

Global Economic Outlook

November 2022



I. Introduction	2
II. Economic outlook in selected territories	3
II.1 Euro area	3
II.2 Germany	4
II.3 United States	5
II.4 China	6
II.5 United Kingdom	7
II.6 Japan	7
II.7 Russia	8
II.8 Poland	8
II.9 Hungary	9
II.10 Countries in the spotlight – Canada	10
III. Leading indicators and outlook of exchange rates	11
IV. Commodity market developments	12
IV.1 Oil	12
IV.2 Other commodities	13
V. Focus	14
Long-run impacts of high energy prices: Who will ultimately benefit?	14
A. Annexes	20
A1. Change in predictions for 2022	20
A2. Change in predictions for 2023	20
A3. GDP growth and inflation outlooks in the euro area countries	21
A4. GDP growth and inflation in the individual euro area countries	21
A5. GDP growth and inflation in other selected countries	28
A6. List of abbreviations	29

Cut-off date for data

11 November 2022

CF survey date

7 November 2022

GEO publication date

18 November 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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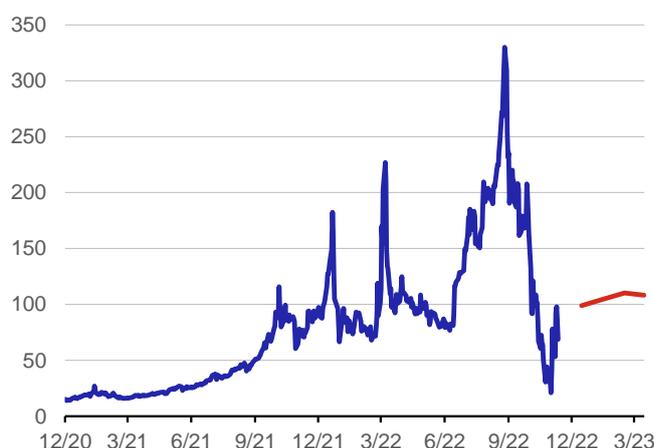
I. Introduction

The Ukrainian army is gradually pushing the Russian aggressor out of its territory! Europe is slowly getting used to the fact that Nord Stream no longer refers to a network of gas pipelines from Russia but merely to an unusual combination of two different words – the German “Nord” and the English “Stream”. The good news is that most European countries will become independent of Russian gas and oil over the next few years. However, the current unusually high energy prices will be financially painful for almost all of us. Even so, measures adopted across European countries will temporarily ease the pain to a large degree. The flip-side of the coin is that the dampening of the transmission of high energy costs to the economy will ultimately be financed from government budgets. There are thus warnings that the energy crisis will turn into a debt crisis unless tax revenue is temporarily increased. In many countries, the higher revenue is to come from a windfall tax.

The key central banks are continuing to tighten.

The Fed’s hawkish policy is beginning to yield tangible results, as inflation in the USA has started to head visibly down. Despite that, interest rates can be expected to be raised at the next monetary policy meetings in both the USA and the euro area. In this context, some are starting to ask whether the growth in rates, whose effects will become visible in the real economy only after several quarters, will be assessed ex post as hasty and “overshooting” in the other direction, triggering a global recession. The sharp rise in key central banks’ interest rates will be very painful for countries whose growing debt is denominated largely in foreign currency, especially the dollar, because the Fed – like in the past – can be expected to be able and willing to tighten more than the ECB. As mentioned above, there is basically no fiscal space for a further increase in debt in many countries, including some very advanced ones.

Price of gas in Europe according to the Dutch TTF in EUR/MWh



Source: Refinitiv Datastream

Note: Red denotes the outlook based on futures with delivery in the given month.

The chart in the current issue shows the European price of gas at the TTF trading point in the Netherlands. The gas price has fallen dramatically since the start of September. Unfortunately, this is due to short-lived excess supply – ships carrying LNG arrived in Europe when there was enough gas on the market thanks to a warm autumn and gas-saving behaviour. Natural gas is expected to cost around EUR 100/MWh in the months ahead, indicating sufficient supplies in Europe for this winter. Even so, energy prices will be above the long-term average and gas prices are not expected to fall below EUR 50/MWh over the next three years.

The current issue also contains an analysis: [Long-run impacts of high energy prices: Who will ultimately benefit?](#) Using historical data, the article analyses how economies adapt to changes in crude oil and natural gas prices. In the short run, high energy prices benefit countries that export these commodities. In the long run, however, energy consumption drops and the energy intensity of economic activity declines.

GEO Barometr of for selected countries

		EA	DE	US	UK	JP	CN	RU
GDP (%)	2022	3.2 ↗	1.5 ↗	1.8 ↗	4.2 ↗	1.5 ↗	3.2 ↗	-4.6 ↘
	2023	-0.1 ↘	-0.9 ↗	0.2 ↗	-0.9 ↘	1.4 ↘	4.5 ↘	-3.1 ↘
Inflation (%)	2022	8.5 ↗	8.2 ↗	8.1 ↗	8.9 ↗	2.3 ↗	2.2 ↗	12.9 ↘
	2023	6.0 ↗	6.9 ↗	4.1 ↗	7.1 ↗	1.7 ↗	2.4 ↗	6.1 ↗
Unemployment (%)	2022	6.8 ↗	5.3 ↗	3.7 ↗	3.7 ↘	2.6 ↗	3.5 ↗	4.1 ↗
	2023	7.2 ↗	5.6 ↗	4.4 ↗	3.7 ↘	2.5 ↗	3.5 ↗	4.7 ↗
Exchange rate (against USD)	2022	1.03 ↘	1.03 ↘		1.17 ↗	135.5 ↗	7.23 ↗	64.2 ↗
	2023	1.07 ↗	1.07 ↗		1.22 ↗	128.1 ↗	7.03 ↗	75.2 ↘

Source: Consensus Forecasts (CF)

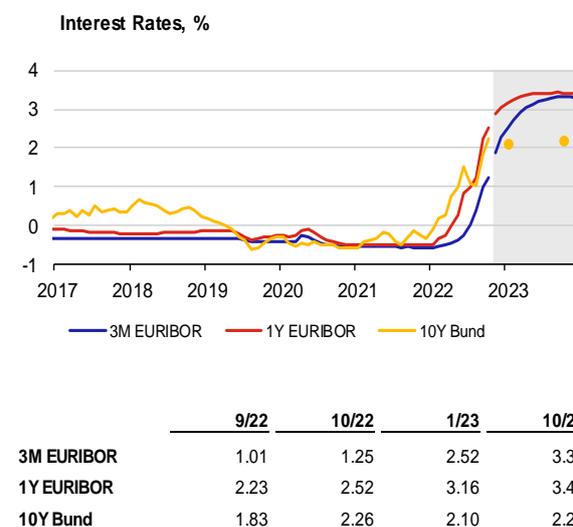
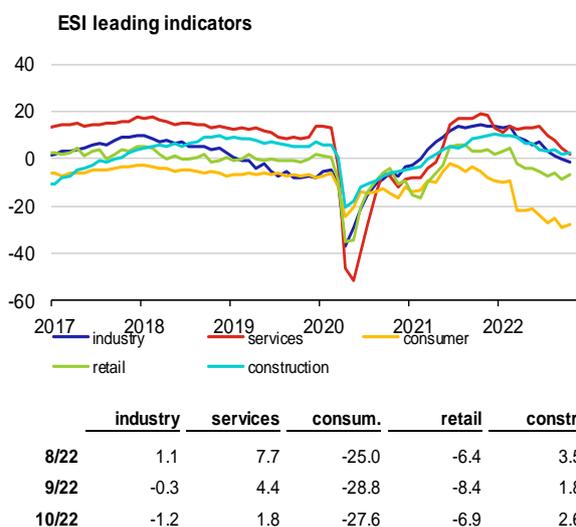
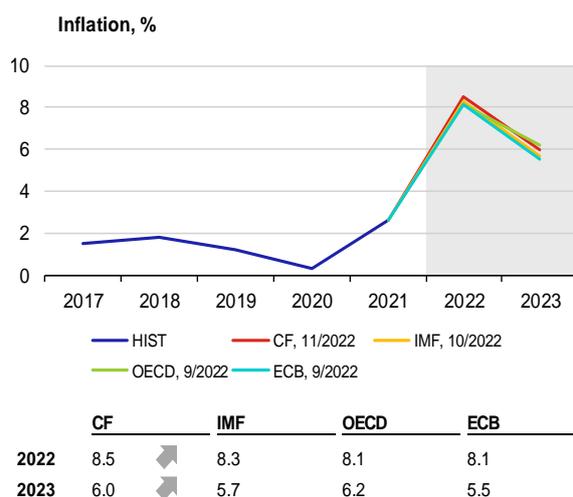
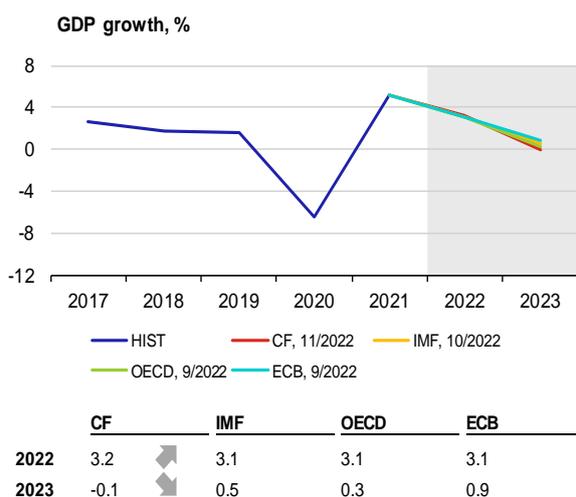
Note: The arrows indicate the direction of the revisions compared with the last GEO.

