

Global Economic Outlook

———— March 2022



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Czech National Bank — Global Economic Outlook — March 2022

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Cut-off date for data

18 March 2022

CF survey date

14 March 2022

GEO publication date

25 March 2022

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

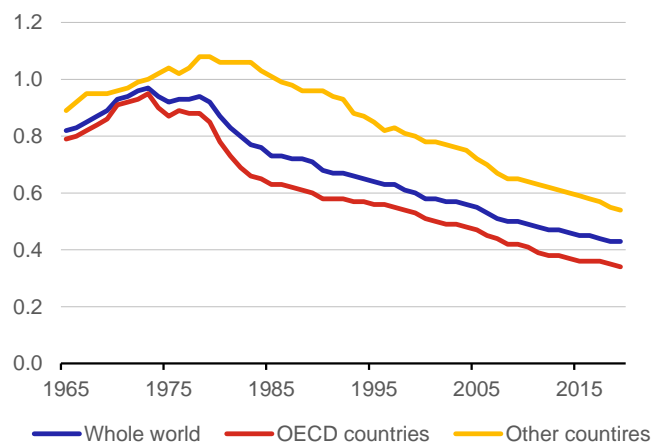
War in Europe!!! The global media brings us regular updates on Russia's attack on Ukraine, while investors cling on to any good news amid volatile markets. The situation is far harder to forecast than the pandemic, as the worst case scenario is now a nuclear catastrophe. Owing to the war, the OECD did not publish its regular outlook and limited its March report to an analysis of the interconnectedness of the global and Ukrainian economies. The war unleashed by Russia has led to its economy becoming significantly isolated from the rest of the world in less than a month, while calls for even tougher sanctions due to continuing barbaric attacks by the Russian military are gaining strength. Losses – albeit only economic ones – will weigh on the financial and real sectors of the vast majority of countries, especially in Europe. Lower economic growth and higher consumer and producer inflation can be expected. The increased financial and commodity market volatility reflects many factors, including news from battlefields, herd behaviour by consumers, reorientation of the corporate sector and, naturally, the likelihood of the war ending. Asset prices are also being visibly affected by the recent monetary tightening by central banks, especially those which issue reserve currencies (the Fed and the BoE). The European Commission is preparing a plan to reduce the EU's heavy reliance on commodities from Russia (especially gas, oil and metal ores) as fast as possible.

The chart in the current issue offers an alternative view of the growth in oil prices on global markets.

As we know, the price of oil neared USD/bbl 140 last month, although it then corrected sharply. However, its significance for advanced countries in terms of economic growth is falling over time. Less advanced countries are much more sensitive to the availability of oil and swings in its price. The chart also shows that some scenarios comparing the current situation with the high prices recorded in the 1970s are irrelevant for the present advanced economies. Not only are they trying to gradually reduce their dependence on fossil sources, but their economies are also much more service-oriented.

The current issue also contains an analysis: “[Developments in the European natural gas market](#)”. The article explains the reasons for the very rapid growth in energy prices since the second half of last year and analyses the global situation. It also shows that a wide range of factors affect the price of natural gas, and that the interplay of these factors caused prices in Europe and Asia to reach historical highs at the end of 2021. In addition, the article finds that, based on market outlooks and related analyses, we cannot expect natural gas prices to decline rapidly in the coming years. This conclusion is reinforced by Russia's current attack on Ukraine.

Use of oil in the global economy, barrels of oil per USD 1,000 of GDP



Source: Rühl and Erker (2021), Bloomberg

Barometr of Global Economic Outlook for selected countries

		EA	DE	US	UK	JP	CN	RU
GDP	2022	3.2	2.4	3.3	3.9	2.3	5.0	-9.4
	2023	2.3	2.6	2.4	1.6	1.8	5.2	1.3
Inflation	2022	5.7	5.2	6.6	6.7	1.4	2.2	5.5
	2023	2.1	2.4	3.0	3.6	0.9	2.3	4.3
Unemployment	2022	7.1	5.1	3.7	4.2	2.6	5.1	7.5
	2023	6.9	4.9	3.6	4.2	2.5	5.0	5.5
Exchange rate	2022	1.13	1.13		1.35	115.3	6.42	107.5
	2023	1.16	1.16		1.37	113.1	6.36	99.9

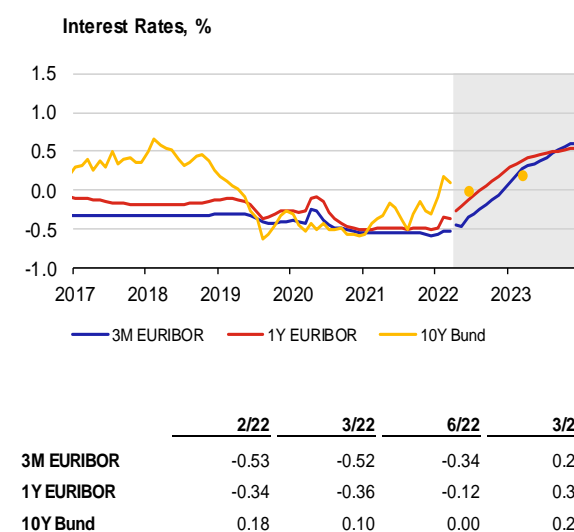
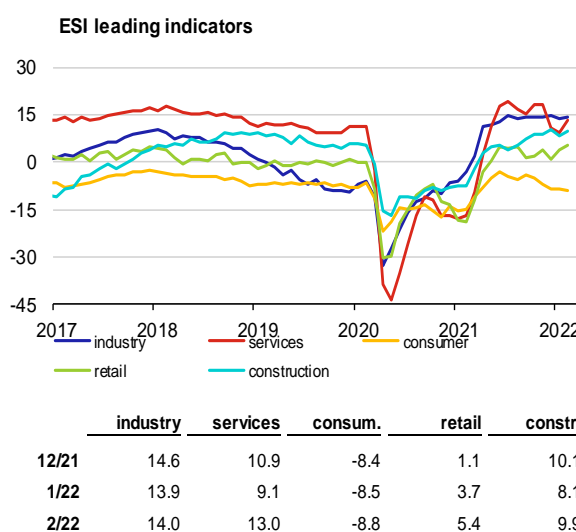
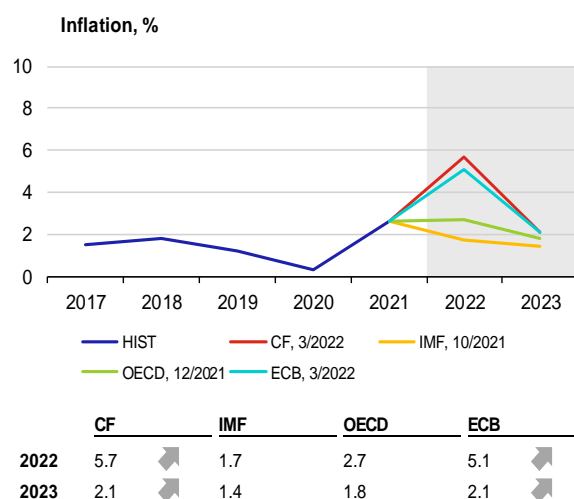
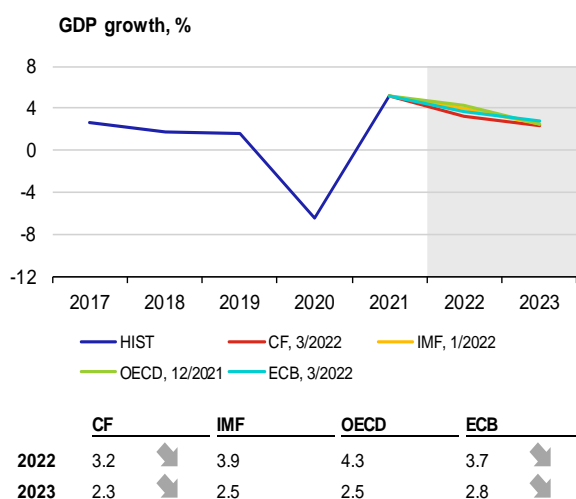
Source: Consensus Forecasts (CF)

Note: The arrows indicate the direction of the revisions compared with the last GEO.

II.1 Euro area

The January wave of Omicron in the euro area was accompanied by milder measures, but hope of a rapid return to the pre-pandemic normal was shattered by Russia’s invasion of Ukraine at the end of February. A rapid receding of the pandemic in euro area countries and supply chain issues early this year raised hopes of a brisker recovery, but the war in Ukraine swung the European economy around again. The sanctions levied by the EU and others disrupted trade and financial relations with Russia and Belarus, while financial markets went into turmoil on concerns about a potential halt in supplies of energy commodities from Russia. However, these concerns have yet to materialise. The disruption of trade with Ukraine has already been felt by many European countries. For example, it has partially stopped production in the automotive industry, as European producers are dependent on supplies of cable harnesses from Ukraine. Supplies of food, particularly grain, from Russia and Ukraine are also jeopardised. This has already been reflected in food prices in the EU. Air and sea transport has also been hit, while the number of firms voluntarily closing down or suspending their operations in Russia continues to grow. There is a consensus in the EU on the need to reduce reliance on Russian gas. The Commission is planning to cut this reliance by two-thirds this year and to end it “well before 2030”. This is to be achieved through a faster switch to alternative supplies (mainly of liquefied natural gas) and renewable resources. The shift away from Russian energy is part of deeper changes in the global geopolitical balance, which will present new challenges to Western and other economies.

The dramatic rise in oil and gas prices has increased expected inflation in the euro area, while growth outlooks have worsened. The CF analysts’ current growth outlook for 2022 is 0.7 pp lower than last month, while their inflation outlook is 1.8 pp higher, due mainly to the surge in prices of energy, most notably natural gas. The ECB’s new outlook has shifted in the same direction. Concerns about the inflationary environment led the ECB to announce a more rapid end to asset purchases, although the question of subsequent interest rate increases remains open.

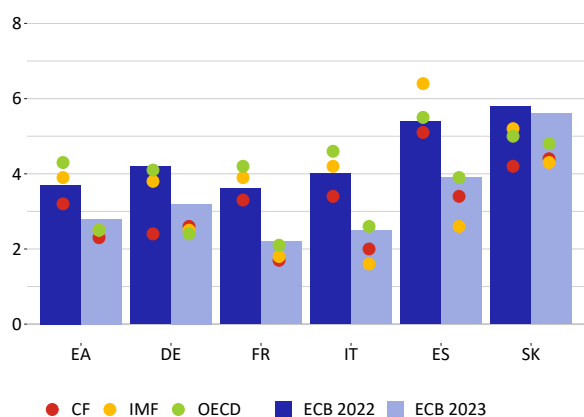


II.2 Germany

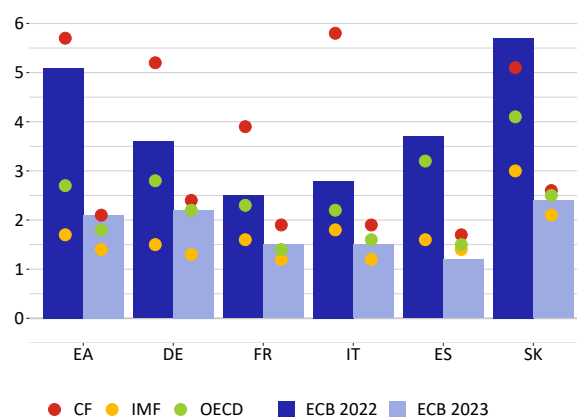
According to revised data, the German economy shrank only slightly at the year-end but is unlikely to avoid technical recession. It declined by 0.3% quarter on quarter but was still 1.8% higher in year-on-year terms. Consumption was pushed down by restrictive anti-epidemic measures at the end of the year, but the other components, including net exports, had the opposite effect. According to high-frequency indicators, activity in German industry expanded, while services and trade recorded a drop. The latest data indicate that the German economy will also contract in 2022 Q1 and will thus not avoid technical recession. The January figures for industrial production, orders and sentiment were very positive. Activity in services slightly reflected another wave of coronavirus, as confirmed by Open Table data on restaurant occupancy. In February, the German economy was on track for faster growth, but Russia's invasion of Ukraine and the related interruption of economic links changed the prospects for a German recovery. Supply chain disruptions affected the German automotive industry, which announced halts in production. Further problems can be expected with chip supplies, as Russia and Ukraine are major suppliers of raw materials for the production of chips (neon and precious metals).

The CF analysts expect lower GDP growth but much higher inflation. Their current growth outlook for 2022 is 1.1 pp lower than last month, while their inflation expectations are 1.8 pp higher. German inflation had already been near an all-time high (5.1% in February) before energy prices surged due to the war. Core inflation rose further (to 3.7%). Inflation in the production sector was also at a historical high in January (25%). However, the price pressures will strengthen further. Germany is one of the countries highly reliant on gas imports from Russia. However, according to statements made by the German government, it will seek to reduce this dependence sharply. Germany wants to end coal and oil imports from Russia by the end of this year, but to wean itself off Russian gas it will need to build and complete liquefied natural gas terminals.

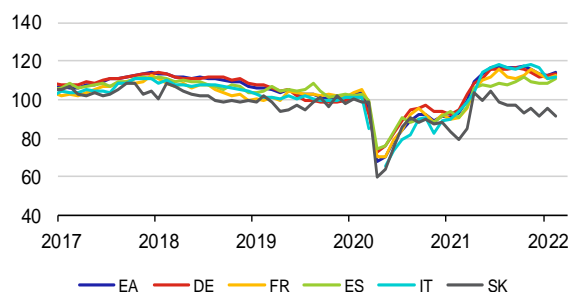
GDP growth in selected euro area countries in 2022 and 2023, %



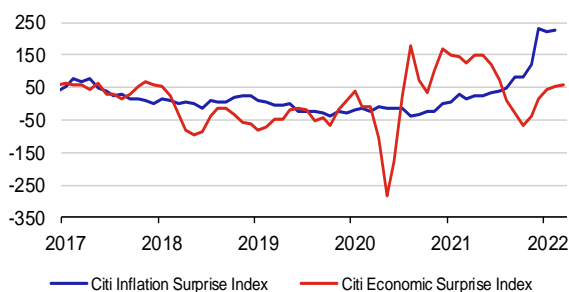
Inflation in selected euro area countries in 2022 and 2023, %



ESI leading indicators



Economic and inflation surprises in the euro area, %



Inflation expectations based on 5year inflation swap and SPF

	EA	DE	FR	ES	IT	SK
12/21	113.8	111.5	113.7	108.3	116.7	91.5
1/22	112.7	112.3	110.9	108.9	110.6	95.4
2/22	114.0	113.5	112.8	111.3	111.6	91.5

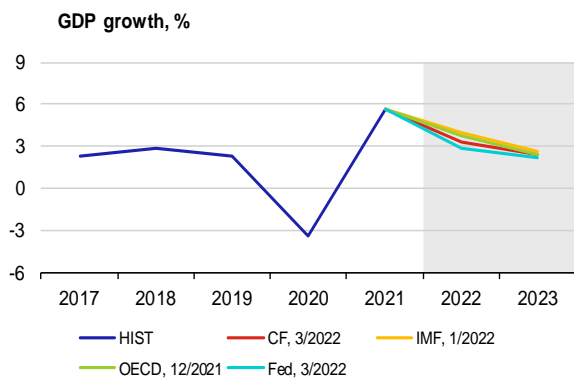
	5y5y	SPF
1/22	1.88	1.97
2/22	1.79	1.97
3/22	2.16	1.97

II.3 United States

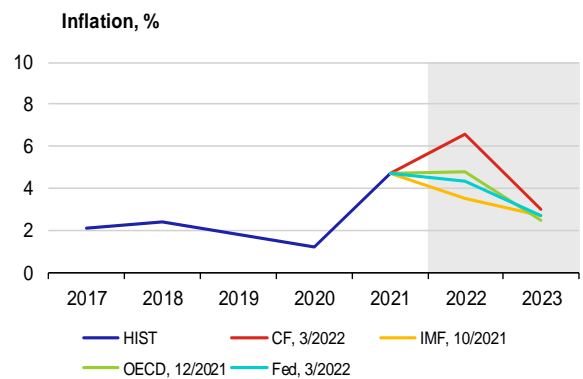
The current outlook for the US economy has decreased, while the inflation outlook continues to rise. Like other economies, the US economy is being affected by the war in Ukraine and the related growth in commodity prices and restricted trade relations. The new CF outlook expects real GDP to grow by 3.3% this year, while in January it had still predicted growth of 3.9%. The GDP growth outlook for next year has also been revised downwards (to 2.4%). The inflation outlook has jumped to 6.6% for 2022 and 3.0% for 2023. The US central bank expects GDP growth of 2.8% and inflation of 4.3% this year in its new projection.

