0
2022	2.4	3.0	1.7	2.9

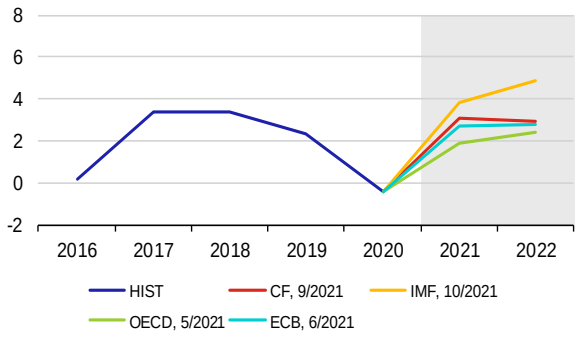
Estonia

GDP growth, %



	CF	IMF	OECD	ECB
2021	7.8	8.5	2.9	5.3
2022	4.3	4.2	5.0	4.9

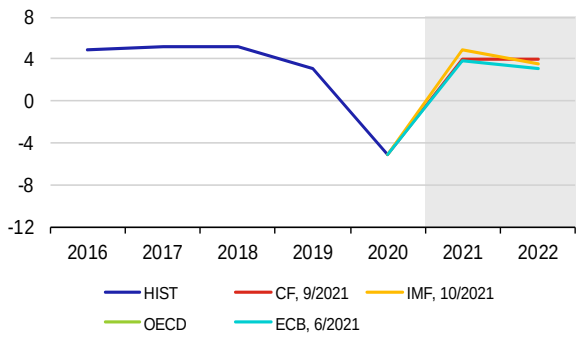
Inflation, %



	CF	IMF	OECD	ECB
2021	3.1	3.8	1.9	2.7
2022	2.9	4.9	2.4	2.8

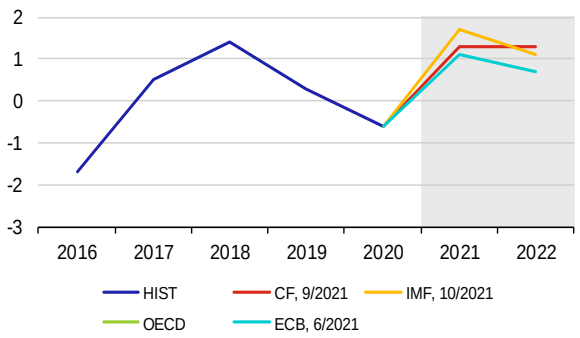
Cyprus

GDP growth, %



	CF	IMF	OECD	ECB
2021	4.0	4.8	n. a.	3.8
2022	4.0	3.5	n. a.	3.1

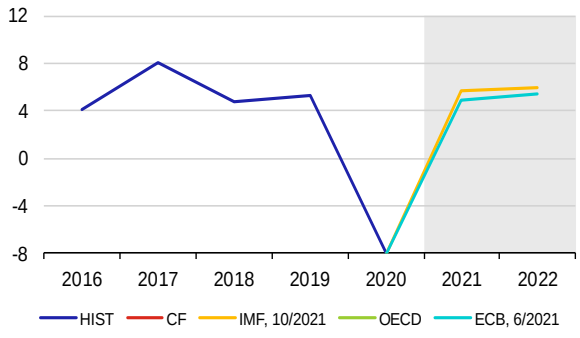
Inflation, %



	CF	IMF	OECD	ECB
2021	1.3	1.7	n. a.	1.1
2022	1.3	1.1	n. a.	0.7

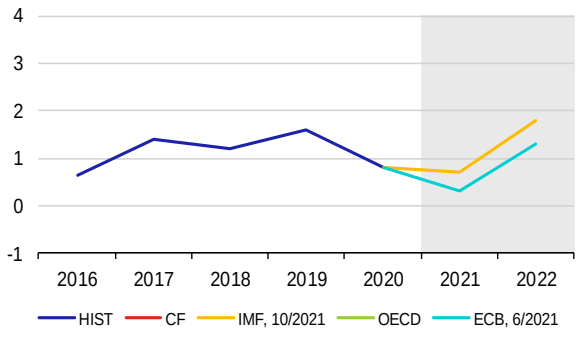
Malta

GDP growth, %



	CF	IMF	OECD	ECB
2021	n. a.	5.7	n. a.	4.9
2022	n. a.	6.0	n. a.	5.4

Inflation, %

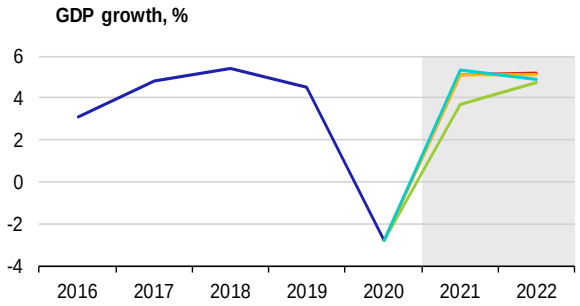


	CF	IMF	OECD	ECB
2021	n. a.	0.7	n. a.	0.3
2022	n. a.	1.8	n. a.	1.3

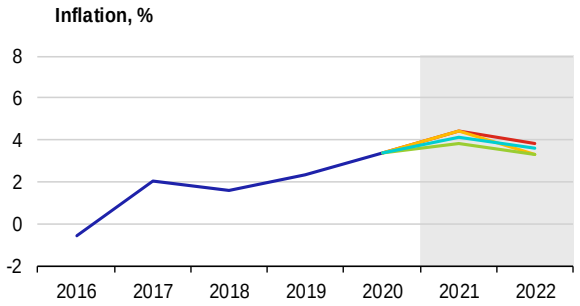
Ddd

A5. GDP growth and inflation in other selected countries