II.1 Euro area

According to the flash estimate, the euro area economy grew by 0.2% quarter on quarter in 2022 Q3, in line with market expectations. Among the largest economies, the GDP growth in Italy (+0.5% q-o-q) and Germany (+0.3% q-o-q) came as a surprise. The Spanish and French economies grew by just 0.2%, as the boom in tourism and leisure subsided following the lifting of pandemic restrictions. On the other hand, declines were recorded by smaller economies, including Latvia (-1.7% q-o-q), Belgium (-0.1% q-o-q) and Austria (-0.1% q-o-q). The current indicators suggest a shift from expansion to contraction in the euro area during the autumn. Inflation is breaking records. Energy prices remain high and the ECB is continuing to raise interest rates sharply. Consumer confidence is close to a historical low, real wage growth is currently at its lowest level in several decades and retail sales are falling year on year. The positive effect of the reopening of economies after the pandemic is also vanishing. The household consumption outlook is thus also worsening and investment expectations are weakening amid rising interest rates and an uncertain economic outlook. Firms are reporting weakening demand, with orders from outside the euro area also declining.

Inflation in the euro area broke records in October, jumping from 9.9% in September to 10.7%. This was due mainly to prices of energy (+41.9% y-o-y) and food, alcohol and tobacco (+13.1% y-o-y), although prices of industrial goods excluding energy and services also rose markedly. Very high inflation (more than 20% y-o-y) hit the Baltic countries, while inflation in France and Spain is only slightly above 7%. The second-round effects of supply-side shocks still seem to be pushing inflation up despite the weakening demand. Analysts therefore think that euro area inflation has yet to peak.

The surprisingly strong growth of the euro area in the first half of 2022 has moved the GDP outlook for this year upwards, but the forecast for 2023 has shifted towards a decline. Expected inflation has moved higher again. The onset of recession at the year-end has eased the pressure on the ECB to continue raising rates sharply. However, according to the financial markets, the monetary policy tightening will continue at least until March 2023..



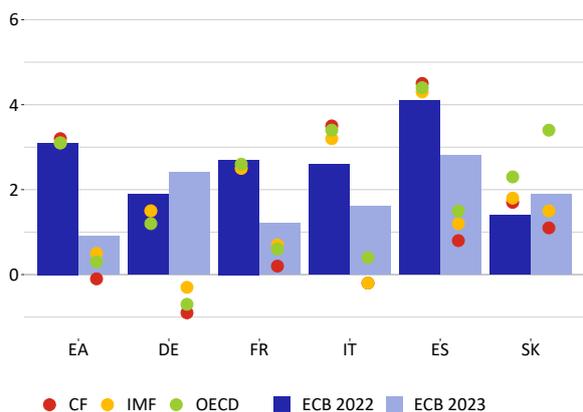
II.2 Germany

The German economy recorded a surprising expansion in 2022 Q3, with GDP rising by 0.3% quarter on quarter. Financial markets had expected a slight quarter-on-quarter drop (of 0.2%). Detailed data are not yet available, but the growth seems to have been driven mainly by private consumption expenditure. Europe’s largest economy continues to grapple with disrupted supply chains, weakening external demand and rising prices. However, the surprise growth in Q3 does not mean the German economy will avoid recession. All the leading indicators are falling, the PMI being in the contraction band in both services and industry. Orders continued to decline, while inventories started to grow again. The ZEW indicates growing pessimism among analysts. Business sentiment about both the current situation and the future, as measured by the IFO, is also none too optimistic.

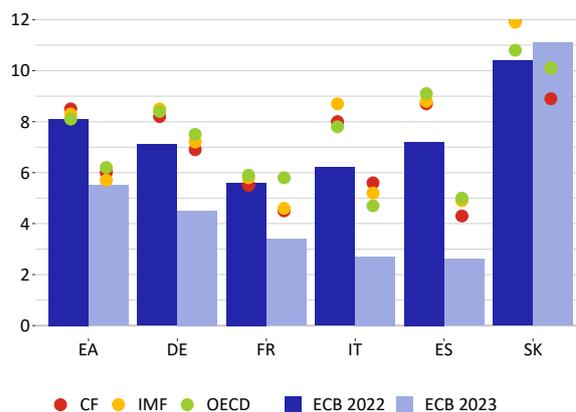
Only the weather brought some relief to the German economy. Higher rainfall has raised the water level in the Rhine, which is much needed for shipping, and warm October weather postponed the start of the heating season. Many firms were able restart production thanks to lower gas prices. However, high inflation continues to weigh on Germans. The inflation rate in Germany rose by more than 11% year on year in October, reaching a new all-time high.

German GDP could fall by almost 1% next year, while inflation will slow only slightly. Price pressures will remain strong, although the CF analysts do not expect a fundamental rise in wage-inflation pressures. The government will throw a lifeline to the German economy again. In addition to a contribution to energy bills to be paid in December, this may involve higher child benefits and lower taxes next year. A cap on energy prices will be introduced at the start of 2023, and a protective shield has also been set up for German businesses. The fall into recession could be much harder without major fiscal support.

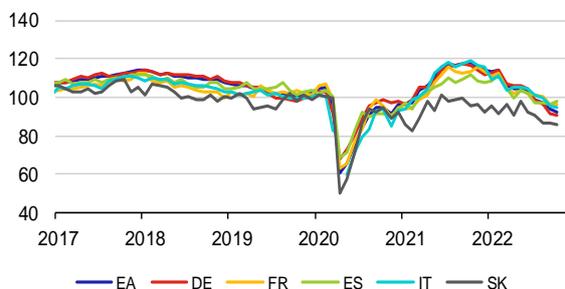
GDP growth in selected euro area countries in 2022 and 2023, %



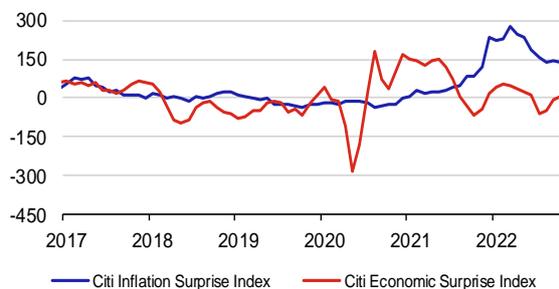
Inflation in selected euro area countries in 2022 and 2023, %



ESI leading indicators



Economic and inflation surprises in the euro area, %



	EA	DE	FR	ES	IT	SK
8/22	97.3	96.7	100.1	97.6	99.6	86.9
9/22	93.6	91.9	96.2	96.6	95.9	86.7
10/22	92.5	90.9	96.2	98.0	95.0	85.8

Inflation expectations based on 5year inflation swap and SPF

	5y5y	SPF
9/22	2.19	2.15
10/22	2.19	2.18
11/22		

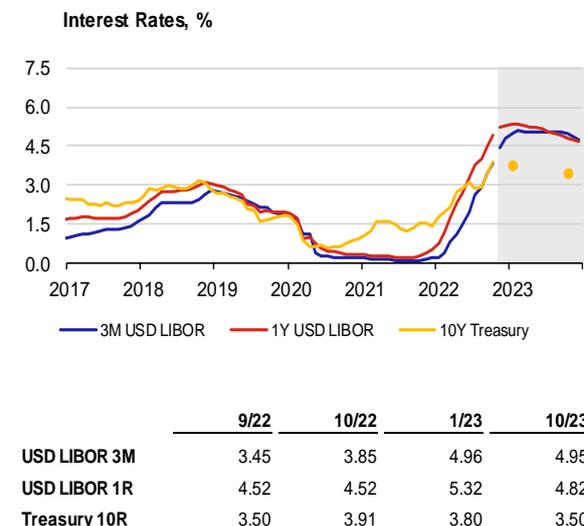
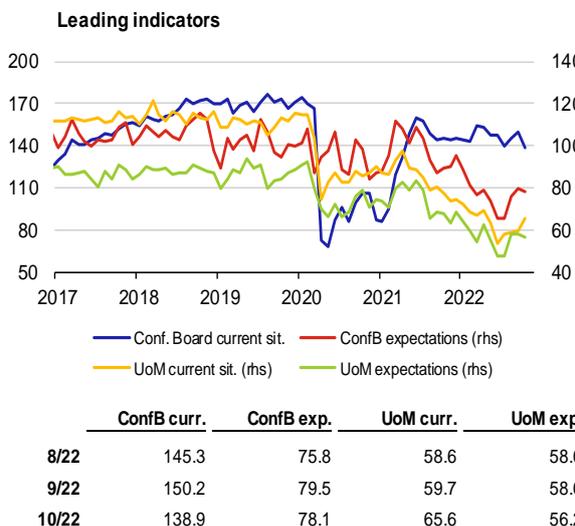
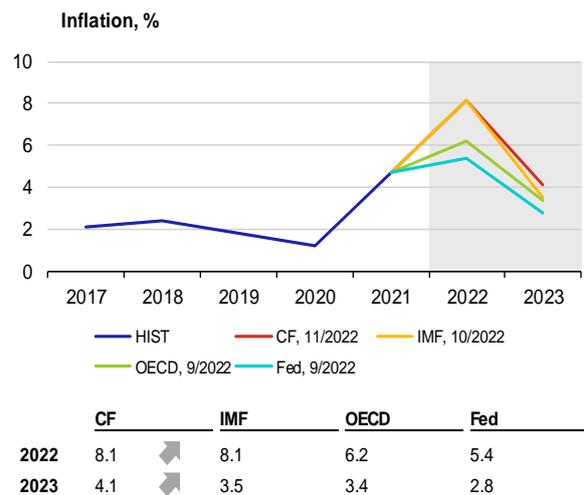
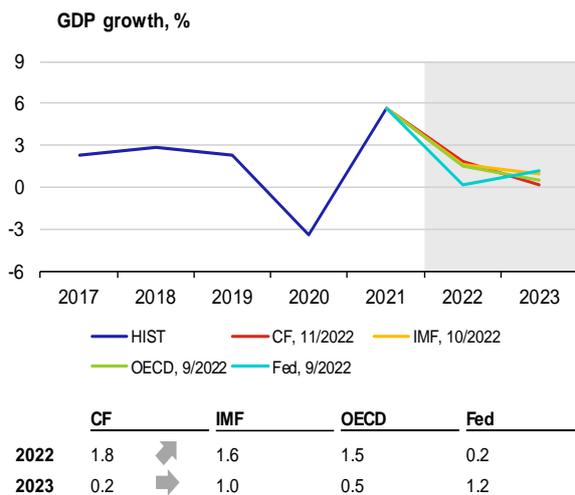
II.3 United States