Annual consumer price inflation reached 7.9% in February. This was due mainly to continued growth in prices of energy (25.5%), food (7.9%) and services (4.4%). Besides consumer prices, industrial producer prices are also rising (10.3%), mainly in the finished products category (14.1%). Higher petrol prices have not affected consumers' behaviour yet, and domestic consumption remains high. A total of 678,000 jobs were created on the labour market in February, exceeding expectations. The unemployment rate fell to 3.8% in February, while the employment rate rose to 59.9%, although the average hourly wage grew by 5.1%, less than analysts had expected. Leading indicators still indicate optimism, as the services PMI remains in the expansion band (56.5) and the industrial PMI is even slightly higher (57.3).

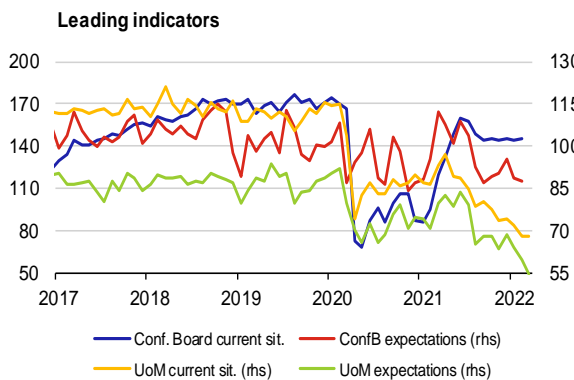
As expected, the US central bank tightened monetary policy by raising interest rates at its March meeting. This involved just a standard hike of 0.25 pp, but the Fed also simultaneously ended asset purchases. According to the central bank's outlook, rates will climb to 2% this year and just below 3% next year. According to Fed Chair Jerome Powell, the Fed will discuss starting asset sales at the next meeting, a move which would help tighten monetary conditions further.



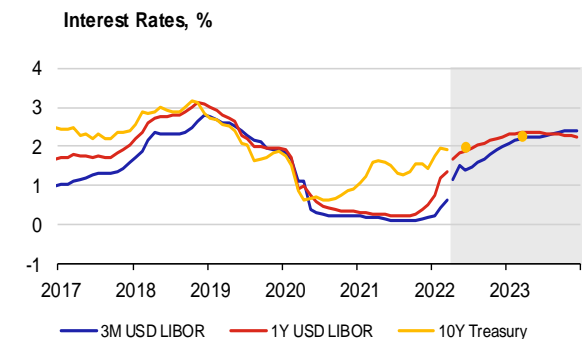
	CF	IMF	OECD	Fed
2022	3.3	4.0	3.7	2.8
2023	2.4	2.6	2.4	2.2



	CF	IMF	OECD	Fed
2022	6.6	3.5	4.8	4.3
2023	3.0	2.7	2.5	2.7



	ConfB curr.	ConfB exp.	UoM curr.	UoM exp.
1/22	144.5	88.8	72.0	64.1
2/22	145.1	87.5	68.2	59.4
3/22			67.8	54.4

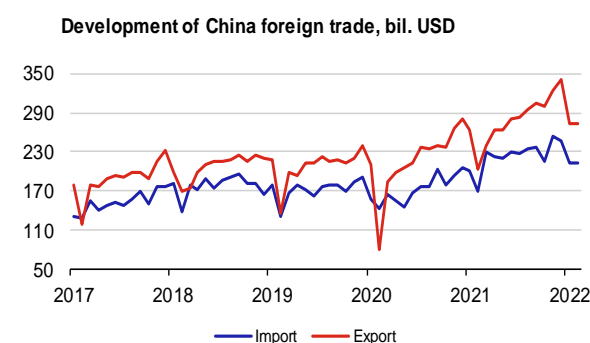
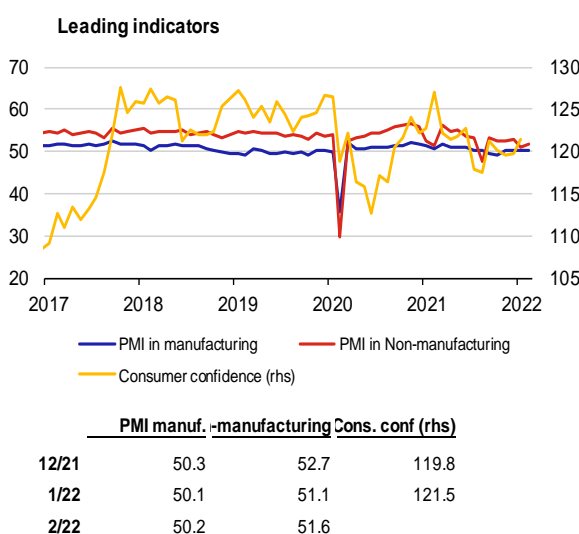
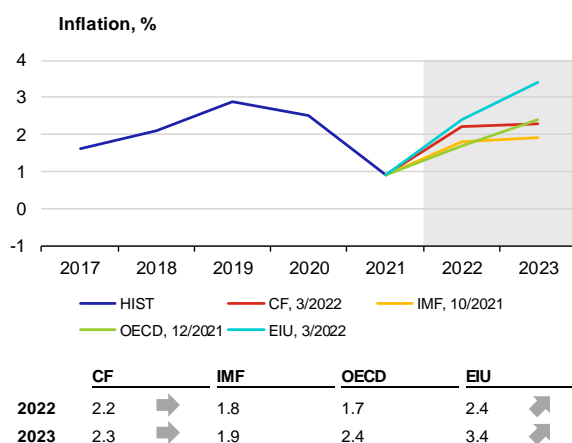
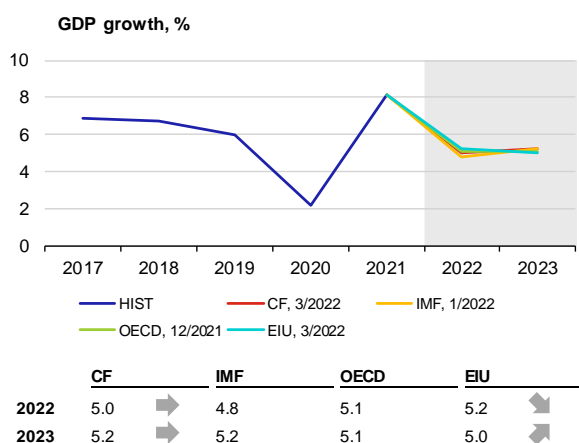


	2/22	3/22	6/22	3/23
USD LIBOR 3M	0.43	0.62	1.40	2.21
USD LIBOR 1R	1.20	1.20	1.87	2.36
Treasury 10R	1.94	1.92	2.00	2.30

II.4 China

China's weaker GDP growth at the end of last year reflected a broad slowdown in agriculture, industry and services. The available data for 2022 Q1, which do not yet fully reflect the impacts of the war in Ukraine, indicate a further slowdown in economic activity, owing mainly to restrictions caused by the spread of the coronavirus. The non-manufacturing PMI fell to a five-month low in January. The situation in manufacturing, where the PMI remains close to the contraction threshold, is not improving either. This mainly reflects long-term problems in the form of a global shortage of semiconductors and other components and high commodity prices. Commodity prices surged further due to the outbreak of the war in Ukraine. By contrast, economic growth is being supported in Q1 by more accommodative fiscal and monetary policy. The main risks to growth are high commodity prices, logistics and the Chinese government's zero tolerance of new COVID-19 cases, which would weaken domestic demand even further if the virus were to spread further. According to the CF analysts' March outlook, the Chinese economy will grow by 5.0% year on year in 2022 and 5.2% in 2023.

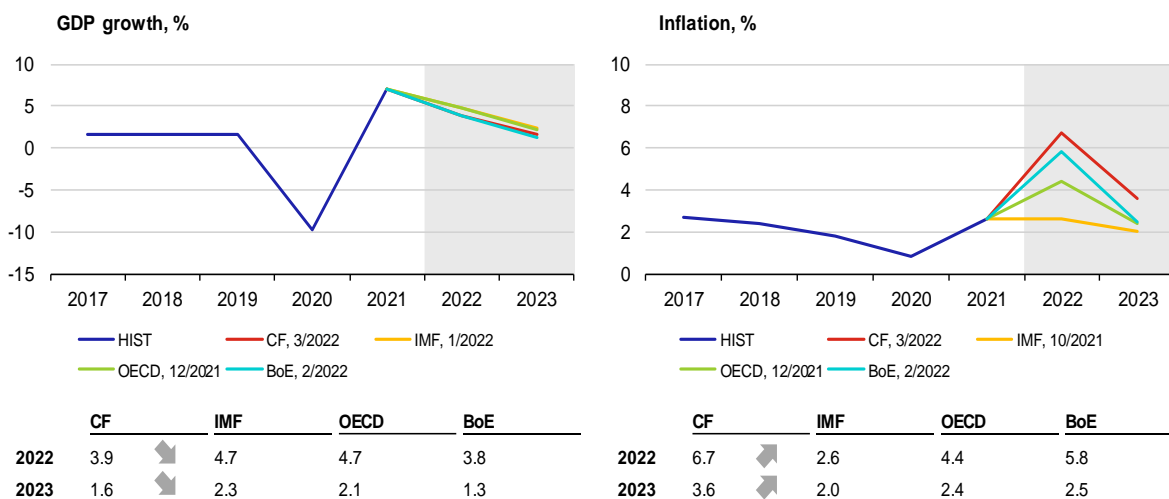
Annual consumer price inflation slowed to 0.9% in the first two months of this year. In addition to weaker consumer demand, it reflected a sharp fall in pork prices. According to the CF outlook, consumer prices will grow at a pace of 2.2% this year, picking up only slightly to 2.3% in 2023. Annual producer price inflation also slowed in January and February to an average of 9%, due to a drop in prices of some industrial commodities. On the one hand, the slowing inflation is creating room for further monetary easing. On the other hand, this room is closing due to monetary policy normalisation, especially by the Fed, as there is a danger of capital flowing out of China if the monetary policies of the two economies diverge significantly. This would be reflected in the renminbi depreciating against the dollar.



Source: Bloomberg

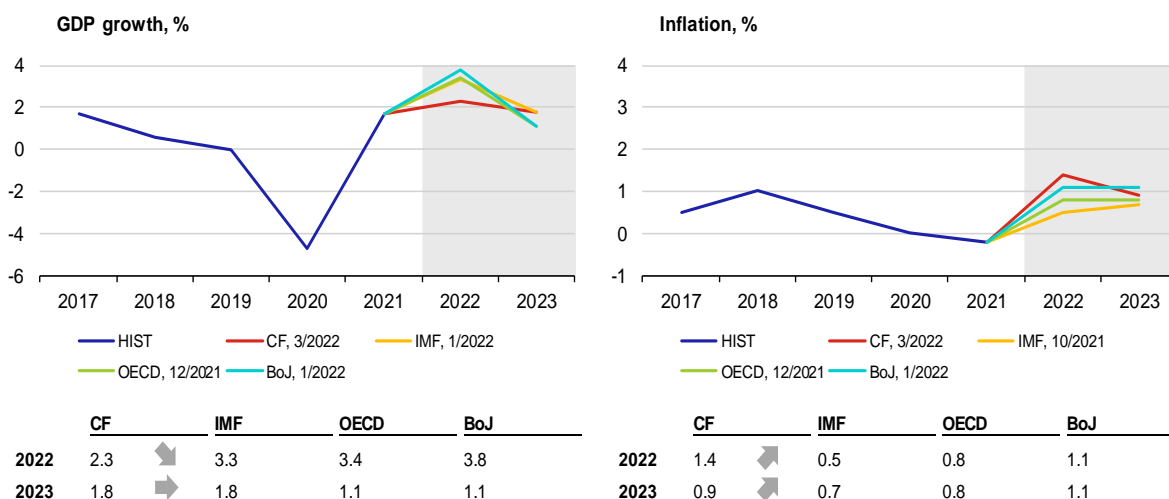
II.5 United Kingdom

In an effort to contain inflation pressures, the BoE tightened its monetary policy in March by raising the key interest rate from 0.5% to 0.75%. The war in Ukraine has led to a further large increase in prices of energy and other commodities, including food, in the UK. Prime Minister Boris Johnson intends to prepare a new energy supply strategy. Annual inflation grew to 5.5% in January and is predicted by the BoE to peak at around 8% in 2022 Q2. This is expected to put households' disposable income under greater pressure and dampen consumption, with a negative impact on economic activity. CF lowered its GDP growth outlook to 3.9% in 2022 and 1.6% in 2023. The composite PMI jumped to 59.9 in February, due mainly to a strong recovery in consumer spending on travel, leisure and entertainment after the Omicron wave of the pandemic receded. The growth of the private sector reached an eight-month high, with growth in the service sector again exceeding growth in manufacturing.



II.6 Japan

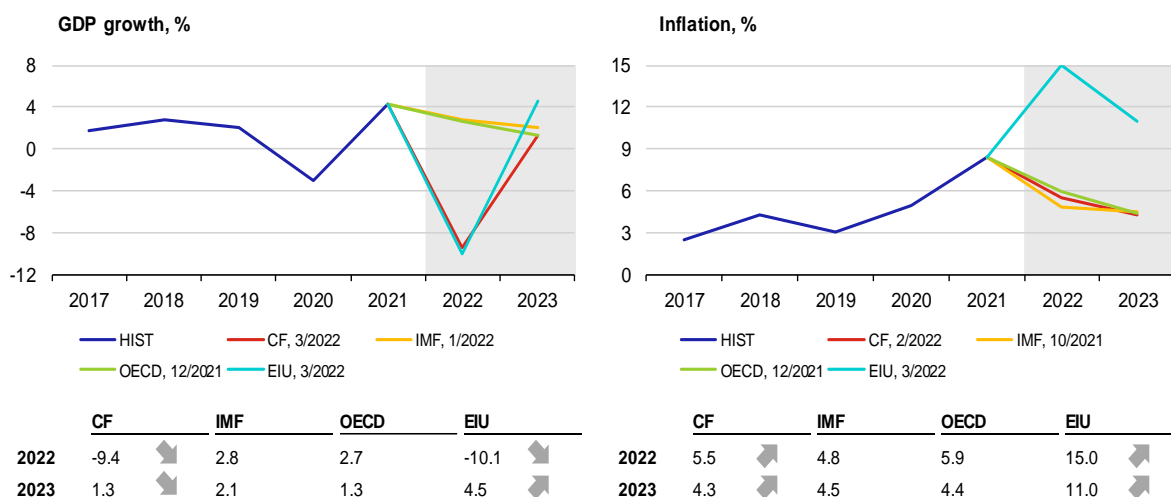
The global growth in energy and commodity prices is gradually increasing inflation in Japan, but the BoJ is not tightening its monetary policy. The BoJ maintained record easy monetary conditions at its March meeting. The central bank expects its inflation target to be exceeded in the coming months but does not intend to react to cost-driven price pressures. Consumer prices grew by 0.9% in February. The biggest growth was recorded for prices of food and energy, which Japan largely imports. Inflation expected by consumers one year ahead is at 2.4%, the highest level since measurement started in 2014. Unions have succeeded in negotiating a significant pay rise in the Japanese engineering industry. However, only future inflation will show if this is enough to deliver growth in real wages, which, according to the OECD, have been flat in Japan for 20 years now. The quarter-on-quarter GDP growth figure of 1.1% in 2021 Q4 suggests a continuing economic recovery, which, however, is still lagging behind Europe and the USA.



II.7 Russia

According to preliminary data, Russia paid interest on its foreign currency government debt to overseas investors.

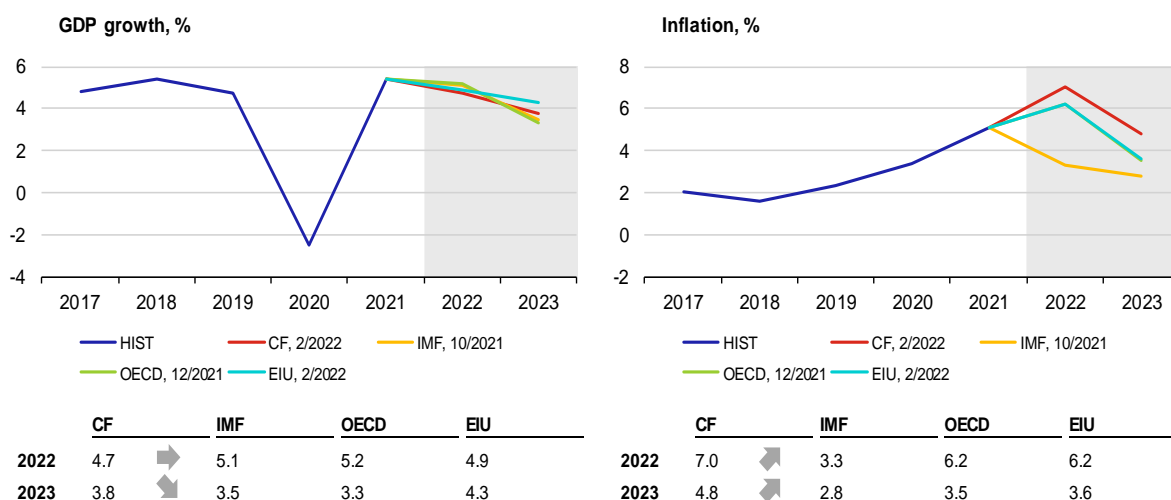
There were concerns about its ability to meet its obligations after the Russian central bank's G7 currency reserves, making up one-half to two-thirds of all Russia's reserves (USD 643 billion as of 18 February 2022) according to various estimates, were frozen. Another wave of concerns was triggered by the Russian president's decision to allow debts to some foreign creditors to be paid in roubles deposited on a special account in the Russian Federation instead of in the original currency. Major rating agencies expressed their worries about the situation by cutting Russia's rating to near or in default. In the last three weeks, the rouble fell sharply and subsequently corrected (by around $\pm 30\%$). The gain was due to Germany's clear plan to keep importing Russian gas. After a sharp one-day drop in share prices, the central bank suspended trading until 18 March on concerns about a further fall. Russian inflation now appears to be in double figures. Prices rose by 9.2% in February and a further 3.4% in the first eleven days of March. The key interest rate is at 20%.