Poland

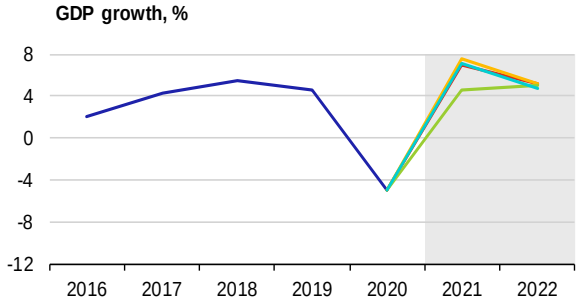


	CF	IMF	OECD	EIU
2021	5.1	5.1	3.7	5.3
2022	5.2	5.1	4.7	4.9

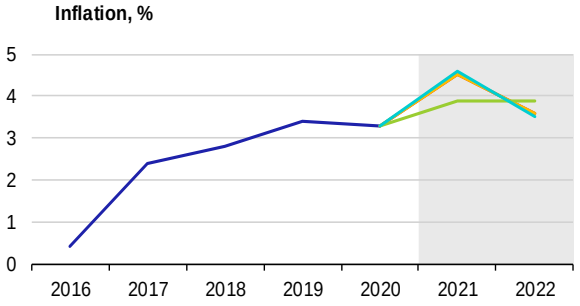


	CF	IMF	OECD	EIU
2021	4.4	4.4	3.8	4.1
2022	3.8	3.3	3.3	3.6

Hungary

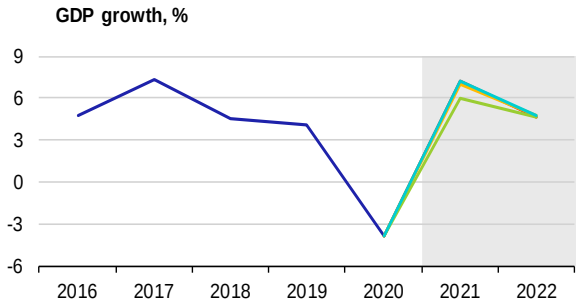


	CF	IMF	OECD	EIU
2021	7.0	7.6	4.6	7.1
2022	5.1	5.1	5.0	4.7

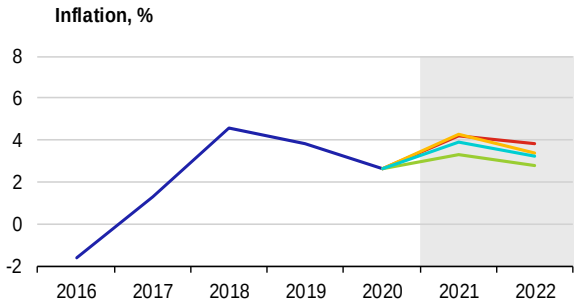


	CF	IMF	OECD	EIU
2021	4.5	4.5	3.9	4.6
2022	3.6	3.6	3.9	3.5

Romania



	CF	IMF	OECD	EIU
2021	7.2	7.0	6.0	7.2
2022	4.6	4.8	4.6	4.7



	CF	IMF	OECD	EIU
2021	4.2	4.3	3.3	3.9
2022	3.8	3.4	2.8	3.2

A6. 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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ČESKÁ NÁRODNÍ BANKA
Na Příkopě 28
115 03 Praha 1
Česká republika

Contact:
ODBOR KOMUNIKACE SEKCE KANCELÁŘ
Tel.: 224 413 112
Fax: 224 412 179
www.cnb.cz