The US midterm elections are crucial not only for current President Joe Biden, but also for the future of the USA as a whole. Elections to the Senate and the House of Representatives took place in early November. Without a majority, especially in the Senate, it is hard for the US President to push through his plans and goals, and much compromise-seeking is needed. A “red wave” – victory for the Republicans and a related strengthening of Donald Trump’s position – had been expected. The tight results suggest that although Americans are not very happy with Joe Biden, they are even more scared of the Republicans with Trump at the helm. The next two years will be difficult for the current Democratic president.

The US economy grew by 2.6% quarter on quarter in Q3, following two quarters of decline. The growth was driven mainly by household consumption and net exports (due mainly to raw materials). The new CF outlook expects GDP to rise by 1.8% this year, which is more than in October. At just 0.2%, the forecast for next year is unchanged from last month.

The October inflation figures were favourable and markets grew in response. The consumer price index had been expected to rise by 7.9%, but inflation came in at just 7.7% (core inflation was 0.3% month on month). The positive figures also fostered a slight improvement in global market sentiment. The new CF outlook expects the CPI to grow by 8.1% this year and 4.1% next year. The outlook has thus shifted higher since October. Inflation is being kept high by rising prices of food (10.9% year on year) and services (6.7% year on year), whereas energy is gradually becoming less dominant (17.6% year on year in October).

The US central bank raised rates by 0.75 pp to 3.75%–4.00% in early November. Fed representatives are maintaining their hawkish tone and markets expect another sharp hike at the December meeting and a gradual end to the rate increase phase in spring 2023.



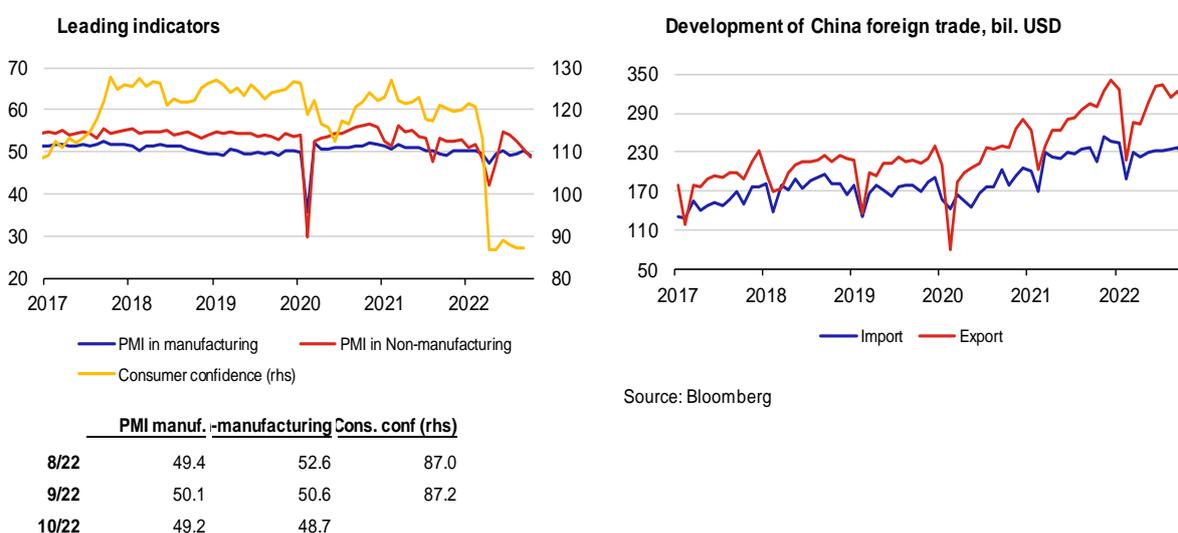
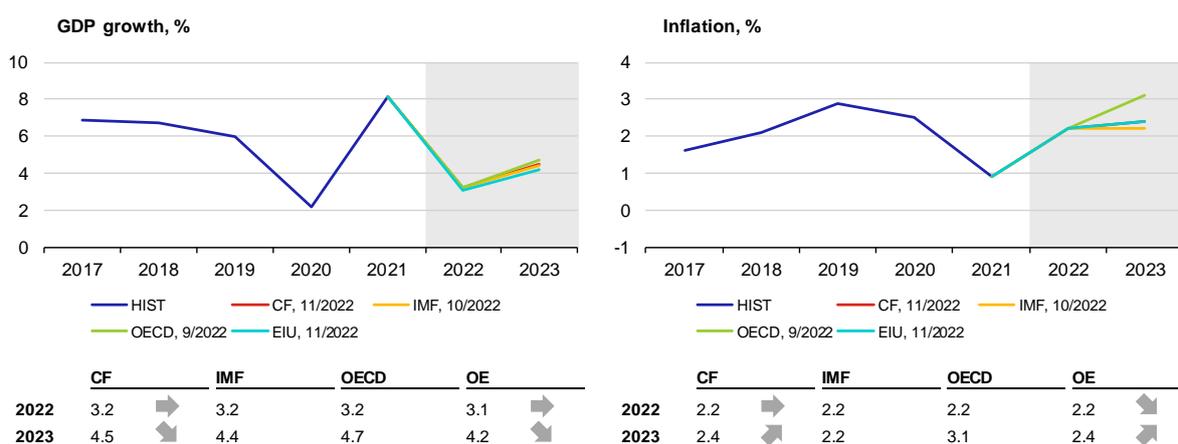
II.4 China

China's economy recorded growth of 3.9% year on year, a considerable recovery compared with the de facto stagnation seen during the summer (0.4% in Q2). This growth was probably due to government stimulus measures taken at the ruling party's congress. The original official GDP growth target of 5.5% in 2022 has not been mentioned in official documents for some time now. Instead, policies to deliver a soft landing for overheated sectors (real estate, regional banking) and support a recovery in lagging sectors are getting more mention. The autumn recovery was uneven in structural terms, with growth in industrial production and commodity extraction contrasting with lacklustre data on retail sales and exports. The official unemployment figures are also the highest since June. Most analysts' growth forecasts for 2023 have been constantly revised down in recent months and are now between 3% and 4%.

Consumer confidence was almost unchanged between August and September and remains deep in the contraction band. The government's restrictive approach to the pandemic is largely responsible for this long-standing consumer pessimism. As indicated by the Caixin index in early November, corporate sentiment is also subdued and the outlook suggests no improvement any time soon. By comparison with the manufacturing PMI, the services PMI points to slightly better expectations compared with the current situation but is also below the 50-point level.

Consumer price inflation in China fell to around 2.1% in October, a level last seen during the spring. The slowdown was across the board, including in the traditionally fastest-growing item of food prices. Producer prices dropped by 1.3% year on year in October owing to weak domestic demand, logistics problems reducing demand for supplies from China, and a global commodity price correction.