II.8 Poland

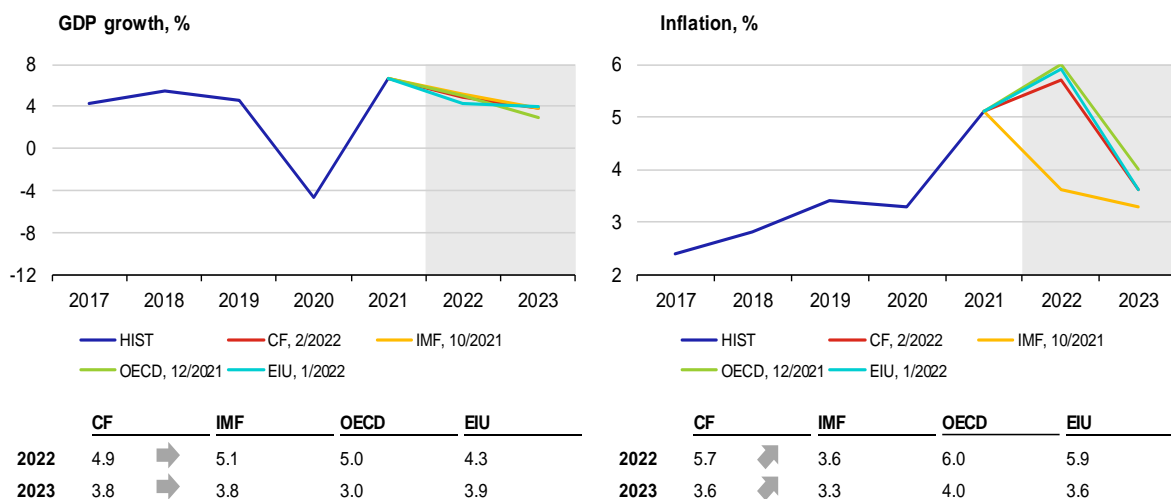
At its meeting on 8 March, the Monetary Policy Council of the Polish central bank decided to raise interest rates from 2.75% to 3.5% despite the uncertainties arising from the war in Ukraine.

Annual consumer price inflation slowed in February for the first time since June 2021 (to 8.5% from 9.4% in January) but remained high even so. The persistence of inflation pressures is also evident in nominal wage growth in the business sector, where wages have been rising rapidly (by 11.7% year on year in February). Annual real GDP growth went up from 5.3% in Q3 to 7.3% in 2021 Q4. Year-on-year industrial production growth slowed from 19.2% in January to 17.6% in February, but exceeded market expectations (16.6%). The slowdown was largely due to mining and quarrying. By contrast, manufacturing picked up slightly. The business confidence survey for the Polish economy remains pessimistic, despite recording a slight improvement from -12.4 points in January to -10.7 points in February.



II.9 Hungary

At its meeting on 22 February, the Monetary Council of the Hungarian central bank (MNB) decided to raise the key rate again (from 2.9% to 3.4%). The MNB also announced it was ready to continue tightening monetary policy until the inflation forecast is clearly on course for the 3% inflation target. Annual consumer price inflation rose from 7.9% in January to 8.3% in February. Core inflation went up significantly from 7.4% to 8.1%. Real GDP growth increased year on year to 7.1% in 2021 Q4 from 6.2% in Q3, significantly exceeding market expectations. According to GKI Economic Research, business confidence in the Hungarian economy decreased from 6.4 in December to 5.3 in February. Retail sales grew by 4.1% year on year in January (as against 6.3% in December). Industrial output accelerated from 5.8% in December to 8.9% in January, the highest growth since June 2021.

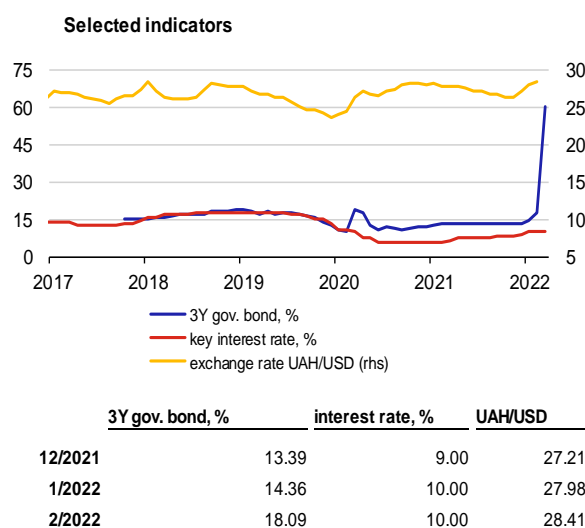
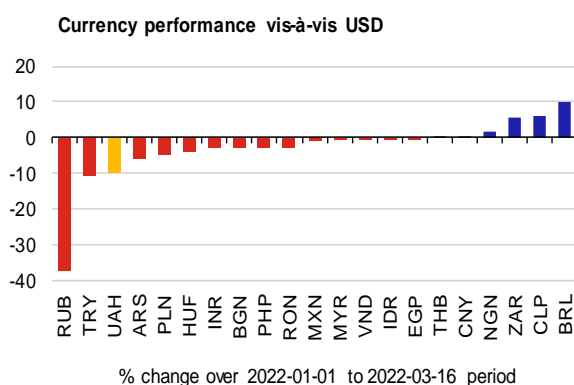
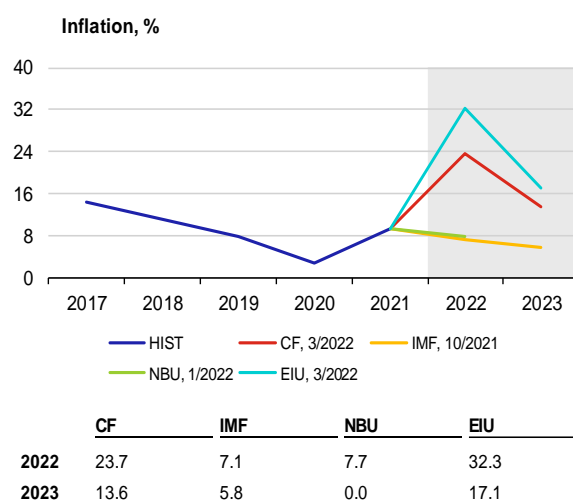
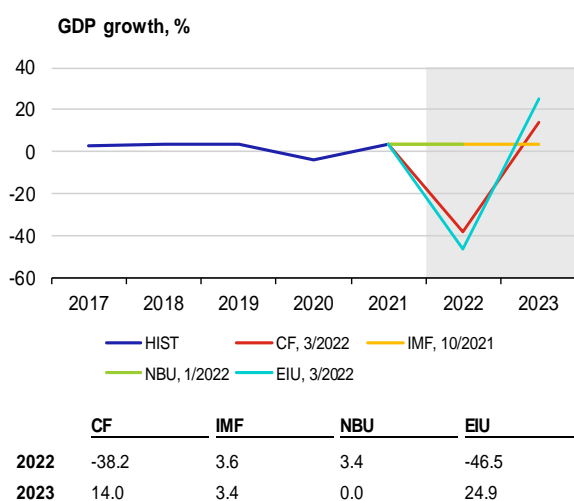


II.10 Countries in the spotlight – Ukraine

At the start of the year, the outlooks for this export-oriented economy were for GDP growth of around 3.5% and inflation of 7%–8%. The National Bank of Ukraine (NBU) chose an inflation target of 5% with a tolerance band of 1 pp under its mandate. At its January meeting, the NBU raised the key rate to 10% due to increased inflation pressures. Unemployment has stayed below 10% in recent years. The central bank sees the natural rate of unemployment at around 8.5%, a level which the labour market was close to at the end of last year. Initial estimates expect GDP to contract by around a half in 2022 and rebound rapidly in 2023. It should be noted that such a scenario assumes an early end to war operations and a peace deal. The country has succeeded in negotiating a loan of 1.4 bil. USD from the IMF to cope with the crisis caused by the attack by Russia. A support package of 925 mil. USD for Ukraine was provided by the World Bank.

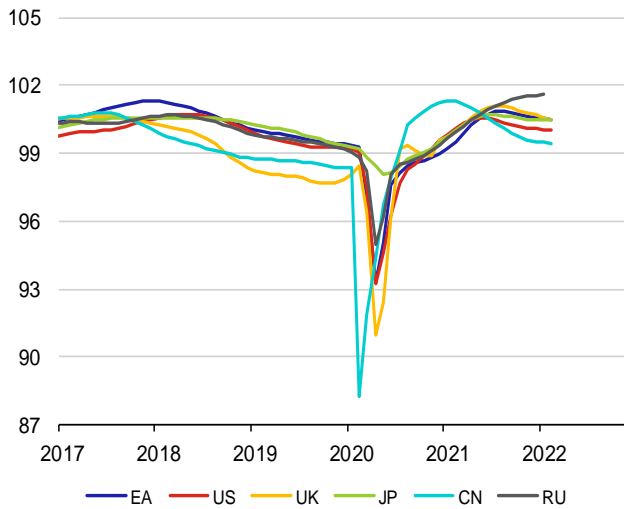
NBU Governor Kyrylo Shevchenko is as brave as President Volodymyr Zelensky but is less visible for obvious reasons. The governor has remained in Kyiv and is safeguarding communication by the central bank, which provides daily information on the operation of the banking sector. The aim is to ensure that the financial sector runs smoothly so it can help the country to develop again and return to normal after the war ends. The exchange rate of the Ukrainian hryvnia is now artificially fixed to maintain its stability. It is currently set at UAH 29.25/USD and UAH 33.17/EUR, slightly weaker than at the start of the year. The central bank has opened a special account for the needs of the military and another for humanitarian purposes. This is supporting inflows of foreign currency. The NBU's foreign exchange reserves amount to USD 27.5 bil (on 1st March). The bank is ready to use them mainly to return to a floating exchange rate after the war ends.

The invasion of Ukraine will affect economies around the world. Ukraine is not only Europe's largest grain producer (grain accounts for around 18% of its exports, going mainly to Egypt, Tunisia, Israel and Thailand), but also a supplier of key industrial components. Its supplies to the automotive industry are crucial for Europe, while global chip production relies on its neon supplies (Ingas and Cryoin produce half of the world's neon, and there is no available substitute now that they have closed down). Supplies to the pharmaceutical industry are also important. The largest export items are iron and steel.

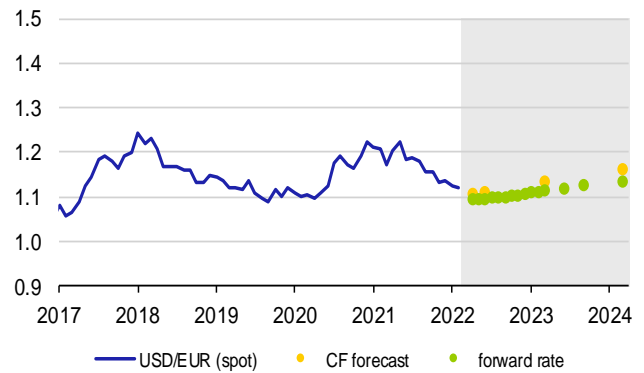


III. Leading indicators and outlook of exchange rates

OECD Composite Leading Indicator

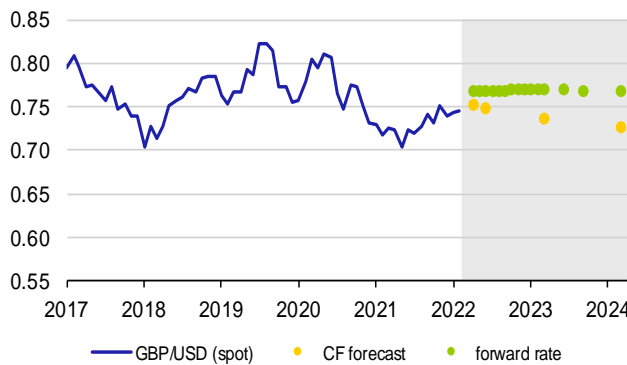


The US dollar (USD/EUR)



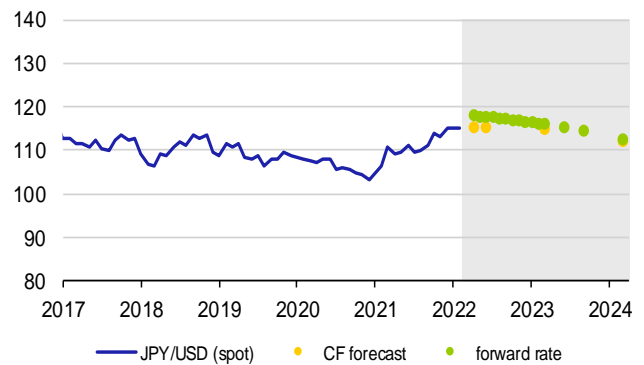
	14/3/22	4/22	6/22	3/23	3/24
spot rate	1.098				
CF forecast		1.110	1.114	1.136	1.164
forward rate		1.095	1.098	1.115	1.138

The British pound (GBP/USD)



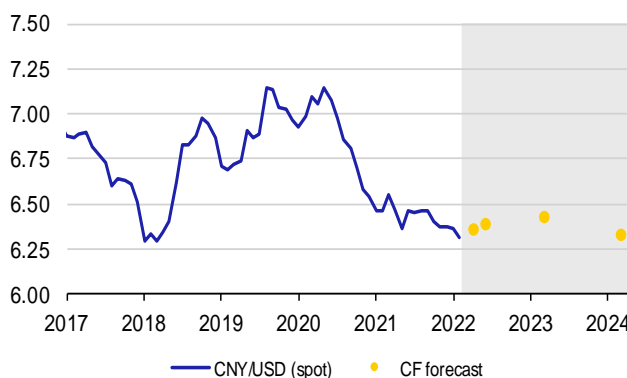
	14/3/22	4/22	6/22	3/23	3/24
spot rate	0.766				
CF forecast		0.754	0.749	0.738	0.728
forward rate		0.769	0.770	0.770	0.769

The Japanese yen (JPY/USD)



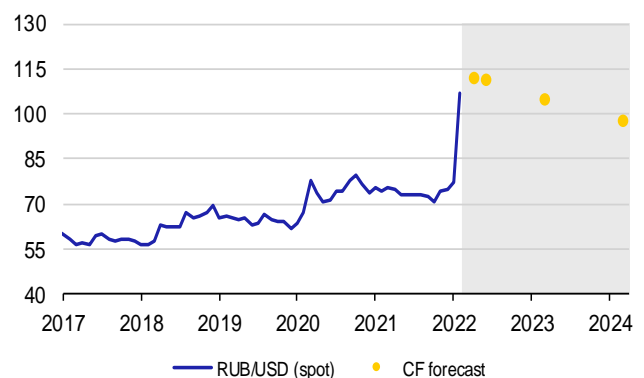
	14/3/22	4/22	6/22	3/23	3/24
spot rate	118.0				
CF forecast		115.6	115.5	115.3	112.4
forward rate		118.1	117.9	116.2	112.9

The Chinese renminbi (CNY/USD)



	14/3/22	4/22	6/22	3/23	3/24
spot rate	6.359				
CF forecast		6.364	6.396	6.433	6.334

The Russian rouble (RUB/USD)



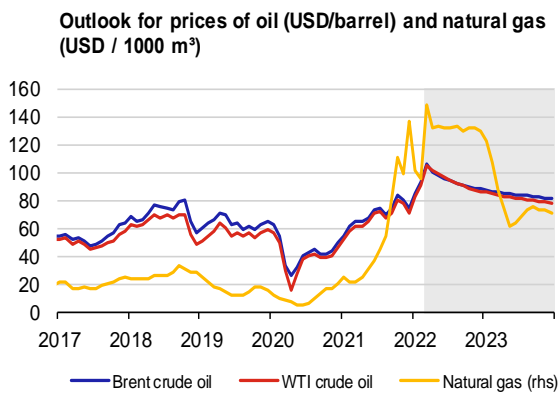
	14/3/22	4/22	6/22	3/23	3/24
spot rate	121.00				
CF forecast		112.30	111.70	105.40	98.05

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.