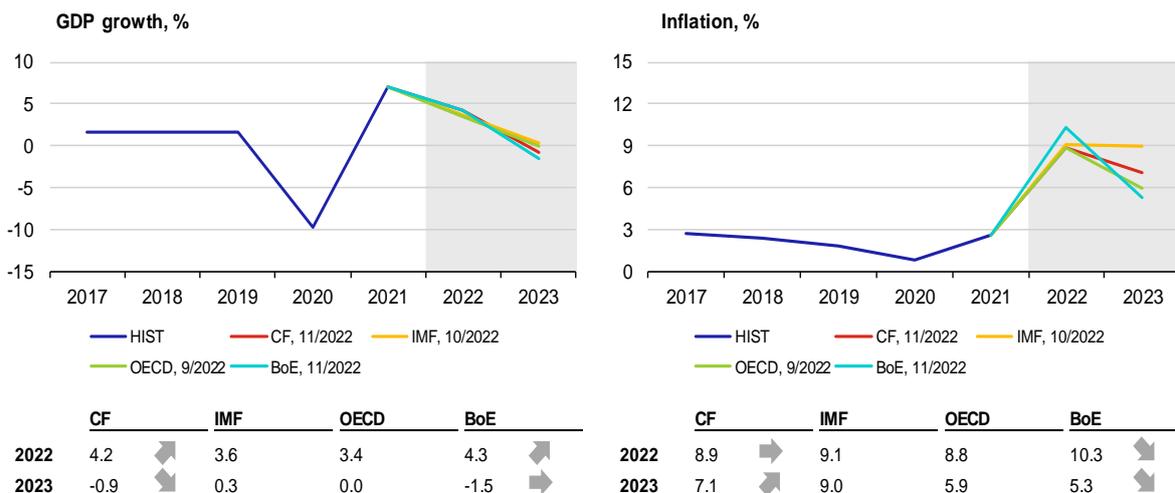
China's foreign trade saw a decline in October. Exports fell by 0.3% year on year and imports by 0.7%, so the trade balance improved slightly. The outlook is unfavourable due to an expected recession in the USA and the EU and to China's continued zero-Covid policy, which is causing frequent delays in supplies. The impacts of the ongoing property crisis on private consumption are weighing on the import side.



Source: Bloomberg

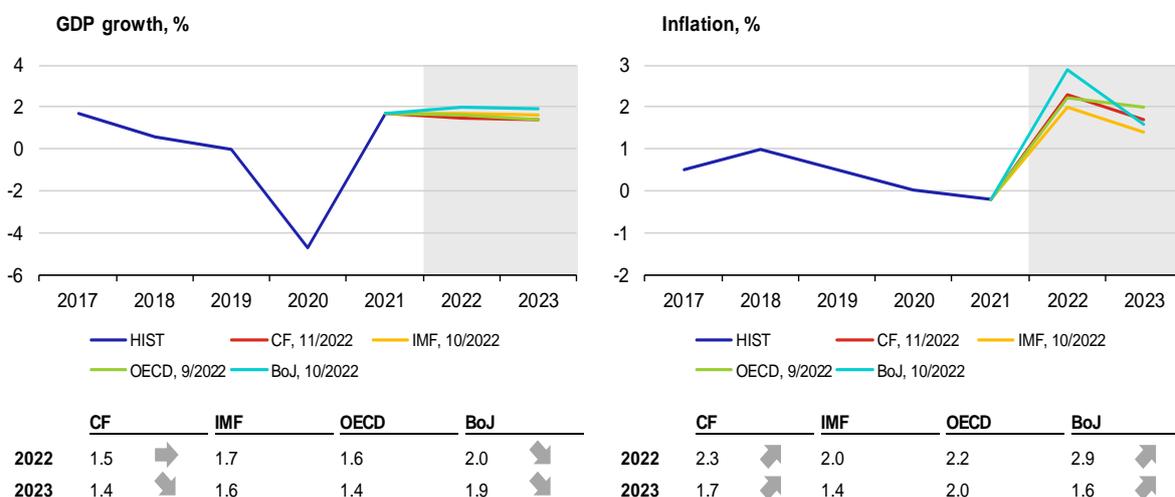
II.5 United Kingdom

The BoE reacted to rising inflation by increasing the key interest rate further in November, this time by 0.75 pp. The rate has thus risen from 0.1% to 3% since December 2021. Annual inflation returned to its July peak of 10.1% in September, mainly on the back of rising food prices. The BoE now expects it to fall sharply from mid-2023 onwards. The GDP forecast for 2022 improved slightly (4.3%), but a decline in GDP is still expected for 2023 (-1.5%; CF expects a slightly more optimistic -0.9%) and the BoE is warning of the longest recession in history. At 48.2 in October (down from 49.1 in September), the PMI was pointing to a further downturn in economic activity. Sentiment worsened sharply in both manufacturing and services, reflecting tight household budgets, recession expectations and political uncertainty. After a controversial government plan caused markets to panic and sterling to fall, the third prime minister in a very short time was appointed. The Conservative Party is now headed by former chancellor of the exchequer Rishi Sunak, who was the only candidate.



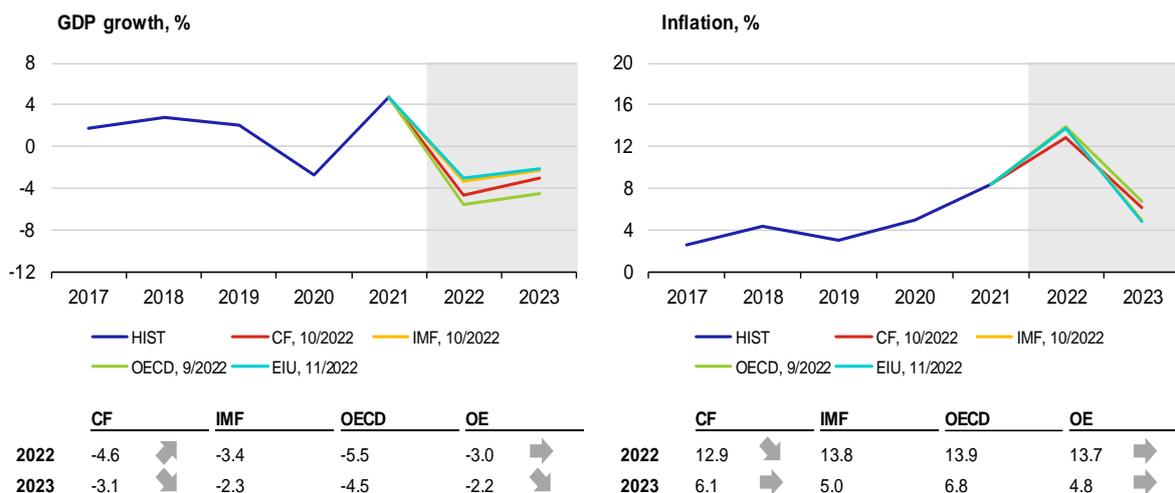
II.6 Japan

The Japanese government's new large support package aims to dampen the impacts of rising prices on households, even as inflation remains well below levels in other advanced economies. A large part of the planned support of more than JPY 29 trillion (USD 197 billion) is directed at helping households to cope with rising energy bills. According to government estimates, it should lower inflation by as much as 1.2 pp. The September inflation figure (3% year on year) is one of the lowest in the world. At its October meeting, the BoJ confirmed its accommodative stance. Japan thus remains the last country in the world with negative rates. In its new forecast, the BoJ revised the inflation outlook up and lowered expected economic growth. The government's interventions to strengthen the yen doubled to USD 43 billion in October. The currency thus remains broadly stable despite rising interest rate differentials, but is at its weakest level since the 1990s.



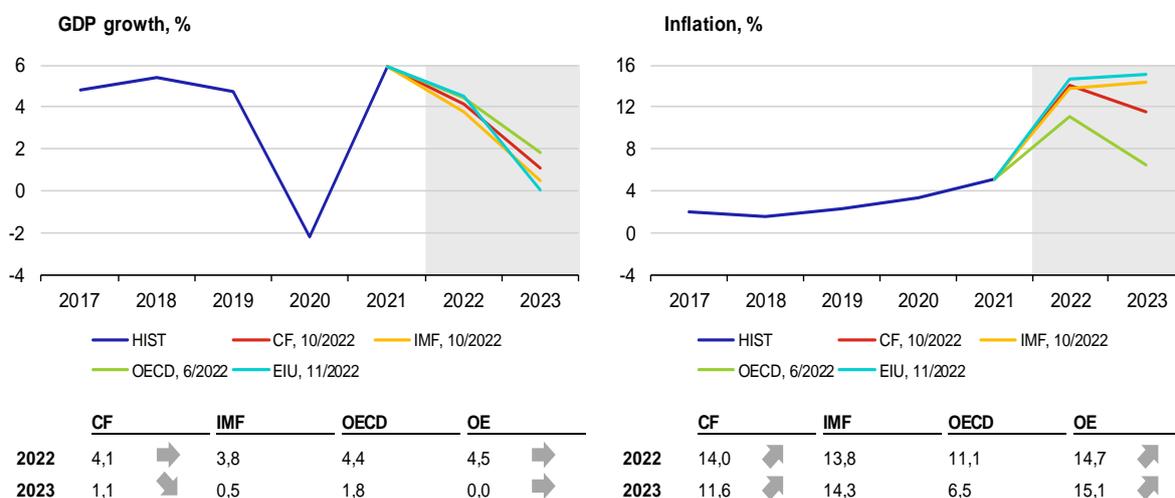
II.7 Russia

Russia’s Ministry of Economic Development expects the economic decline to deepen in September. According to Interfax, it estimates that the year-on-year drop in GDP will intensify from 4% in August to 5% in September. Overall, GDP is expected to fall by 4.4% year on year in Q3, a 0.3 pp stronger decline than a quarter earlier. Short-term indicators also suggest a downturn. The drop in industrial production accelerated to 3% year on year in September. The October PMI also declined compared with September, nearing the boundary between growth and contraction. The services PMI fell to 43.7 points, the second-worst result this year. According to firms, the lower output was due to a drop in demand resulting from sanctions-related constraints and a decline in customers’ purchasing power. The annual inflation rate fell for the sixth month in a row and consumer price inflation dropped to 12.6% in October. The interest rate remained unchanged.



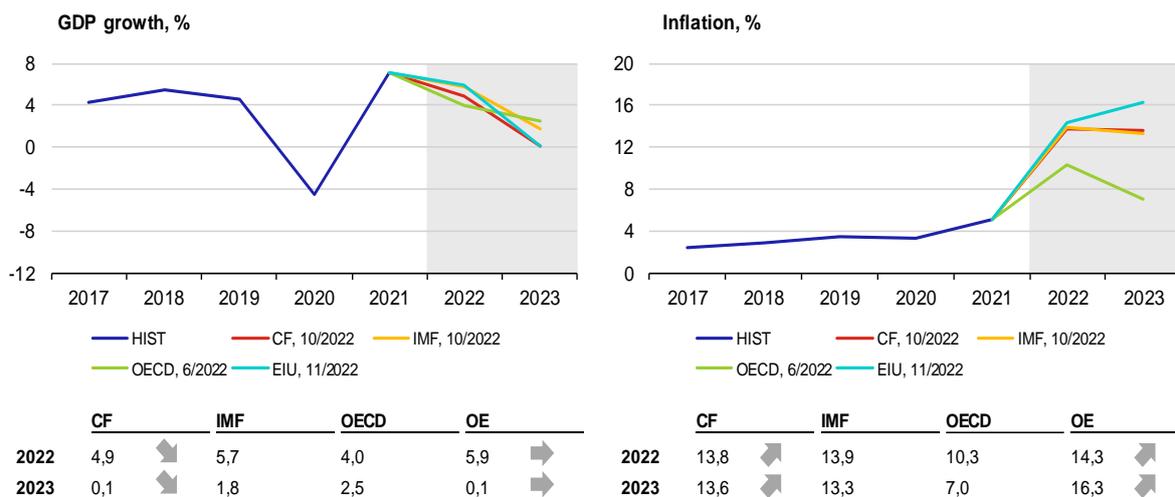
II.8 Poland

The Polish central bank left its policy rate at 6.75% at its November meeting, citing a worse economic outlook. In its new forecast, it significantly lowered its GDP growth estimate for 2023 to -0.3%–1.6%. There are therefore concerns of a recession. In the first half of 2022, Poland’s growth was driven mainly by household consumption. However, the question is how long households will be willing to spend in the current headwinds. Unemployment is very low for now and wage growth is lagging only slightly behind inflation. CF also lowered its GDP growth outlook, while OE expects stagnation. Consumer price inflation reached 17.9% in October (preliminary figure) and core inflation exceeded 10% in September. According to CF, inflation should peak at just below 20% in February and return to single figures by the end of 2023. However, it is unlikely to return to the target (2.5%) until 2026–2027 (long-term CF outlook). The new NBP forecast is similar, as it does not expect average annual inflation to fall below 4% in the next two years.



II.9 Hungary

According to the Magyar Nemzeti Bank’s (MNB) new forecast, economic growth will slow to around 1% next year and inflation will return to the tolerance band around the inflation target in 2024. Industrial output is continuing to rise rapidly. The manufacturing PMI has returned above the 50-point level and the trade deficit has shrunk. The labour market remains tight. The unemployment rate is very low, despite having risen slightly in recent months. In its October forecast, the MNB expects GDP to grow by 3–4% this year and only 0.5–1.5% next year due to greater caution among consumers and investors. CF and OE are more optimistic for this year but expect stagnation next year. In October, inflation picked up to 21.1% (core inflation to 22.3%), slowing to a still high 2% in monthly terms. The lifting of some government measures to combat the energy crisis, which had become an excessive burden on the budget, is having an inflationary effect. The central bank left the policy rate at 13% at its latest meeting and expects rates to stay at this level for longer.

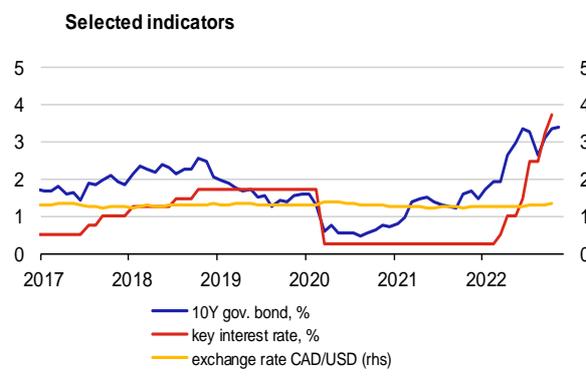
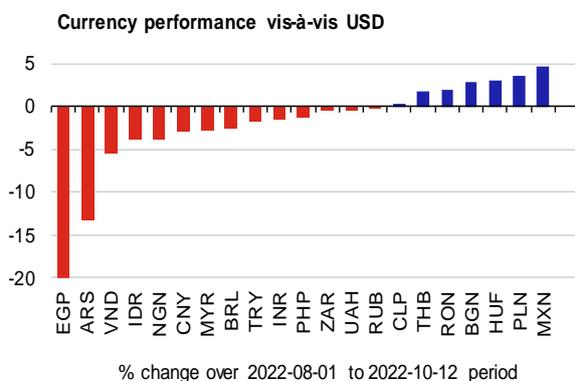
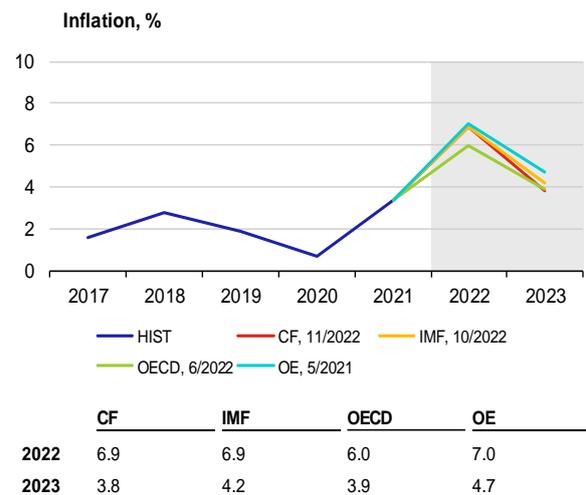
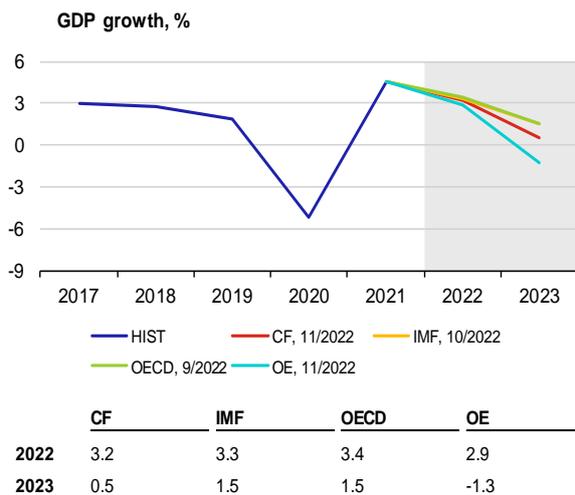


II.10 Countries in the spotlight – Canada

The Canadian economy is facing labour shortages and persisting supply chain issues. The economy showed solid growth in the first half of 2022 due to the relaxation of restrictive anti-epidemic measures and high commodity prices. Unemployment stayed at 5.2% in October, one of the lowest levels in 40 years. Wage growth has been intensifying since the start of 2021 and currently stands at around 4%. However, the housing market has cooled due to rising mortgage rates, and the economy started to show signs of slowing in mid-2022. Tighter monetary policy conditions are reducing household consumption and business investment. Weaker external demand (mostly from the USA) is dragging on net exports. A slight recession thus cannot be ruled out in late 2022 and early 2023. Although a major weakening of the Canadian dollar in October partly offset these negative factors, the Canadian dollar returned to a stronger level in November. However, the supply chain issues should gradually lessen and external demand should increase. The Bank of Canada (BoC) thus expects annual real GDP growth to slow from 3.2% in 2021 to 2.1% in 2022 and 1.0% in 2023, recovering to 2.3% in 2024.