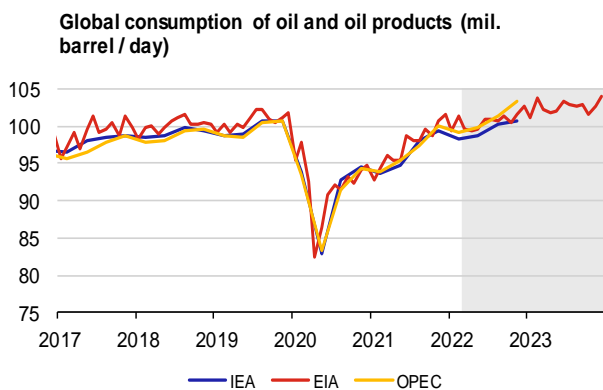
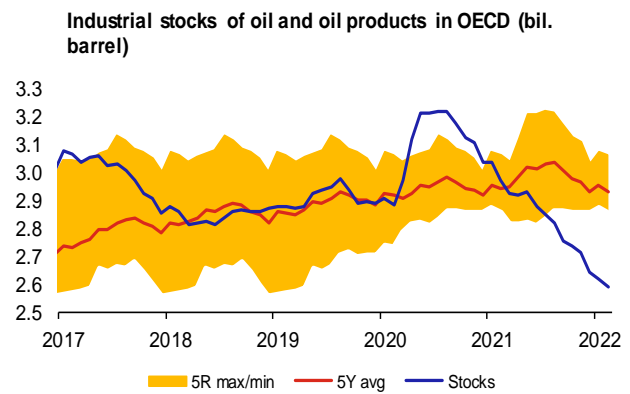
IV.1 Oil

The Brent crude oil price neared USD 100/bbl before the Russian invasion of Ukraine. It surged by 30% in eight days in response to the war, only to fall back equally quickly. The price stabilised after talks between Russia and Ukraine started. However, the oil market remains tight and, due to the risk of a halt in Russian oil exports, the price of oil contains a high risk premium. Sanctions have not yet been imposed on exports of energy commodities from Russia, so supplies under long-term contracts and deals concluded before the invasion have not been disrupted. However, large Western firms have stopped entering into new contracts for Russian oil for reputational or financial precautionary reasons. The IEA thus estimates in its March report that Russian exports of up to 3 million of the total of 8 million b/d of crude oil and petroleum products could be jeopardised from April. Although spot supplies of Russian oil are being offered on the market at a large discount, buyers are hard to find. However, OPEC+ continues to raise output only gradually. Surplus production capacity is now available only in Saudi Arabia and the UAE, and potentially Iran if it succeeds in renewing its nuclear deal with Western countries in the near future. Production in the USA is still growing only very slowly. Global oil inventories are thus continuing to fall quickly. At the end of January, commercial inventories in the OECD were at their lowest levels since April 2014 and were sufficient to cover around 57 days of future consumption. The IEA released around 63 million barrels from its member countries' strategic reserves, but this did not calm the market or oil prices much.

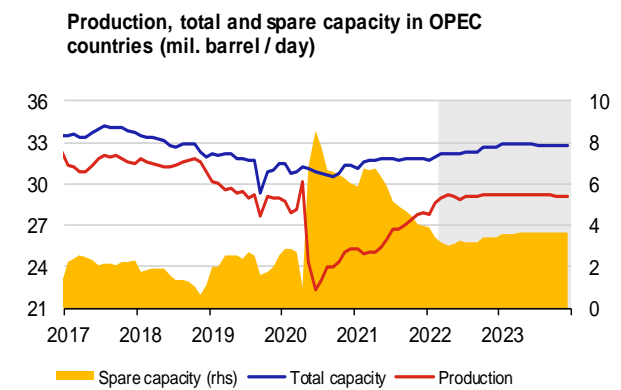
The EIA forecast, which was prepared when the growth in oil prices was peaking, expects the Brent price to remain above USD 115/bbl until May 2022 and then decline rapidly to USD 95/bbl at the end of 2022 and fall further to USD 83/bbl at the end of 2023. The mid-March market curve is based on the current lower price (after the price stabilisation) and is signalling a drop from around USD 100/bbl to USD 88.5/bbl at the end of 2022 and USD 82/bbl at the end of 2023.



	Brent	WTI	Natural gas
2022	93.94 ↗	93.37 ↗	1278.39 ↗
2023	84.62 ↗	82.08 ↗	797.72 ↗



	IEA	EIA	OPEC
2022	99.45 ↗	100.62 ↗	100.88 ↗
2023		102.56 ↗	



	Production	Total capacity	Spare capacity
2022	28.94 ↗	32.25 ↗	3.30 ↗
2023	29.19 ↗	32.82 ↗	3.63 ↗

Source: Bloomberg, IEA, EIA, OPEC, CNB calculation

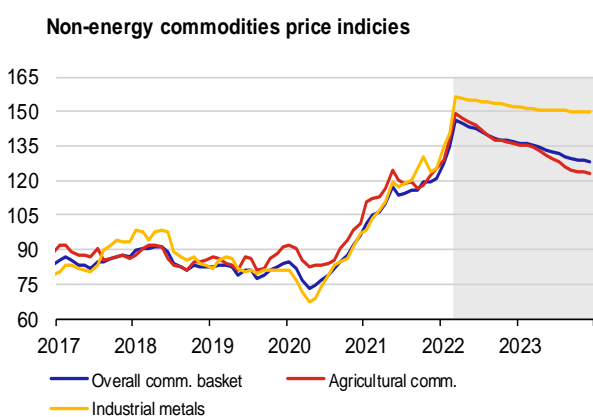
Note: Oil price at ICE, average gas price in Europe – World Bank data, smoothed by the HP filter. Future oil prices (grey area) are derived from futures and future gas prices are derived from oil prices using model. Total oil stocks (commercial and strategic) in OECD countries – IEA estimate. Production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

IV.2 Other commodities

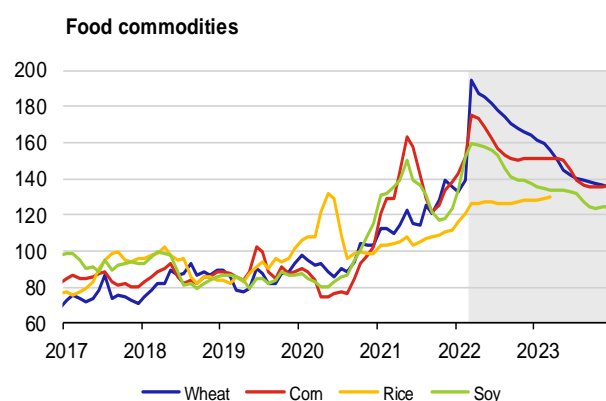
The spot price of natural gas in Europe had been on a slight downward trend since the start of the year but soared to new all-time highs in response to the Russian invasion of Ukraine. It subsequently recorded a sharp downward correction as talks between Russia and Ukraine started, but in mid-March it was still higher than before the Russian invasion. According to the market outlook, the gas price will remain at similar levels for the rest of this year and cannot be expected to fall significantly until early next year (more generally on natural gas prices see the thematic article in this issue). A similar trend can be observed for prices of electricity, which are closely correlated with natural gas prices. Coal prices also responded to the Russian invasion by rising sharply. By contrast, prices of emission allowances showed the opposite pattern, reacting to the war in Ukraine with a sharp drop and a subsequent partial correction.

The non-energy commodity price sub-indices also recorded strong growth in February and the first half of March, both rising to new all-time highs, but outlooks expect them to fall gradually. The fall should be deeper for food commodities, within which the price of wheat responded most strongly to the situation in Ukraine (first by rising by more than 60% and then by falling back slightly), as Russia and Ukraine are major exporters of this commodity. Prices of corn and soy increased much less (but remain elevated despite a falling outlook), as did rice and sugar prices. The price of pork surged in mid-February but fell in response to the invasion. Major declines were also recorded for prices of coffee, cocoa and rubber last month.

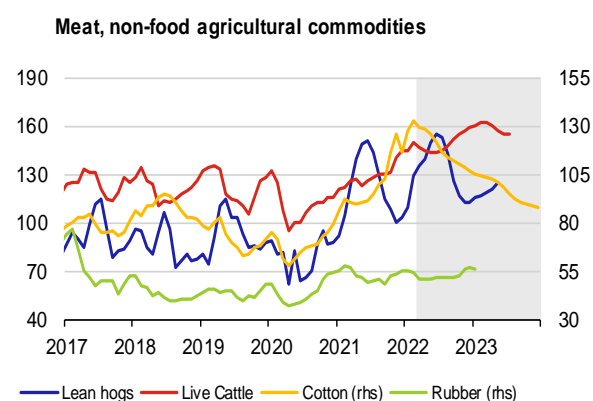
Prices of most industrial metals were already rising strongly before the crisis in Ukraine on the back of high energy prices. They responded to the invasion with only a temporary increase. Only the price of nickel surged and remained high, as Russia accounts for around 13% of global nickel production.



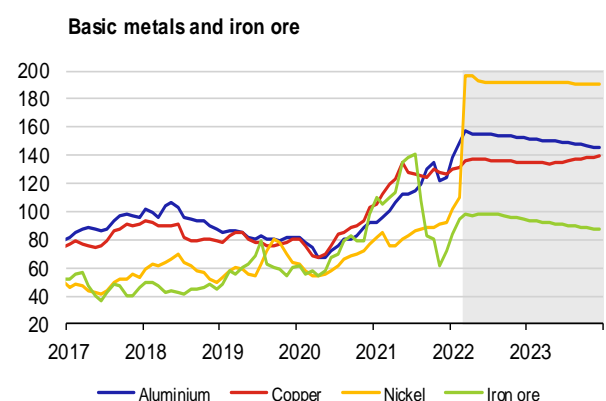
	Overall	Agricultural	Industrial
2022	139.2	140.3	151.4
2023	132.1	129.0	150.6



	Wheat	Corn	Rice	Soy
2022	170.0	157.2	125.5	147.6
2023	145.1	143.1	129.3	130.0



	Lean hogs	Live Cattle	Cotton	Rubber
2022	131.7	148.8	119.4	52.7
2023	119.3	158.7	96.6	56.3



	Aluminium	Copper	Nickel	Iron ore
2022	152.7	135.2	178.5	95.8
2023	148.8	136.2	191.2	90.3

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.

Developments in the European natural gas market¹

Global gas prices rose sharply in 2021, culminating in turbulence in December. To understand the reasons for this, we need to look not only at economic fundamentals such as demand, supply and inventories and at the global geopolitical situation, but also at the significant changes in how natural gas has been traded over the past two decades. This article shows that a wide range of factors affect the price of natural gas, and the interplay of these factors caused prices in Europe and Asia to reach historical highs at the end of 2021, which were, however, surpassed because of Russian military invasion of Ukraine. Based on market outlooks and related analyses, we cannot expect natural gas prices to decline rapidly in the coming years.

Introduction

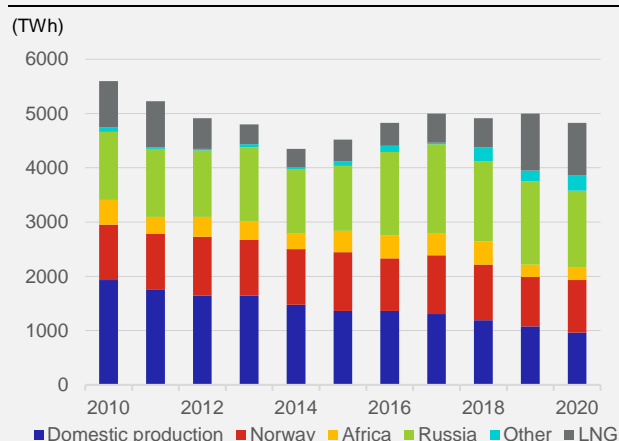
Global natural gas consumption has long been growing the fastest of all the fossil fuels, and strong growth can be expected in the future as well. The industrialisation of emerging economies in Asia, the Middle East and Latin America is a strong contributor to the growth in demand. Rapidly rising production and transport of liquefied natural gas (LNG) has made natural gas available even in countries that are not close to gas fields. According to the IEA, natural gas accounted for about a quarter (6,300 TWh) of global electricity production in 2020. Because of their lower greenhouse gas emissions, gas-fired power plants are replacing less environmentally friendly coal-fired power plants. However, their importance lies mainly in their flexibility. Unlike coal power plants, they can be switched quickly from off to fully on and back off again, so they are ideal as a reserve source to balance seasonal and short-term swings in generation at solar and wind plants, whose nameplate production capacity is growing rapidly. Gas-fired plants will act as a necessary transitional link² until the storage of electricity from renewable sources is resolved on an industrial scale.

Natural gas consumption in Europe will continue to rise. Gas consumption in Europe fell at the start of the last decade due to rapid growth in the generation of electricity from renewables, but this trend has reversed since 2015, when gas-fired plants started to replace decommissioned coal and nuclear plants. The temporary inclusion of natural gas among clean energy sources means that natural gas consumption will increase in the medium term in developed countries as well.

However, Europe is increasingly reliant on gas imports, due to falling domestic production (see Chart 1). Natural gas extraction in Europe has roughly halved since 2010, due to falling output on the European continent (the Netherlands) and in the North Sea (UK). Demand is thus being met increasingly with pipeline supplies from Russia, Norway, North Africa and Azerbaijan and with imports of LNG. According to the EIA, the USA (26%), Qatar (24%) and Russia (20%) contributed the most to LNG imports into Europe in 2021. Russia remains the biggest supplier of pipeline gas to Europe. It prefers supplies based on long-term bilateral contracts. To transport its gas, it mainly uses the new Nord Stream pipeline (along the bottom of the Baltic Sea) to Germany and the TurkStream pipeline (along the bottom of the Black Sea via Turkey) to southern Europe. By contrast, Russia's monopoly exporter Gazprom is restricting supplies through the traditional pipelines running via Ukraine and Belarus and Poland.

The rising global LNG production is making the international gas market increasingly interconnected, but natural gas trading mechanisms still vary from region to region. Prices in individual regions are thus no longer independent and are gradually converging. However, the growing interconnectedness of what were originally isolated markets also means that demand or supply shocks in one region have an effect in distant regions, and not only on gas prices themselves, but also on prices of related commodities (electricity, fertilisers and chemicals). But despite having converged partially, natural gas prices remain persistently different across regions. In the USA, natural gas is traded solely on a market basis at present (supply, demand, inventories), while supplies based on long-term bilateral contracts, whose prices are

Chart 1 – Structure of natural gas supply to the European market



Source: EIA, own calculation
Note: 1 TWh is about 95 mil. m3 of natural gas

¹ Author: Jan Hošek. The views expressed in this article are those of the author and do not necessarily reflect the official position of the Czech National Bank.

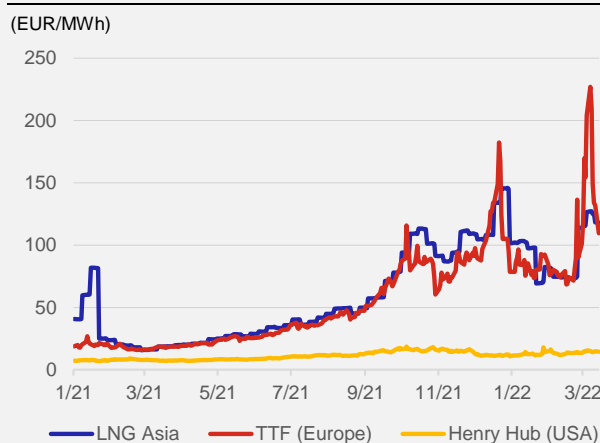
² In the final phase of the transition to renewable sources, electricity will be stored using batteries, hydrogen tanks and other technologies as a reserve source to cover the inevitable swings in production. However, these are currently in the early stages of development. It should also be noted that while these technologies will make it possible for Europe to reduce its reliance on imported fossil fuels for electricity and heat generation, they will also require it to import significant amounts of rare metals and minerals (such as lithium, cobalt and nickel).

derived from those of competing fuels (such as crude oil, fuel oil or coal), predominate in Asia. In Europe, there is strong pressure to switch from long-term contracts indexed to oil prices to shorter-term contracts based on market principles. This should reduce the monopoly suppliers' pricing power and increase trading transparency. These processes are also going on in Asia. Physical and virtual trading hubs, to which sellers and buyers of physical gas, firms looking to hedge against price movements, and investors speculating on future prices have unrestricted access, are thus forming in Europe and around the globe. These changes are mainly affecting gas producers – making it harder for them to plan new investments – and may thus have a negative impact on the future supply of gas. However, consumers, for whom such changes should ensure lower prices due to higher competition in the market, may also be exposed to greater uncertainty and price volatility.

Rising LNG production caused a glut in the global gas market in the past decade, but the situation changed dramatically in 2021.

We discussed the LNG market in detail in the September 2018 issue of GEO.³ At the time, we concluded that the LNG glut would peak in 2020 and subside in 2022. In retrospect, it is evident that until 2020 rapid growth of LNG production did indeed keep the prices of natural gas down in most regions of the world. However, the global natural gas market was unexpectedly affected by the outbreak of the coronavirus pandemic. This initially reduced demand in 2020 and led to an unprecedented drop in natural gas prices, but the situation changed radically the following year. As the global economy recovered, global demand for all primary energy commodities went up and their prices surged. However, market prices of natural gas saw the largest increase by far, reaching historical highs in Europe and Asia in December 2021 (see Chart 2). These highs were, however, surpassed later due to the outbreak of war in Ukraine.

Chart 2 – Market prices of natural gas since 2021



Source: Refinitiv Datastream

Note: TTF = natural gas in Europe; HenryHub = natural gas in the USA

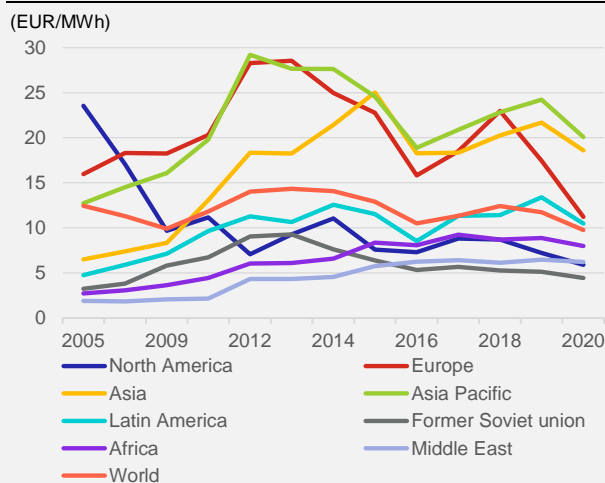
A brief look into the past

International trade in natural gas started to increase in importance around the 1960s. Gas was mostly consumed locally near gas fields. Pricing mechanisms included administered prices set by government agencies, more or less market-based prices derived from the price of another (usually competing) reference commodity, and prices determined purely by supply and demand on spot markets.⁴ These mechanisms, and gas prices themselves, varied across regions (see Chart 3), as there was no way of creating interregional trading links (unlike, for example, in the oil market).

In 2010, long-term contracts indexed to the crude oil price still dominated international natural gas trade.

This meant that the price of gas was derived from prices of (competing) reference commodities. This mechanism originated in Europe in the 1960s and later extended to LNG trading in Asia. In the USA, by contrast, trading hubs quickly became dominant, with the natural gas price determined by supply and demand on the market. This form of liberalised market began to spread to Europe in the late 1990s. The first virtual trading hub – the National Balancing Point (NBP) – was established in the United Kingdom. The UK pipeline system was later connected to Belgium, and market trading in natural gas thus also started to penetrate Northwest Europe.

Chart 3 – Market prices of natural gas by region



Source: IGU – Wholesale Gas Price Survey 2021 Edition

³ [The liquefied natural gas \(LNG\) market](#)

⁴ We are referring here to spot markets in the broader sense, where – in addition to spot transactions – futures contracts with various maturities, physical and virtual transactions, and standardised, OTC and bilateral trades are also executed, though all based on the current situation in the gas market.

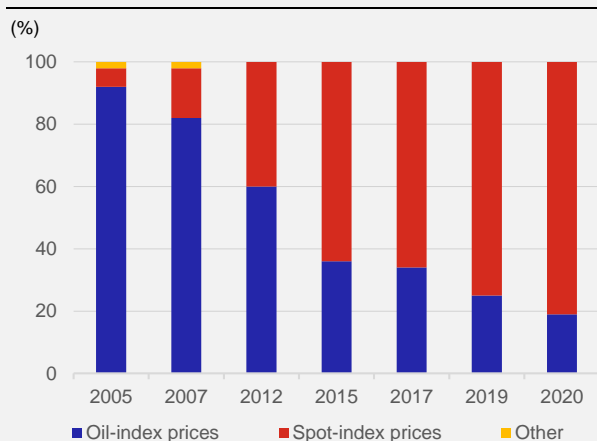
At first, natural gas trading based on market principles did not pose a major problem for incumbent market players in Europe. A limited number of traditional wholesalers bought natural gas from a small number of suppliers (producers) under long-term contracts (20 years+). Gas prices were linked to prices of competing products (crude oil, oil products or coal and other commodities) and pricing formulas could be adjusted from time to time by mutual agreement based on the market situation. Buyers also had some freedom regarding the quantity they took each year, which typically ranged from 85% to 115% of the nominal annual contract volume. However, the contracts also contained a “take-or-pay” clause requiring the buyer to pay the seller for a minimum agreed quantity even if it took less.⁵ The traditional wholesale buyers then resold the gas under shorter contracts to local distribution networks and large end customers (industrial firms). If the spot market price diverged from the prices of long-term contracts, the traditional wholesale buyers usually had sufficient room to manoeuvre. In the case of a higher market price, they bought more gas from the sellers and supplied it to the spot market as well. In the opposite case, they reduced their long-term contract orders and bought the rest on the spot market. As a result, spot prices did not deviate far from the indexed prices of long-term contracts

After the 2008 financial crisis, however, the situation changed fundamentally and Europe became a “battleground” between the two different pricing mechanisms (Melling, 2010). Several factors contributed to this. Global demand for natural gas, especially from industrial firms, fell sharply in late 2008. At the same time, the supply of LNG on world markets rose and supplies were redirected from Asia and the USA⁶ to Europe. The gradual adoption of legislation to liberalise the European market caused more and more small traders to appear and compete with incumbent wholesalers. Traditional traders were bound by long-term contracts and minimum amounts, which they were unable to resell amid such a sharp decline in demand. In addition, the sharp drop in market prices meant they could not compete in terms of price either. The

only option left open to them was to renegotiate their existing contracts – not only in terms of price, but also in terms of take-or-pay levels.

The share of gas traded at market prices started to grow quickly in Europe. Producers (especially from Russia and Algeria), who did not want to lose the long-term contract system or their long-term customers, eventually relinquished their bargaining power. They reduced the take-or-pay commitments (albeit temporarily) and started to supply some of their gas to traditional buyers at (lower) market prices. This amount gradually rose.⁷ However, there was a simultaneous rise in the amount of gas supplied to spot markets (especially pipeline gas from Norway and LNG from Qatar). The global gas glut lasted until 2020. This, along with growing competition, kept market prices below prices of contracts indexed to the price of oil. According to the EIA, the ratio of oil-indexed contracts declined steadily from more than 90% in 2006 to less than 10% in 2020 (see Chart 4).⁸

Chart 4 – Growth in the share of gas imported into Europe at market prices



Source: EIA, IGU

Causes of the surge in natural gas prices in 2021

After more than a decade of a relative glut of natural gas in the global market, 2021 saw a surge in gas prices in most regions, culminating in strong turbulence in December. According to the IEA (2022), this resulted from a combination of demand- and supply-side factors. The 4.6% increase in global natural gas consumption in 2021 was more than twice as large as the decline in consumption in 2020.

The strong growth in global demand was driven both by the economic recovery from the recession caused by the coronavirus pandemic and by a series of adverse weather events. A cold spell at the start of 2021 caused natural gas consumption in Asia to rise. Large importers such as Japan and South Korea subsequently replenished their stocks during the year. To do so, they made maximum use of their long-term LNG import contracts, the oil-indexed price of which was more favourable than the spot price. This caused deliveries to the spot market to fall (despite increasing exports from the USA). Demand from China – whose economy recovered quickly from the pandemic and was hit by an energy crisis caused

⁵ The buyer was thus in effect prepaying for future supplies and could take this gas for the next few years as long as it met the minimum take-or-pay requirement in that period. This clause ensured the seller the stable income it needed to repay its upstream investments.

⁶ Thanks to the “shale revolution”, crude oil and natural gas production rose sharply in the USA. The United States thus became less and less dependent on LNG imports, turning into a net exporter of natural gas around 2018.

⁷ In addition, clauses forbidding buyers from reselling gas to non-contractual destinations were dropped under new legislation.

⁸ In the case of LNG, the transition to market prices was not as fast. About 60% of the total volume was still indexed to the price of oil in 2020.

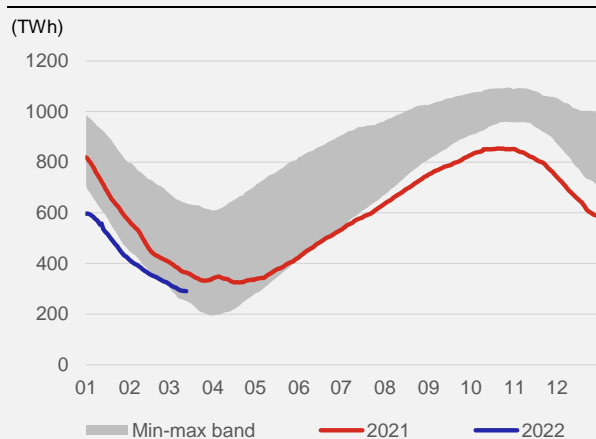
by a shortage, and high prices, of coal – also grew strongly. The spot price of gas in Asia soared as a result. Gas consumption increased due to the cold winter and the subsequent refilling of reservoirs in North America, too. In Brazil and Turkey, the worst drought in a decade reduced hydropower generation during the year. It was replaced, among other things, by greater use of gas-fired power plants, which boosted local demand for natural gas. Demand for natural gas is rising steadily in almost all the emerging economies of South-East Asia (such as India and Pakistan).

On the supply side, planned and unplanned extraction and LNG production outages had an adverse effect. The coronavirus pandemic caused labour shortages in 2020, and the regular maintenance of extraction facilities in gas fields was postponed. It was subsequently carried out in 2021 at a time of higher demand for gas. In addition, 2021 saw record LNG supply outages due to malfunctions (according to the IEA, up to 8% of nameplate capacity was out of service in some periods).

The gas market situation in Europe was specific.

European gas storage remained considerably depleted after the long, cold winter. Low wind generation in the summer necessitated greater use of reserve gas power plants in Germany. This, together with high gas prices and a recovery in industrial activity due to the receding pandemic, slowed the replenishment of gas stocks during the summer. Demand for gas was also pushed up by rising prices of carbon dioxide emission allowances. The European gas storage filling rate ahead of the next heating season therefore fell further below its long-term average in 2021 (see Chart 5). The low filling rates coupled with worsening political relations with Russia gave rise to concerns of gas shortages not only in the coming winter, but throughout 2022. This drove natural gas prices to unprecedented levels before the Christmas holidays (see Chart 2).

Chart 5 – Natural gas inventory in Europe



Source: Gas Infrastructure Europe - Aggregated Gas Storage Inventory
 Note: Minimum and maximum of 2016 – 2020 period for the corresponding day of the year

Current and future trends on the European gas market

Increased LNG supplies to the European market fostered a relative calming of the situation at the start of 2022.

Thanks to a mild December and sufficient gas inventories in Asia, demand fell and LNG spot prices in Asia⁹ dropped below the European level. Spot supplies, especially from the USA and Qatar, could thus be partially redirected from Asia to Europe at the end of 2021. China was meanwhile reselling surplus gas purchased under its long-term contracts. Demand for LNG also declined in Brazil, where heavy rainfall increased hydropower generation at the expense of gas. In January 2022, a record amount of LNG was thus sent to Europe. Although this merely returned European gas prices to their October and November levels (which even so were extremely high from the historical perspective), the price volatility decreased significantly. However, the gas market remains tight and the period for which natural gas prices are expected to remain elevated is gradually getting longer.

The weather in Europe also had a positive effect. Temperatures in Europe in January and February were higher than usual, and windy weather increased the output of wind farms in the North Sea. This in turn reduced the need for electricity from gas-fired power stations. The deficit in the European inventory relative to the five-year average therefore decreased in the period in question.

According to the IEA, global growth in demand for natural gas will be lower in 2022. This is because of an expected weakening global economic growth and lower demand in response to high gas prices. By contrast, supply is expected to recover. This could improve the inventory replenishment situation, reduce market tightness and thus allow gas prices to fall.

However, the state of calm on the European natural gas market was short-lived. The invasion of Ukraine by Russian military troops, and the associated Western sanctions against Russia and possible retaliatory sanctions, cast uncertainty on the security of natural gas supplies from Russia. Complications could also be caused by the onset of a lengthy period of colder weather or outages of renewable electricity sources. The outlook for gas prices is also an issue. Futures contracts indicate that the natural gas price in Europe will remain elevated for longer (at least until 2023 Q1). In addition, summer and winter prices do not differ greatly, so the incentive to refill European gas storage facilities during the summer is low. It may take until 2025 before any lasting relief is felt. By then, new LNG production and export facilities are expected to have come online, especially in Qatar.

⁹ Japan Korea Marker (JKM) – Asia's spot market reference price

Consequences of the liberalisation of the European gas market

During the past decade, the European market was clearly dominated by contracts linked to market prices of gas.

There were several reasons for this. From an administrative point of view, there was an attempt by the EU to liberalise the European natural gas market through legislation. The glut of gas on world markets also had a positive effect, reducing the market price below the oil-indexed price. Customers thus pushed for gas supplies at market prices. This increased the importance of trading hubs, where more and more contracts were concluded at market prices. Due to the large-scale participation of financial investors, their liquidity rose.

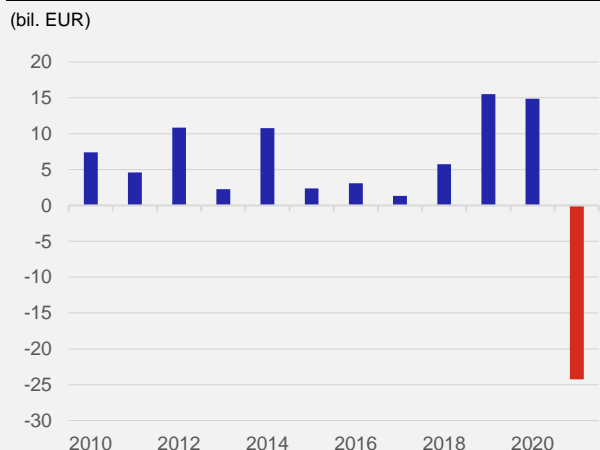
For almost all of the past decade, purchasing natural gas at market prices was favourable for consumers.

Due to the long-term gas surplus on the market and the growth in spot prices, traditional sellers and wholesale buyers gradually lost their pricing power and part of their stable profits. For example, Zeniewsky (2021) defends the benefits of importing natural gas to Europe at market prices, acknowledging that although liberalisation had exposed European consumers to greater price volatility, it had saved them EUR 70 billion over the past decade (see Chart 6). In addition, reference prices of oil in indexed contracts were smoothed by the use of 6–9 month moving averages, so they did not reflect the current market situation. While this provided a relatively stable gas price and made it easier for suppliers to plan investments in upstream projects, transport pipelines and LNG terminals, buyers were unable to take advantage of the low prices because of the glut of natural gas on the market at the time (due among other things to the US shale gas revolution). Moreover, market flexibility is needed for the transition to renewable electricity sources, whose output is highly volatile and requires flexible reserve sources (gas-fired power stations) and hence flexible gas supply.

However, 2021 saw a fundamental change. As described above, there was strong growth in demand on the global natural gas market and hence a marked increase in prices in 2021. The market price of gas thus moved well above the oil-indexed price. The scenario described by Melling as far back as 2010 thus materialised. He predicted that the transition to market prices would harm traditional large traders in the market the most. As most production is in the hands of a few large producers, Europe will almost certainly face oligopolistic behaviour that will allow producers to control gas prices in the longer term. Producers will manage extraction in such a way as to maximise their profits.¹⁰ They will bypass traditional wholesalers and conclude contracts with smaller companies and large end customers, thereby gaining a better overview of the market situation. If, subsequently, there is stronger growth in demand (which can almost certainly be expected due to the industrialisation of large emerging economies), sellers will regain their great pricing power, which will provide them with perhaps higher profits than the original oil-indexed contracts. European legislation has meanwhile restricted the monopolistic behaviour of traditional wholesalers, who have come up against strong competition from smaller firms. However, the behaviour of producers is much more difficult to influence using administrative measures. If conditions arise where other competitors are unable to increase production sufficiently, one large producer may influence the market price of gas by restricting its supply to the market. This was not possible back when contracts were indexed to the price of oil.

Only time will tell whether the changes towards a purely liberalised gas market in Europe will be viable. If strong growth in demand and only limited growth in production (supply) continues on the global natural gas market, the situation that prevailed in 2021, which was highly unfavourable for European consumers, may persist in the years ahead. This would logically change how market trading in natural gas is regarded.¹¹ It would also very likely have an effect on trading mechanisms in the Asian LNG market, where the transition to market contracts has been slower so far. Natural gas trading based on short-term contracts and market prices gives rise to greater volatility¹² and uncertainty and thus generally reduces

Chart 6 – Comparison of gas import costs in Europe



Source: IEA

Note: Hypothetical difference between gas import costs under actual import prices and costs in the case of 100% oil-indexed prices.