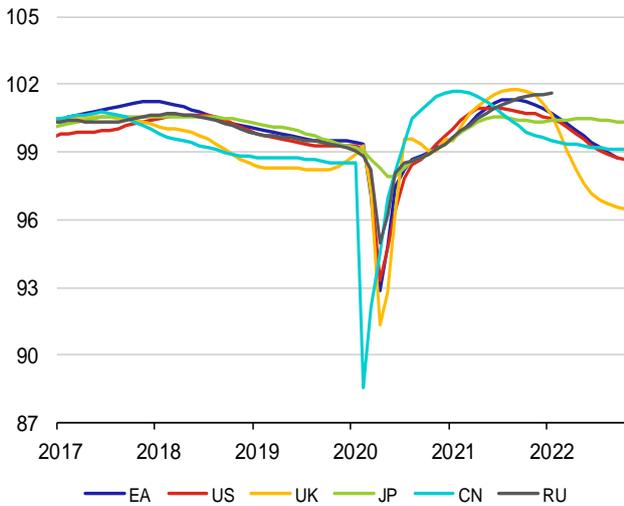
Inflation increased further earlier this year, peaking at more than 8% in June. Despite a subsequent decline, the BoC expects it to remain close to 7% until the end of 2022. The previous rise in inflation was mostly due to prices of energy and agricultural commodities, which increased inflation in the housing, food and tradable goods categories. There is persisting upward pressure on food prices and growing upward pressure on prices of services at present. The BoC started to increase interest rates in March 2022. By October, its rates had gone up in six steps from 0.25% to 3.75%. Markets expect them to increase further above 4% before the end of this year. The central bank predicts that inflation will respond to monetary policy tightening and expected economic developments by gradually decreasing from around 7% in 2022 Q4 to the upper boundary of the tolerance band (3%) at the end of 2023 and to the 2% inflation target in the second half of 2024.

The trade balance, which has mostly been in a deficit since 2008, switched to a surplus in mid-2021. The surplus has gradually been increasing and peaked at a 14-year high in May and June 2022 due to high gas and oil prices.

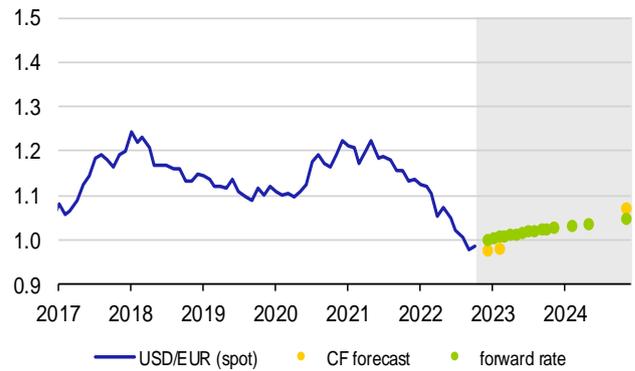


III. Leading indicators and outlook of exchange rates

OECD Composite Leading Indicator

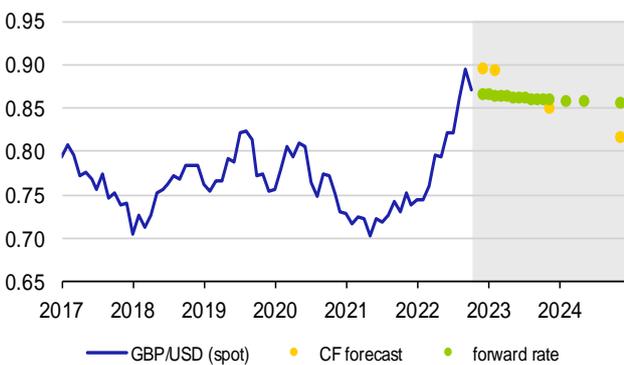


The US dollar (USD/EUR)



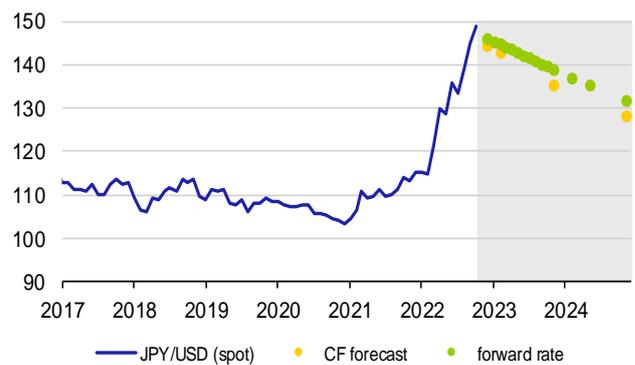
	7/11/22	12/22	2/23	11/23	11/24
spot rate	1.000				
CF forecast		0.979	0.983	1.030	1.072
forward rate		1.004	1.010	1.028	1.049

The British pound (GBP/USD)



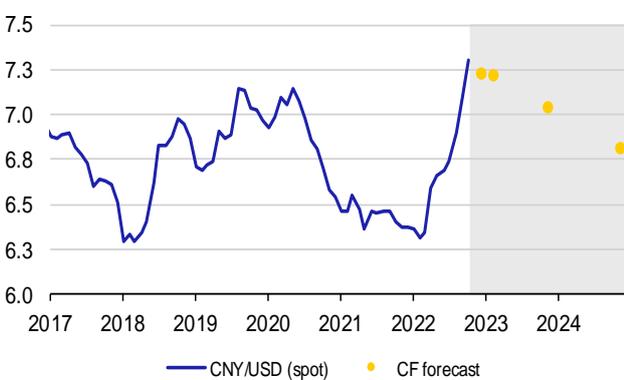
	7/11/22	12/22	2/23	11/23	11/24
spot rate	0.873				
CF forecast		0.896	0.894	0.852	0.817
forward rate		0.868	0.866	0.861	0.857

The Japanese yen (JPY/USD)



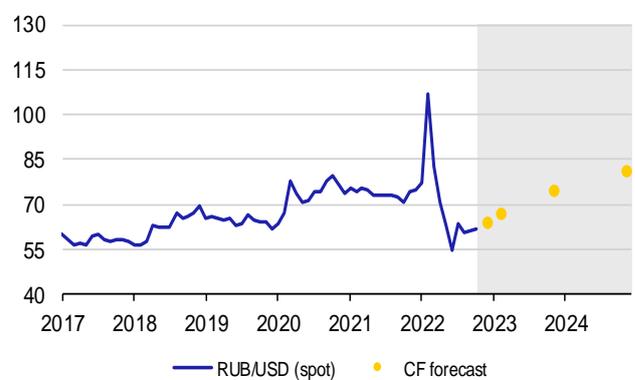
	7/11/22	12/22	2/23	11/23	11/24
spot rate	146.5				
CF forecast		144.6	142.9	135.5	128.1
forward rate		146.1	144.8	138.9	131.9

The Chinese renminbi (CNY/USD)



	7/11/22	12/22	2/23	11/23	11/24
spot rate	7.239				
CF forecast		7.230	7.227	7.044	6.817

The Russian rouble (RUB/USD)



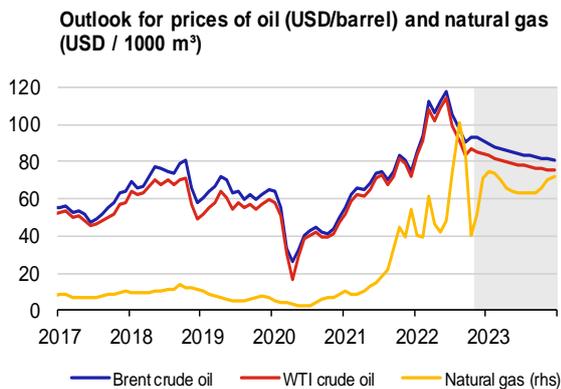
	7/11/22	12/22	2/23	11/23	11/24
spot rate	61.25				
CF forecast		64.15	67.42	74.70	81.15

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.

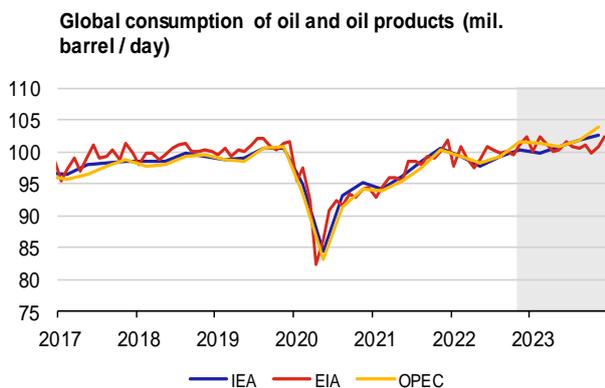
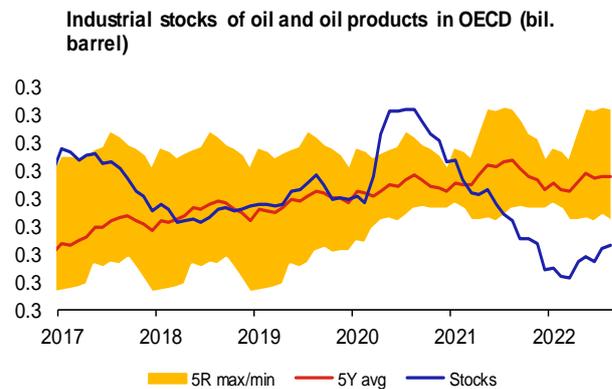
IV.1 Oil

The OPEC+ decision to substantially cut production in November halted the downward trend in oil prices in early October. The average monthly price of Brent crude oil thus rose in October after three consecutive declines. The Brent price neared USD 100/bbl in early November on concerns about insufficient supply due to the reduced production in OPEC+ countries and the impending ban of seaborne imports of Russian oil to the EU (from 5 December). The increase in oil prices was also due to a weakening dollar and speculation that China would ease its zero-tolerance policy on Covid-19. Although China has not officially confirmed any changes in its approach to combating the epidemic, it has relaxed the measures somewhat. Most analysts believe the oil market will remain tight this winter even though a rapid recovery of the Chinese economy is now a more distant prospect. The EIA lowered its oil production growth forecast for 2023 again, estimating that global oil inventories, which increased by 0.8 million barrels a day (mb/d) in 2022 Q3, will rise by 0.2 mb/d in the rest of the year and decline by 1.2 mb/d in 2023 Q1. Money managers also expect oil prices to rise further, and their net long positions rose to the highest level since June. Prices of options suggest a similar trend. Prices of risky assets were also supported by lower-than-expected inflation in the USA in October. This might allow the Fed to increase interest rates more slowly, which in turn would have a favourable impact on US economic growth and global demand for oil.