¹⁰ We are currently seeing similar behaviour among firms extracting shale oil in the USA. In the first phase of the shale revolution, they tried to maximise their market share, which led to a large oil glut on global markets. This resulted in an oil price which did not cover their investment cycle and caused the entire sector to suffer financial problems. These firms have now changed their behaviour and are curbing growth of upstream investment and using the revenues from high oil prices to service their loans and pay dividends.

¹¹ In response to the turbulence and rising prices on the gas market, some buyers are already attempting to return to oil-indexed contracts.

¹² At trading hubs, trading takes place not only in the physical commodity, but also in financial instruments that do not ultimately end in physical delivery or offtake. These instruments are used not only by firms to hedge future prices, but also by financial investors. On the one hand, financial investors increase hub liquidity. On the other hand, given their herd behaviour, they amplify price swings originally caused by only a

the incentive for producers to invest upstream. Such investment is extremely costly and involves long repayment periods. In addition, market sentiment – affected by the push to reduce carbon dioxide emissions – generally does not favour investment in fossil fuel extraction. Banks and investors thus prefer investment projects that focus more on building renewable energy sources.

The real impact of high natural gas prices on the economy

Spot prices at trading hubs may not be a perfect measure of the impact of gas prices on the economy.

Numerous different prices can be observed in spot markets. Day-ahead and month-ahead trades account for the largest volumes. As on the oil market, the futures curve can have various slopes. If traders perceive a current surplus of a commodity in the market, the futures curve has a positive slope (contango), which means that prices of contracts with earlier delivery are lower than those with later delivery. This situation was typical in the past decade, when it was advantageous for traders to buy contracts with earlier delivery. The opposite case (a negative futures curve slope) is called backwardation. The actual average price of imported gas thus depends on the term structure of physical contracts and is hard to derive from prices on spot markets (where the majority of contracts do not end in physical delivery). However, we can get some idea from customs import statistics. The price often quoted (especially in the past) was the German border price, which was an estimate of the import price of Russian gas. It was calculated as the ratio of the total price to the physical amount (in energy units) of imported gas in a given month. Similarly, the price of imported gas in the Czech Republic can also be calculated.

The results are summarised in Chart 7. It can be seen that the sharp rise in market prices at the end of 2021 may not have a corresponding impact on producer prices or consumer price inflation, as some of the gas was contracted earlier. However, the longer spot prices remain high, the greater the pass-through to current import prices, and thus to the economy, can be expected.

Conclusion

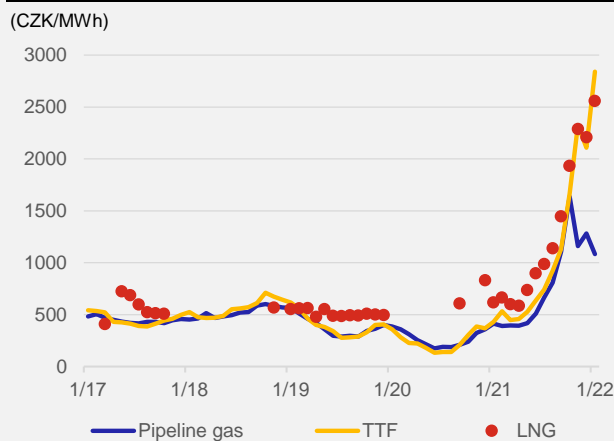
The global natural gas market is currently the fastest growing segment of the commodity markets. Natural gas consumption is increasing rapidly, especially in the emerging economies of Asia and South America. Growth in the production and export of LNG has made the natural gas market more global. Nowadays, gas prices in one region can be affected by developments in very remote areas of the world. Global demand for natural gas is growing because of the push to move away from coal combustion, as natural gas produces less greenhouse gases. In some places, decommissioned nuclear power stations are being replaced by gas-fired plants. The growing share of renewable energy sources in electricity generation has increased the importance of natural gas and gas-fired power stations as a reserve source for these unstable and weather-dependent technologies, as unfortunately the storage of large quantities of electricity is yet to be technically resolved. Electricity prices (especially in Europe) thus currently depend heavily on gas prices.

The European natural gas market has seen significant changes in the past decade. The original long-term contracts with gas prices derived from prices of oil and other energy commodities were based on the philosophy of fuel competition at the end customer. These contracts were favourable for producers, as they provided them with a regular income and allowed them to plan. In turn, they guaranteed consumers relatively stable prices. However, they did not take into account movements in market fundamentals directly in the gas market. In the past decade, the global natural gas market was in surplus and market prices were below oil-indexed prices. Consumers thus pushed for market prices to be taken into account in their contracts and the European Union made efforts to increase competition in the natural gas market through legislation. In 2020, more than 90% of natural gas was supplied to the European market on the basis of significantly shorter contracts and prices were determined solely by market forces.

Trading on the basis of market gas prices can lead to higher price volatility and persistently higher price levels, especially if there is a shortage of the commodity on the market. This manifested itself significantly in 2021. Melling (2010) described the possible consequences of future market liberalisation and the transition to market pricing. He predicted that traditional wholesale buyers would be most affected, as they would lose their monopoly profits. Conversely,

modest change in fundamentals. The total trade volume at a hub can be many times higher than the physical amount of gas ultimately delivered. This ratio is called the churn rate and may be much higher than 10.

Chart 7 – Comparison of gas import prices in the Czech Republic with market prices at TTF



Source: Datastream, CZSO, own calculation
Note: TTF – average price of monthly contract for a given month

gas producers would be able to adapt to the new situation over time and possibly even increase their profits. On the supplier side, there are typically only a small number of large oil-producing companies, and oligopolistic behaviour cannot be ruled out (and is hard to regulate administratively). A single large producer can cause market prices to rise significantly by reducing supply without any great risk of losing its market share. This is something we are observing at present. One of the few instruments the European administration has to combat gas price volatility is to make better use of, and to better interconnect, European underground gas storage facilities. Discussions on this topic are currently under way. However, only time will tell whether natural gas trading on a purely market basis will be viable and whether it will gain ground in other regions outside Europe.

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Keywords

natural gas, LNG, oil indexation, gas-on-gas competition, trading hubs

JEL Classification

D40, D43, L10, Q40

A1. Change in predictions for 2022

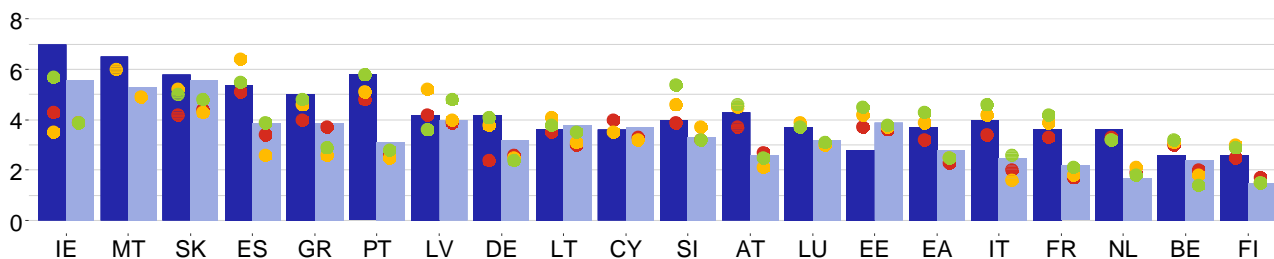
	GDP growth, %				Inflation, %			
	CF	IMF	OECD	CB / EIU	CF	IMF	OECD	CB / EIU
EA	+1.2	+0.7	+0.6	+0.9	-1.4	+1.0	+0.5	-0.6
US	+1.9	+0.8	+1.7	+1.5	-0.6	+1.9	+1.5	+2.7
UK	+2.7	+1.8	+1.7	+2.0	-2.9	+0.3	-0.7	+0.8
JP	-1.0	-0.8	-0.3	+0.5	-1.2	-0.9	-0.7	-0.9
CN	+3.0	+2.4	+2.3	+2.6	-1.3	-0.8	-1.4	-1.4
RU	+1.7	+1.8	+0.9	+1.8	+3.4	+2.5	+0.8	+1.7

A2. Change in predictions for 2023

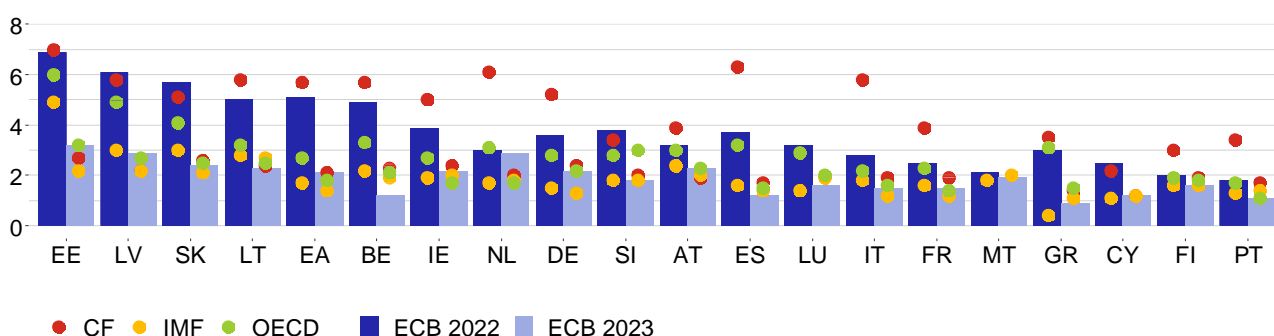
	GDP growth, %				Inflation, %			
	CF	IMF	OECD	CB / EIU	CF	IMF	OECD	CB / EIU
EA	+0.7	+1.9	--	+0.8	+4.0	+0.3	--	+3.3
US	+0.8	+1.8	--	+0.6	+4.0	+1.0	--	+2.0
UK	+1.9	+2.8	--	+2.3	+4.0	+0.6	--	+3.6
JP	+0.5	+1.9	--	+2.5	+0.7	-0.2	--	+0.1
CN	-0.2	-0.5	--	+0.3	-0.1	-0.1	--	-0.2
RU	-11.6	+0.8	--	-12.5	+1.3	+1.0	--	+10.9

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

GDP growth in the euro area countries in 2022 and 2023, %



Inflation in the euro area countries in 2022 and 2023, %

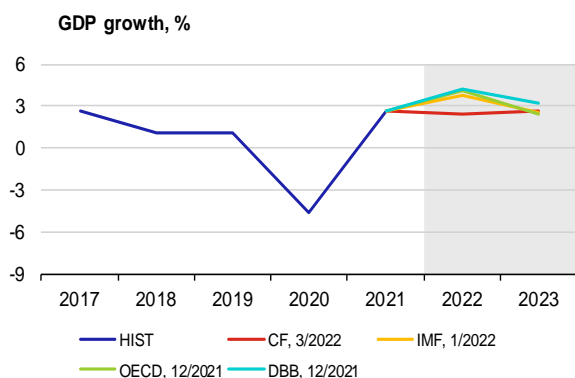


● CF ● IMF ● OECD ■ ECB 2022 ■ ECB 2023

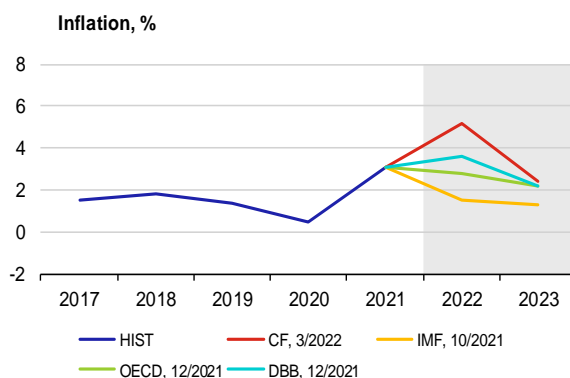
Note: Charts show institutions' latest available outlooks of for the given country.

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

Germany

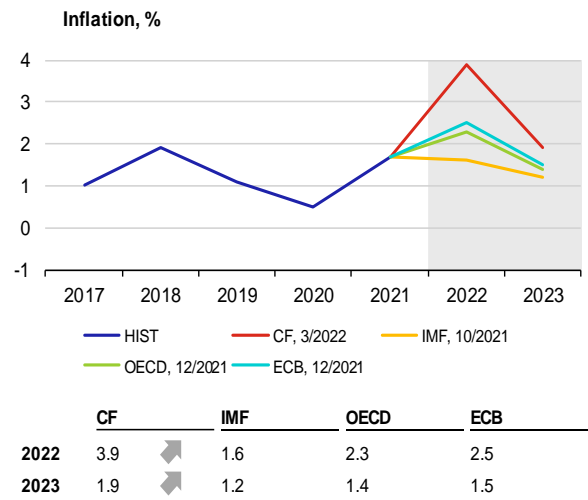
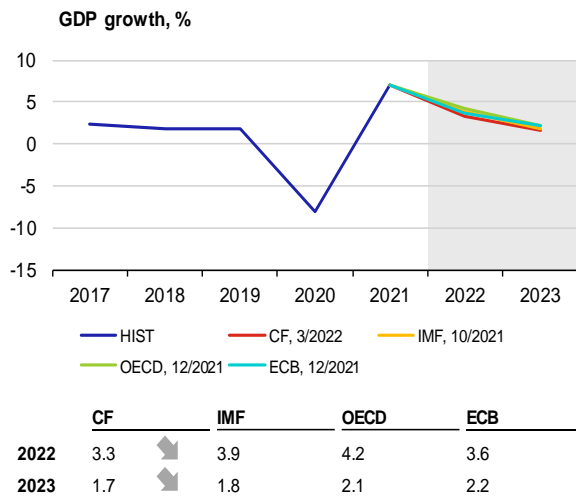


	CF	IMF	OECD	DBB
2022	2.4	3.8	4.1	4.2
2023	2.6	2.5	2.4	3.2

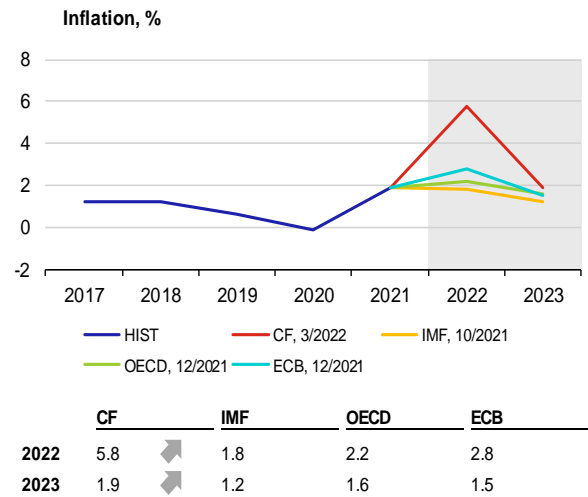
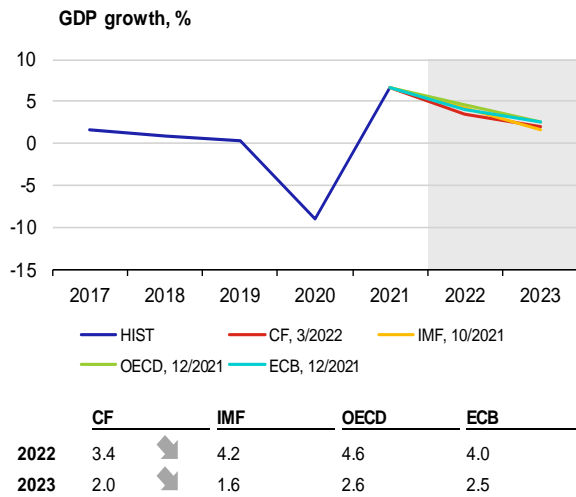


	CF	IMF	OECD	DBB
2022	5.2	1.5	2.8	3.6
2023	2.4	1.3	2.2	2.2

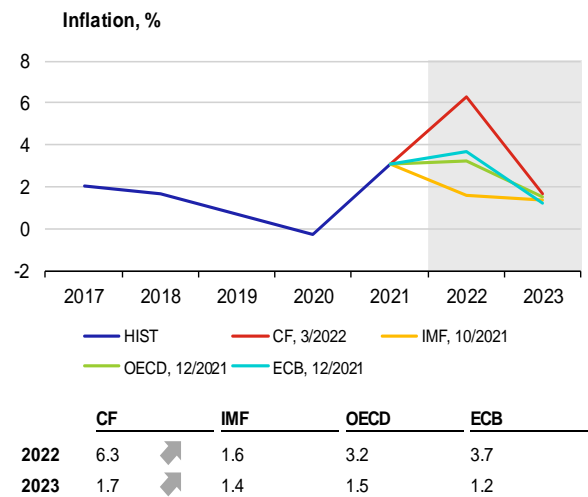
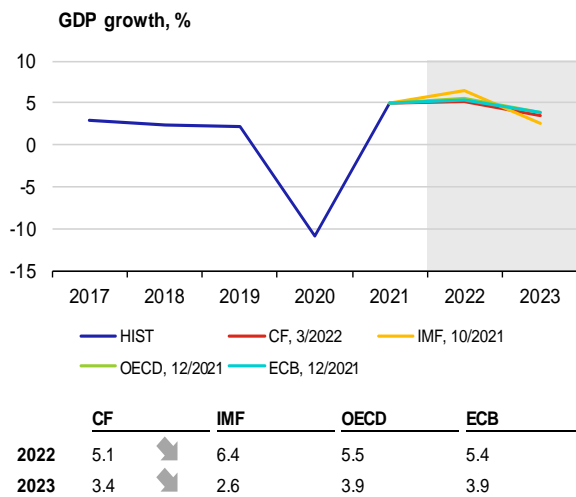
France



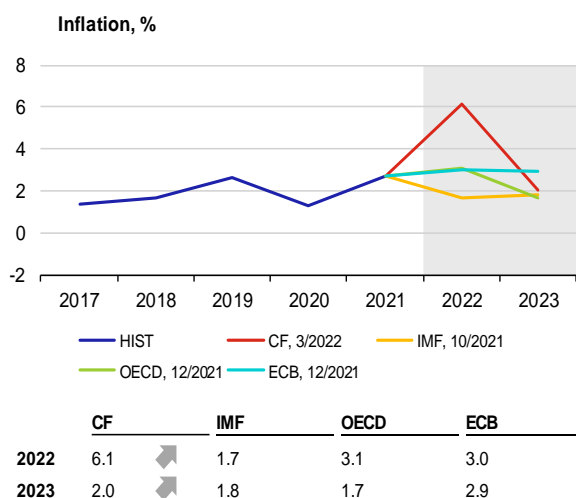
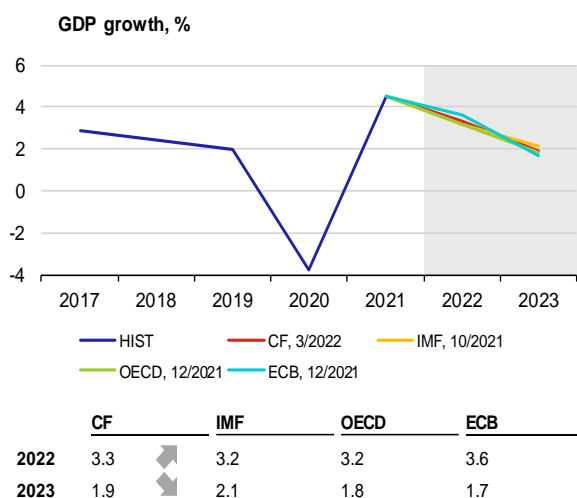
Italy



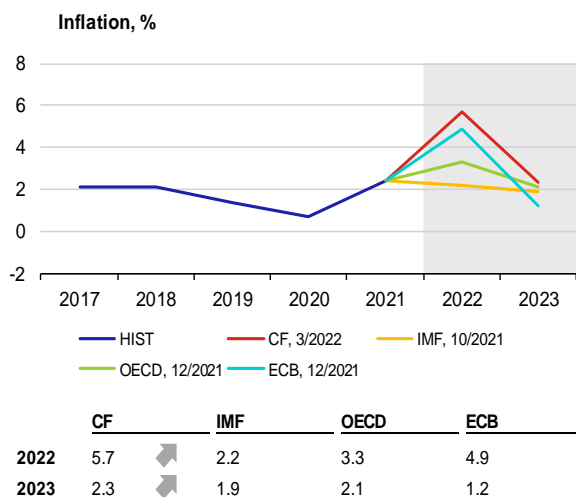
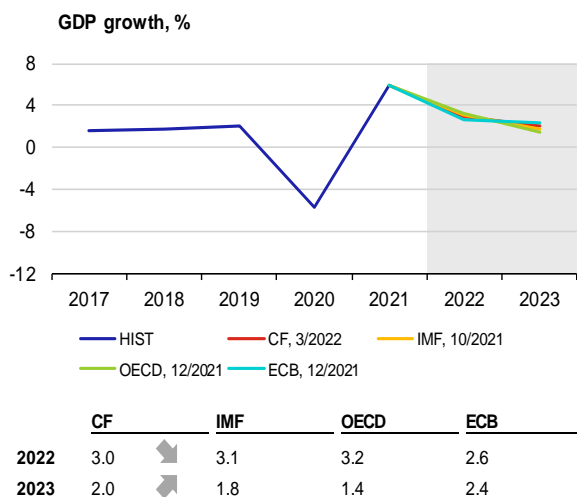
Spain



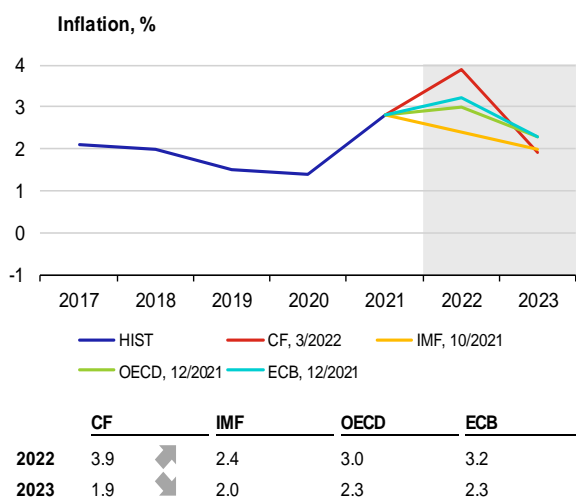
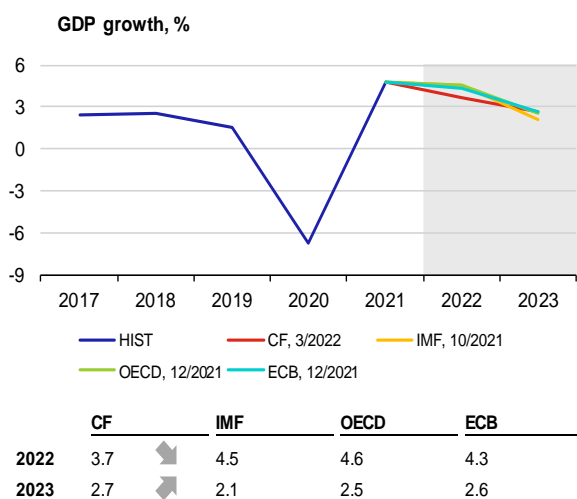
Netherlands