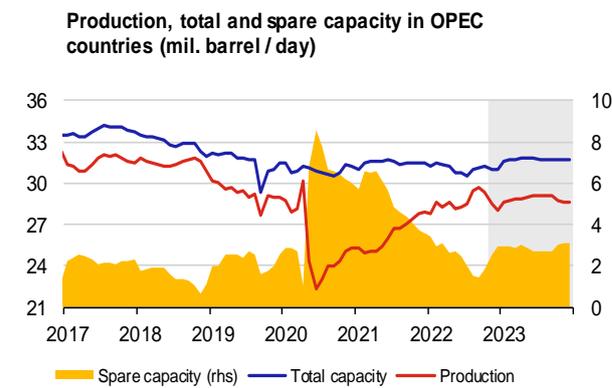
The market futures curve at the end of October moved upwards slightly relative to our October outlook but still signals a fall in the Brent crude oil price to around USD 81/bbl at the end of 2023. The November CF expects a more moderate decrease – to USD 91.2/bbl at the one-year horizon. The current EIA forecast predicts that the Brent crude oil price will fluctuate around USD 94/bbl until mid-2023 and then start to rise, reaching USD 98/bbl at the year-end due to growing excess demand.



	Brent	WTI	Natural gas
2022	99.83 ↗	94.93 ↗	1460.28 ↘
2023	84.39 ↗	78.60 ↗	1681.78 ↘



	IEA	EIA	OPEC
2022	99.18 →	99.83 ↗	99.67 →
2023	101.31 →	100.99 ↘	102.02 →



	Production	Total capacity	Spare capacity
2022	28.59 ↗	31.04 ↗	2.45 ↗
2023	28.85 →	31.72 →	2.87 →

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

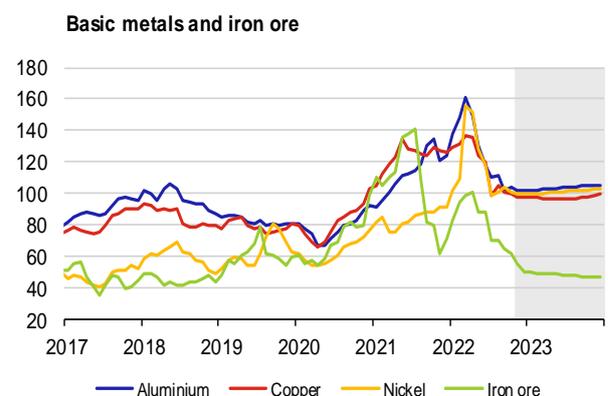
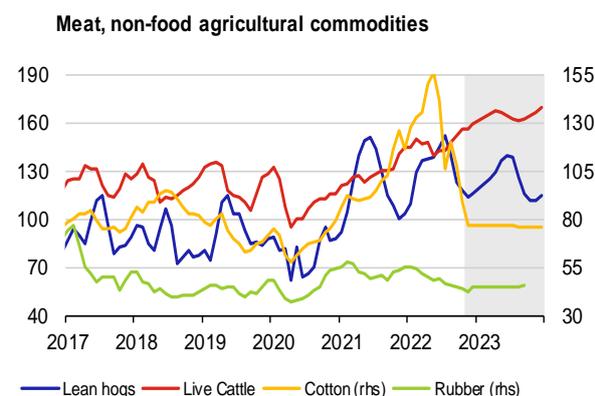
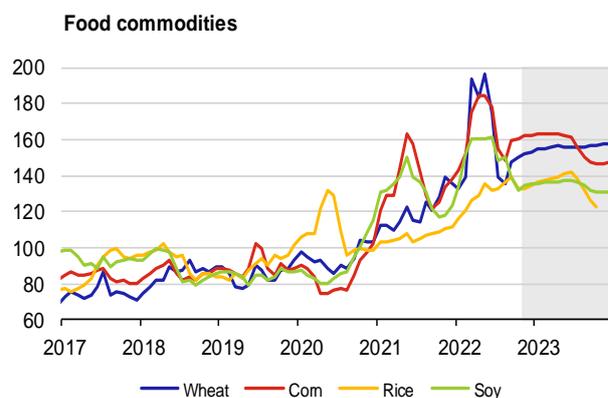
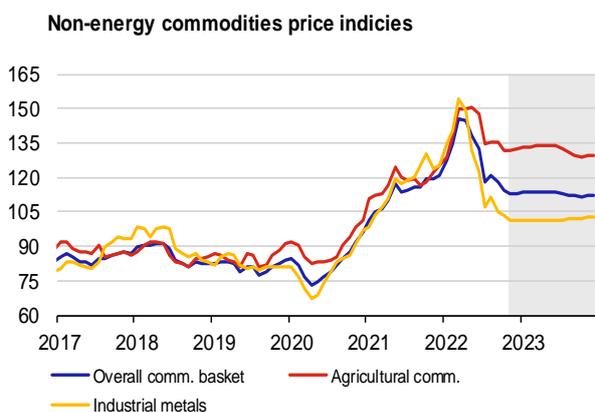
Note: Oil price at ICE, average natural gas price in Europe – World Bank data. Future oil and gas prices (grey area) are derived from futures. Industrial oil stocks in OECD countries – IEA estimate. Production and extraction capacity of OPEC – EIA estimate.

IV.2 Other commodities

The two-month-long decline in natural gas prices in Europe halted at the end of October, and the price fluctuated between EUR 100 and EUR 140/MWh in the first half of November (see the chart at the start of this issue). Above-average temperatures during the autumn and high supplies of LNG enabled European countries to fill their gas storages almost to capacity before the heating season (albeit at enormous cost). Going forward, the price will depend mainly on the weather during the winter in the northern hemisphere and also on the scale of savings on the consumption side. However, the futures curve indicates that gas prices will increase again during the coming winter. Coal prices dropped sharply in October but remain very high from the historical perspective and are not expected to decrease significantly in the near future despite the fact that traditional exporters such as Australia and South Africa have increased production to compensate for the expected shortfall of supplies from Russia. Producers in China are also aiming to greatly increase coal production.

The food commodity price index has been flat near the July level for four consecutive months, and a further slight decline is expected after harvests in the years ahead. The price of wheat decreased in October to the level before the outbreak of the war in Ukraine, yet it is at its highest level since 2012 (with the exception of this year).

The decline in the basic metals price index slowed in October and a return to growth is expected next year. The price of copper surged in the first half of November due to low inventories and on hopes that the Fed will increase interest rates at a lower pace, which will boost demand in industry. Also encouraging is the support that the Chinese government is providing to its property market. In early November, this fostered a slight increase in prices of steel and iron ore, which have nonetheless been falling sharply since May due to weak demand in industry and construction.



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.

Long-run impacts of high energy prices: Who will ultimately benefit?¹

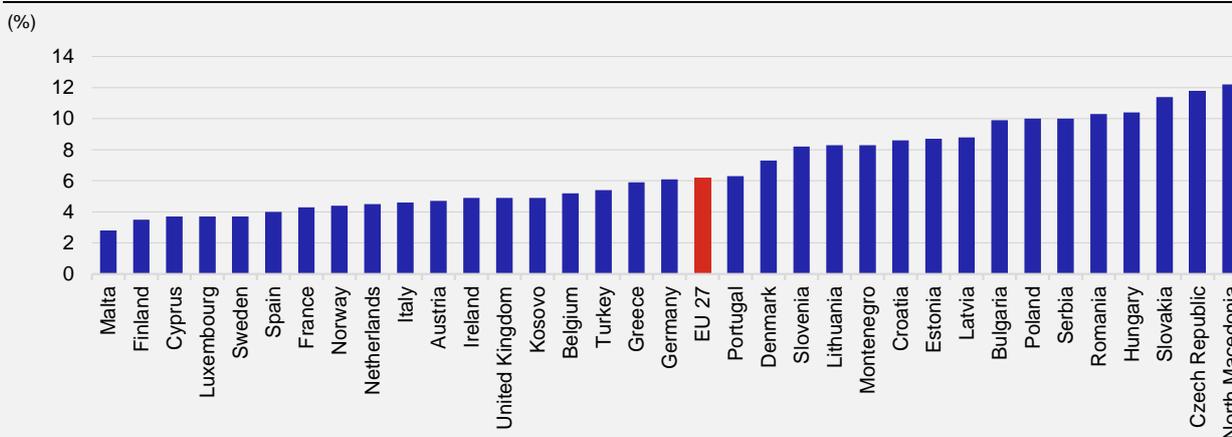
For energy importers, a sharp rise in energy prices represents a negative supply shock, raising inflation while reducing economic activity and household wealth. This shock is exacerbated by the fact that the short-run price elasticities of energy are low, so the price shock strongly affects firms' and households' budgets. In the longer run, however, there are mechanisms which make it possible to reduce the energy intensity of economic activity. Using the example of crude oil and natural gas, this article shows that the energy intensity of economic activity drops sharply during periods of high energy prices. In the short run, growth in energy prices benefits energy-exporting countries. In the long run, periods of high energy prices lead to a drop in energy consumption, as a result of which net energy exporters carve out a smaller portion of energy importers' GDP.