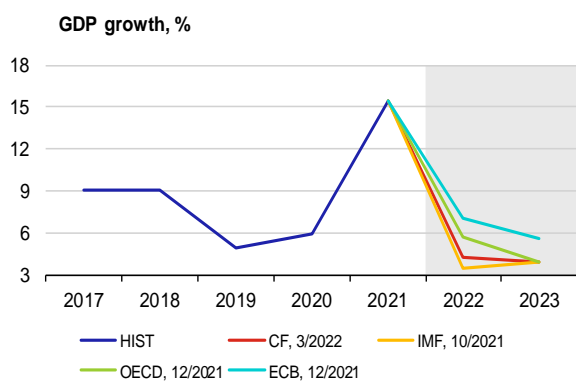
Belgium



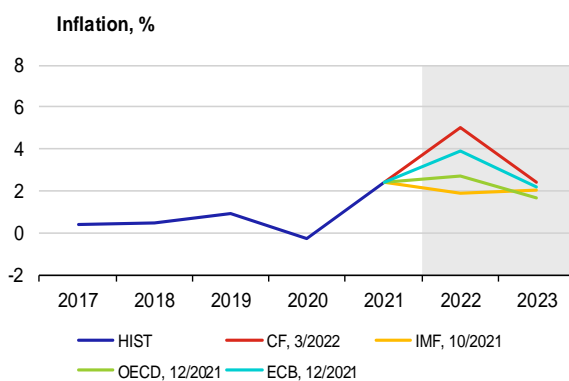
Austria



Ireland

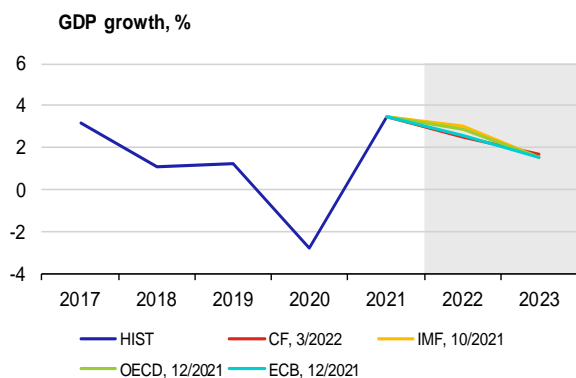


	CF	IMF	OECD	ECB
2022	4.3	3.5	5.7	7.0
2023	3.9	3.9	3.9	5.6

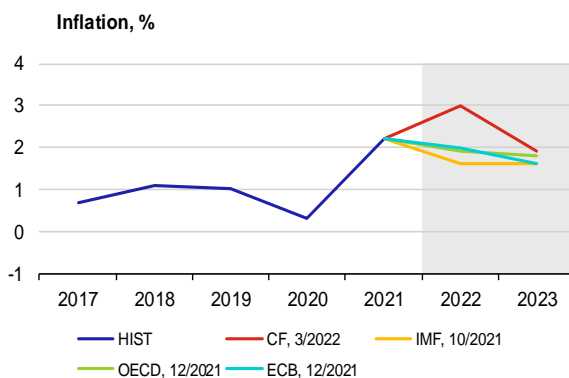


	CF	IMF	OECD	ECB
2022	5.0	1.9	2.7	3.9
2023	2.4	2.0	1.7	2.2

Finland

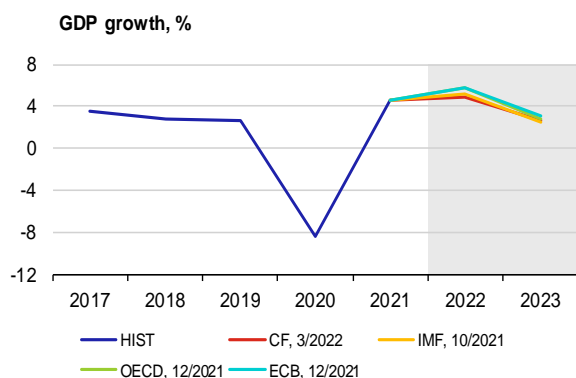


	CF	IMF	OECD	ECB
2022	2.5	3.0	2.9	2.6
2023	1.7	1.5	1.5	1.5

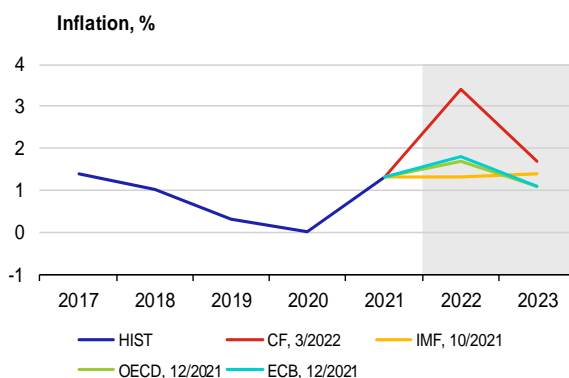


	CF	IMF	OECD	ECB
2022	3.0	1.6	1.9	2.0
2023	1.9	1.6	1.8	1.6

Portugal

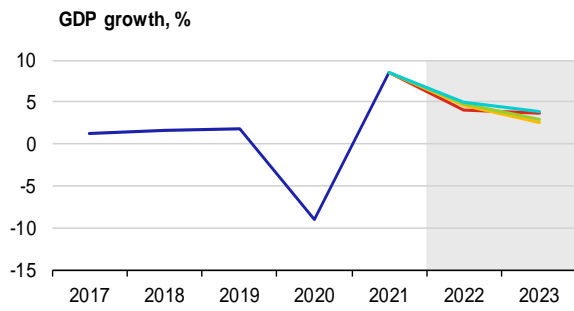


	CF	IMF	OECD	ECB
2022	4.8	5.1	5.8	5.8
2023	2.6	2.5	2.8	3.1

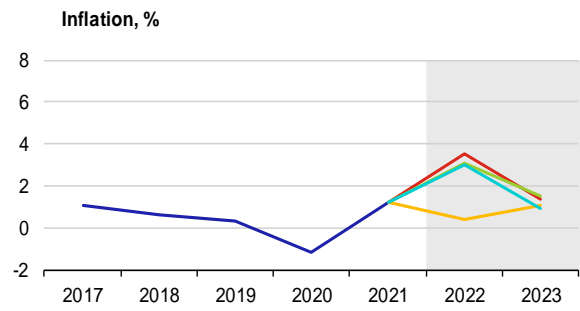


	CF	IMF	OECD	ECB
2022	3.4	1.3	1.7	1.8
2023	1.7	1.4	1.1	1.1

Greece

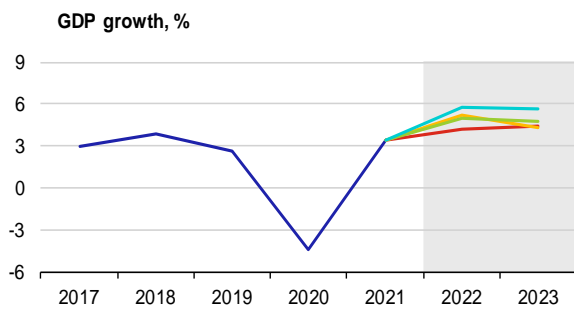


	CF	IMF	OECD	ECB
2022	4.0	4.6	4.8	5.0
2023	3.7	2.6	2.9	3.9

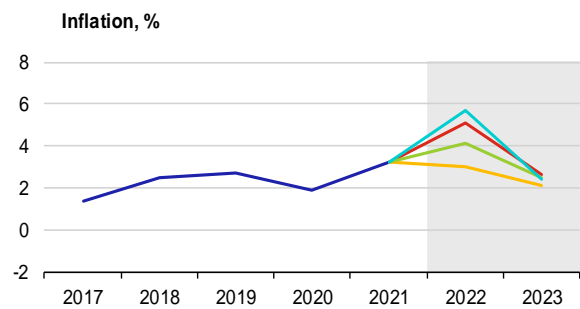


	CF	IMF	OECD	ECB
2022	3.5	0.4	3.1	3.0
2023	1.4	1.1	1.5	0.9

Slovakia

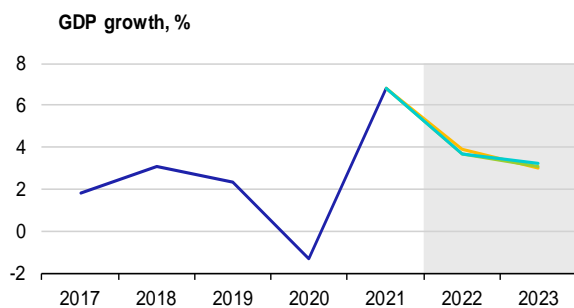


	CF	IMF	OECD	ECB
2022	4.2	5.2	5.0	5.8
2023	n.a.	4.3	4.8	5.6

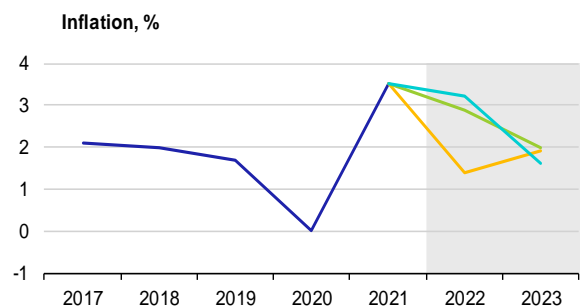


	CF	IMF	OECD	ECB
2022	5.1	3.0	4.1	5.7
2023	n.a.	2.1	2.5	2.4

Luxembourg

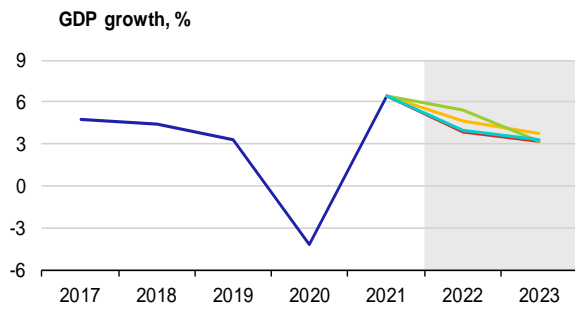


	CF	IMF	OECD	ECB
2022	n. a.	3.9	3.7	3.7
2023	n. a.	3.0	3.1	3.2

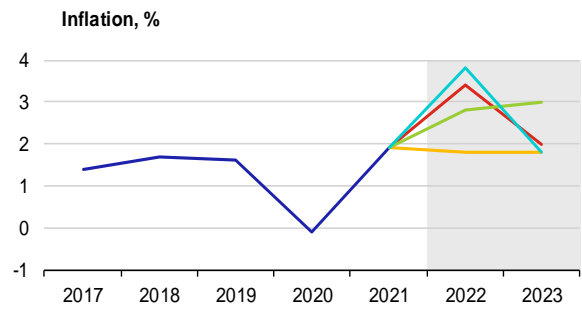


	CF	IMF	OECD	ECB
2022	n. a.	1.4	2.9	3.2
2023	n. a.	1.9	2.0	1.6

Slovenia

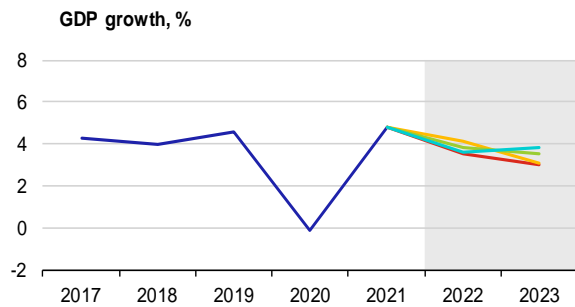


	CF	IMF	OECD	ECB
2022	3.9	4.6	5.4	4.0
2023	n.a.	3.7	3.2	3.3

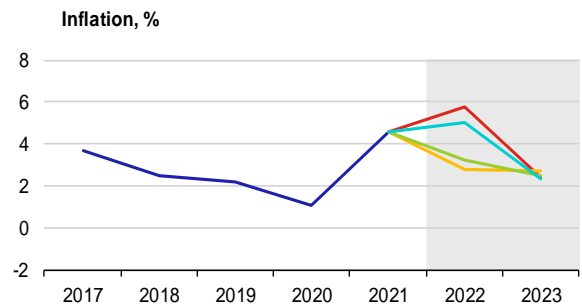


	CF	IMF	OECD	ECB
2022	3.4	1.8	2.8	3.8
2023	n.a.	1.8	3.0	1.8

Lithuania

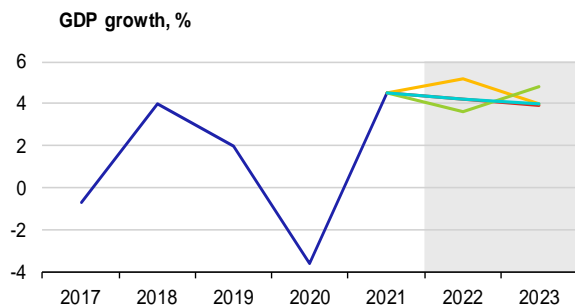


	CF	IMF	OECD	ECB
2022	3.5	4.1	3.8	3.6
2023	n.a.	3.1	3.5	3.8

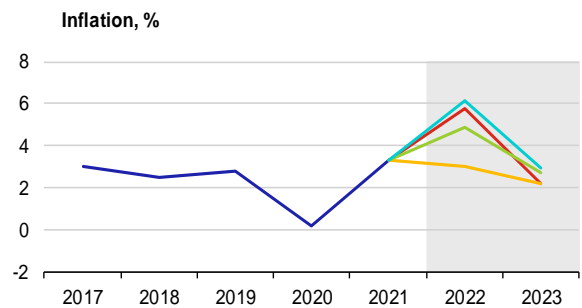


	CF	IMF	OECD	ECB
2022	5.8	2.8	3.2	5.0
2023	n.a.	2.7	2.5	2.3

Latvia

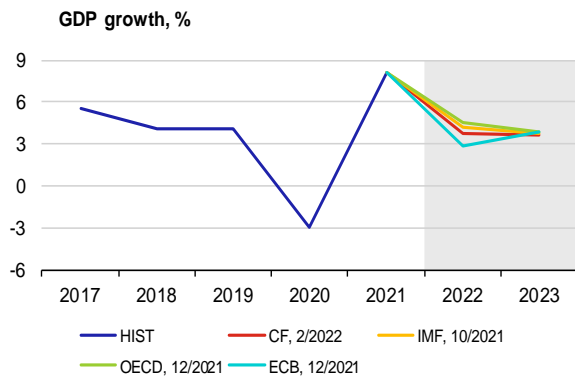


	CF	IMF	OECD	ECB
2022	4.2	5.2	3.6	4.2
2023	n.a.	4.0	4.8	4.0

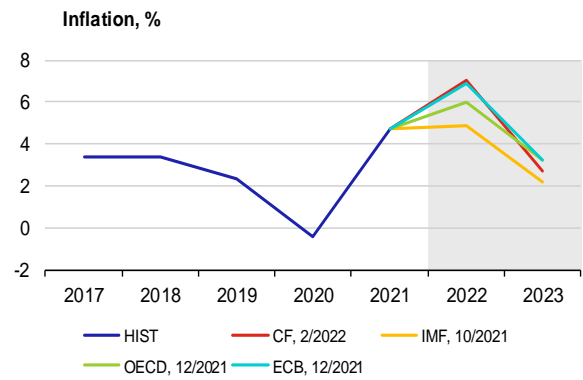


	CF	IMF	OECD	ECB
2022	5.8	3.0	4.9	6.1
2023	n.a.	2.2	2.7	2.9

Estonia

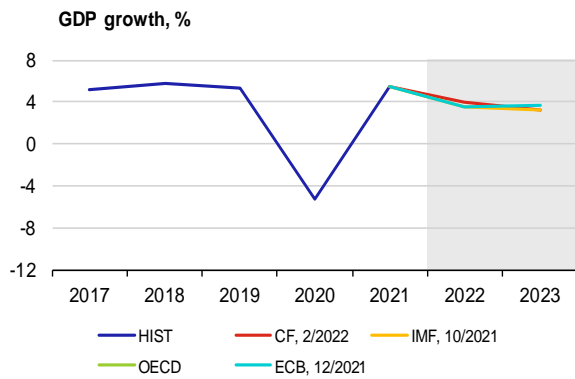


	CF	IMF	OECD	ECB
2022	3.7	4.2	4.5	2.8
2023	n.a.	3.7	3.8	3.9

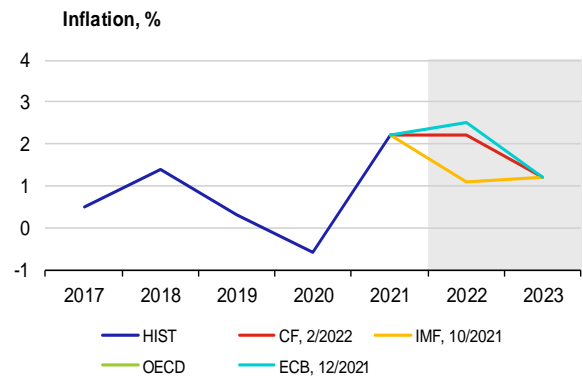


	CF	IMF	OECD	ECB
2022	7.0	4.9	6.0	6.9
2023	n.a.	2.2	3.2	3.2

Cyprus

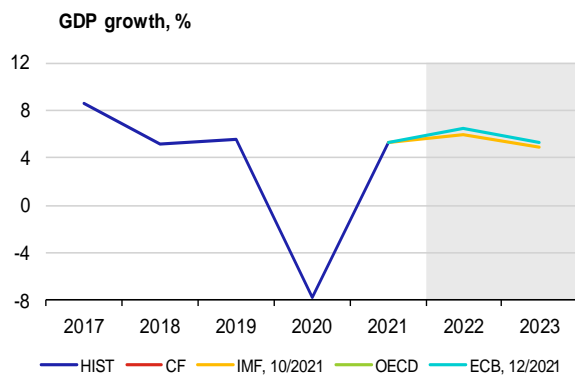


	CF	IMF	OECD	ECB
2022	4.0	3.5	n.a.	3.6
2023	n.a.	3.2	n.a.	3.7

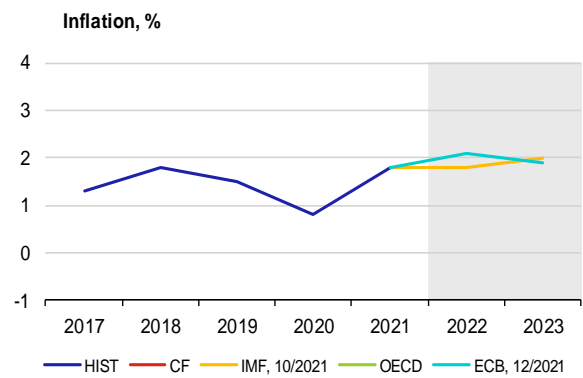


	CF	IMF	OECD	ECB
2022	2.2	1.1	n.a.	2.5
2023	n.a.	1.2	n.a.	1.2

Malta



	CF	IMF	OECD	ECB
2022	n.a.	6.0	n.a.	6.5
2023	n.a.	4.9	n.a.	5.3

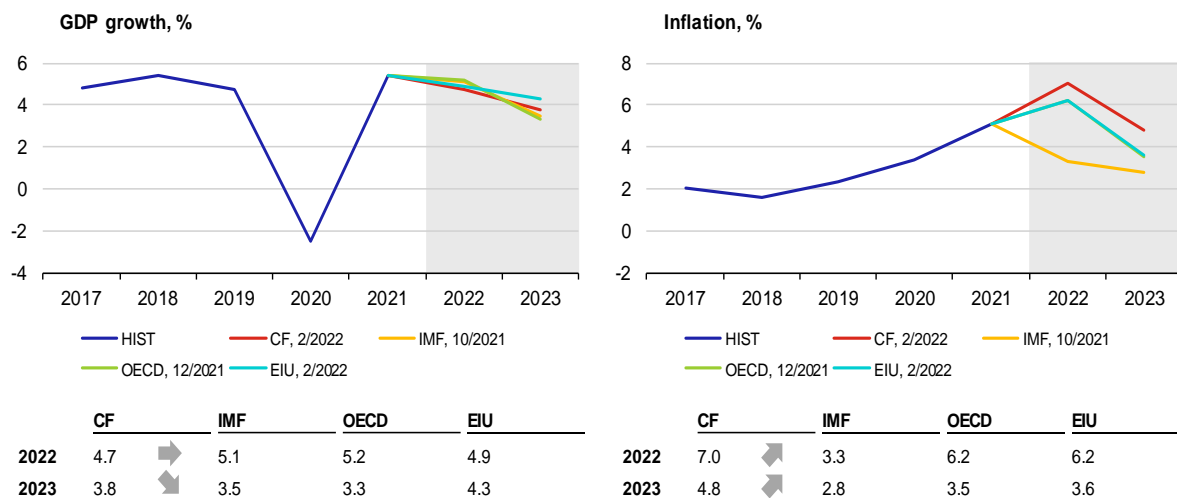


	CF	IMF	OECD	ECB
2022	n.a.	1.8	n.a.	2.1
2023	n.a.	2.0	n.a.	1.9

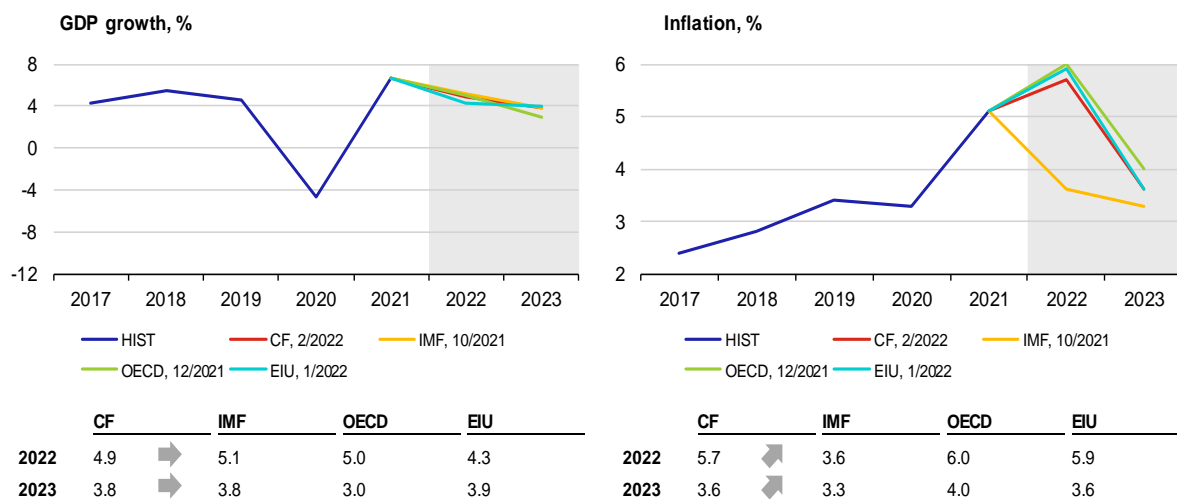
Ddd

A5. GDP growth and inflation in other selected countries

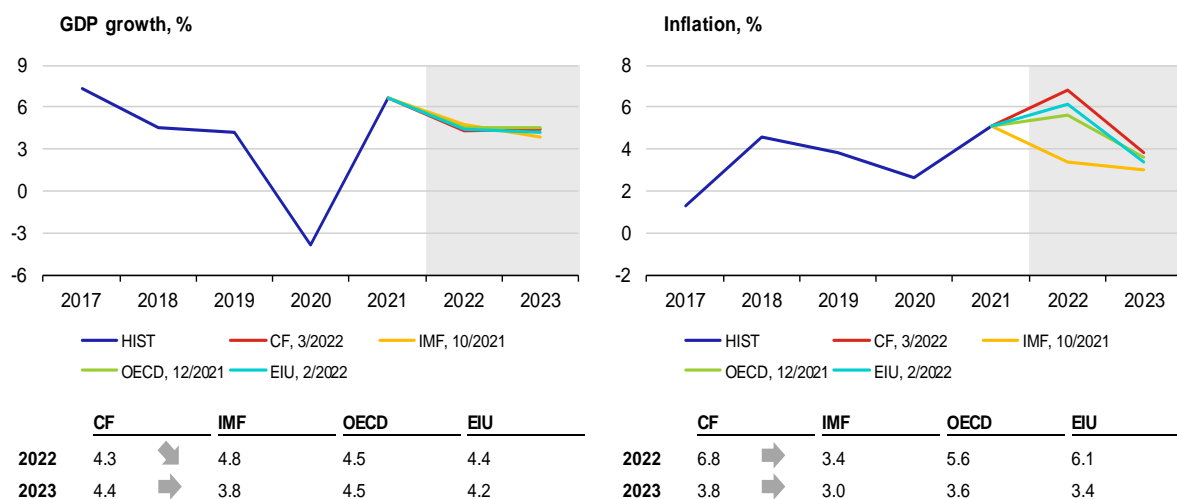
Poland



Hungary



Romania



A6. List of abbreviations

AT	Austria	IFO	Leibniz Institute for Economic Research at the University of Munich
bbl	barrel	IMF	International Monetary Fund
BE	Belgium	IRS	Interest Rate swap
BoE	Bank of England (the UK central bank)	ISM	Institute for Supply Management
BoJ	Bank of Japan (the central bank of Japan)	IT	Italy
bp	basis point (one hundredth of a percentage point)	JP	Japan
CB	central bank	JPY	Japanese yen
CBR	Central Bank of Russia	LIBOR	London Interbank Offered Rate
CF	Consensus Forecasts	LME	London Metal Exchange
CN	China	LT	Lithuania
CNB	Czech National Bank	LU	Luxembourg
CNY	Chinese renminbi	LV	Latvia
ConfB	Conference Board Consumer Confidence Index	MKT	Markit
CXN	Caixin	MT	Malta
CY	Cyprus	NIESR	National Institute of Economic and Social Research (UK)
DBB	Deutsche Bundesbank (the central bank of Germany)	NKI	Nikkei
DE	Germany	NL	Netherlands
EA	euro area	OECD	Organisation for Economic Co-operation and Development
ECB	European Central Bank	OECD-CLI	OECD Composite Leading Indicator
EE	Estonia	OPEC+	member countries of OPEC oil cartel and 10 other oil-exporting countries (the most important of which are Russia, Mexico and Kazakhstan)
EIA	Energy Information Administration	PMI	Purchasing Managers' Index
EIU	Economist Intelligence Unit	pp	percentage point
ES	Spain	PT	Portugal
ESI	Economic Sentiment Indicator of the European Commission	QE	quantitative easing
EU	European Union	RU	Russia
EUR	euro	RUB	Russian rouble
EURIBOR	Euro Interbank Offered Rate	SI	Slovenia
Fed	Federal Reserve System (the US central bank)	SK	Slovakia
FI	Finland	UK	United Kingdom
FOMC	Federal Open Market Committee	UoM	University of Michigan Consumer Sentiment Index - present situation
FR	France	US	United States
FRA	forward rate agreement	USD	US dollar
FY	fiscal year	USDA	United States Department of Agriculture
GBP	pound sterling	WEO	World Economic Outlook
GDP	gross domestic product	WTI	West Texas Intermediate (crude oil used as a benchmark in oil pricing)
GR	Greece	ZEW	Centre for European Economic Research
ICE	Intercontinental Exchange		
IE	Ireland		
IEA	International Energy Agency		

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