1. Short-run impacts of high energy prices

A shock to energy prices is a negative supply shock and poses a tough challenge for monetary policy. A negative supply shock raises inflation while reducing economic activity and household wealth. By doing so, it simultaneously poses a major challenge to monetary policy. Unlike a negative demand shock (a drop in prices coupled with a drop in GDP), when easing monetary policy causes inflation to return to the target while boosting economic activity, the fight against inflation caused by a negative supply shock has adverse effects on economic activity. The dilemma between combating inflation and saving the economy was a pressing issue amid the oil shocks of the 1970s (Bernanke, 2004; Romer and Romer, 2013). It is also an acute problem today, as Russia's aggression against Ukraine has caused prices of energy commodities to rise dramatically, the outlook for global economic growth to worsen and the risk of recession in key economies to grow.

An energy price shock is especially acute in the short run. Firms' technological processes are fixed in the short run, and investing in more modern and efficient machinery and equipment takes time. Likewise, it is hard for many households to quickly change their heating systems, invest in building insulation or change their overall habits. Energy accounts for a large part of their total consumption (see Chart 1). High energy prices thus reduce the funds available to households for other consumption. As a result, some may not be able to afford to invest in energy efficiency.

Chart 1 – Share of energy costs in the total consumption of European households



Source: Eurostat Household Budget Survey (HBS).

Note: Data for 2015. Data are available in 5-year intervals. Data for 2020 are not yet available for the entire EU. The HBS statistics may differ from the household consumption statistics in the national accounts, due, among other things, to different weighting schemes and price indices.

Such a shock also entails social costs. In general, households' expenditure on energy is regressive, i.e. poorer households spend a higher percentage of their expenditure on energy than wealthier ones do (see, for example, Flues and Thomas, 2015). In the long run, it may also be harder for poor households to invest in building insulation or alternative heat sources. The deterioration in the socio-economic situation can in turn have numerous negative second-round social impacts (crime and educational exclusion) and political impacts (such as growth in support for extremist political movements).

Changes in energy prices constitute a shock to the terms of trade and thus lead to redistribution of wealth among countries. Energy prices faced by firms and households fluctuate for many reasons: the exhaustion of an energy source, climate protection policy, which can affect final energy prices both directly (taxes) and indirectly (incentives), and, finally, geopolitical events, which play a dominant role in energy price volatility. The 1970s oil shocks and the current dramatic rise

¹ Authors: Oxana Babecká Kucharčuková and Jan Brůha (both from the CNB). The views expressed in this article are those of the authors and do not necessarily reflect the official position of the Czech National Bank.

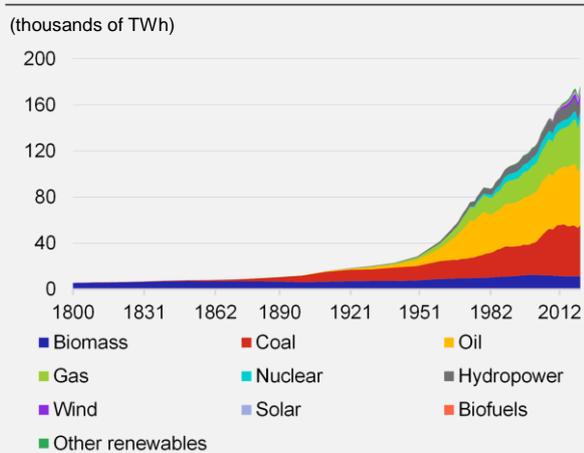
in energy prices undoubtedly both have geopolitical roots. As some countries are net energy exporters while others are importers, these geopolitical events affect flows of wealth between countries. This is the case in the current situation, where the limits imposed on energy commodity imports from Russia by Western countries are essentially enabling Russia to make a substantial rent from its energy sources via the terms of trade (see, for example, Hausman et al., 2020). This is because the use of quantitatively defined sanctions (like those currently being applied against Russia by the EU) enables commodity exporters to raise their prices so that their income remains largely unaffected.²

In the short run, high energy prices mean a transfer of wealth from energy-importing countries to exporters, but the long-run effects are ambiguous. From the long-term perspective, there are mechanisms enabling economic agents to adapt to high energy prices. In the longer run, firms can buy new and more efficient machinery and equipment and invest in new technologies that gradually penetrate the market.³ In aggregate terms, energy intensity (the ratio of the quantity of energy consumed to GDP) is reduced by “creative destruction”. Firms that are unable to adapt leave the market. By contrast, the share of firms that succeed in adapting and cutting their energy consumption per unit of output rises. Households also increase the energy efficiency of their homes, often with government support, and replace cars and household appliances with more energy-efficient ones. Price elasticity is thus much greater in the long than the short run.⁴ On the other hand, if persistently high energy prices lead to a drop in countries’ energy intensity, energy exporters may in the longer run get an increasingly small share of the “pie” of energy importers’ GDP for their energy.

2. High energy prices and a long-running decline in energy intensity

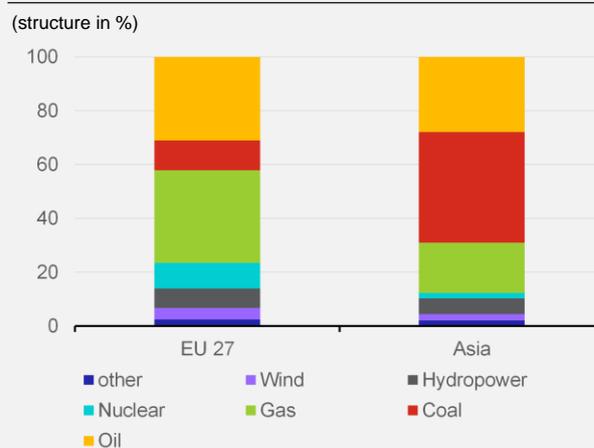
Fossil fuels today account for more than 80% of global primary energy consumption. Of this, 31% is crude oil, 27% coal and 25% natural gas (see Chart 2). Nuclear energy, biomass, solar, water and wind energy, and other types of renewable energy represent only a small proportion of direct primary energy consumption. Energy sources had already become significantly diversified by the mid-20th century, and various renewable sources were discovered around the 1980s. Since then, the territorial structure of the energy mix has changed, mainly due to exponential growth in energy consumption in China and Asia in general. After the Global and Financial Crisis, China replaced the USA as number one on the list of energy consumers. However, the structure of Asia’s energy mix still differs from that of European economies, for example. Whereas coal is the most important energy component in Asia, oil (36%) and gas (24%) are the dominant ones in

Chart 2 – Primary energy consumption by source



Source: Our World in Data. The source uses historical statistical data from Smil (2017) and since 1965 from BP Statistical Review of World Energy. Authors’ calculations.
Note: The last observations are for 2021.

Chart 3 – Structure of primary energy consumption in the EU-27 and Asia



Source: Our World in Data. The source uses historical statistical data from Smil (2017) and since 1965 from BP Statistical Review of World Energy. Authors’ calculations.
Note: The structure of energy consumption in the EU-27 and Asia in 2021..

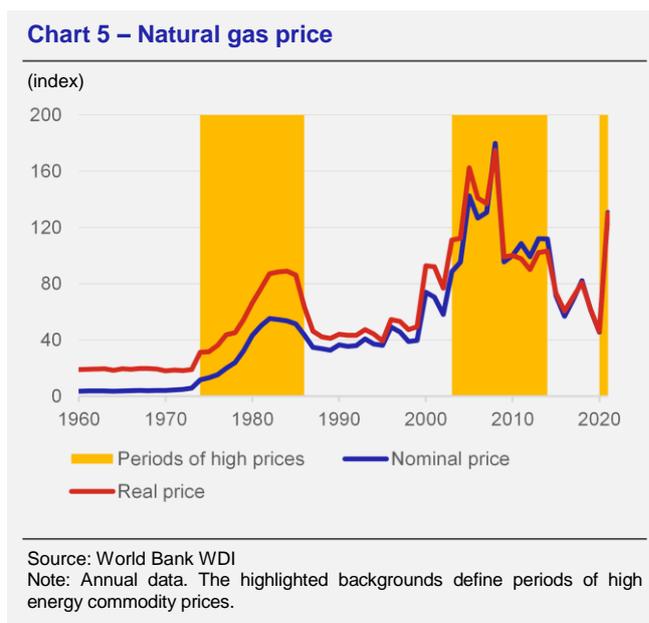
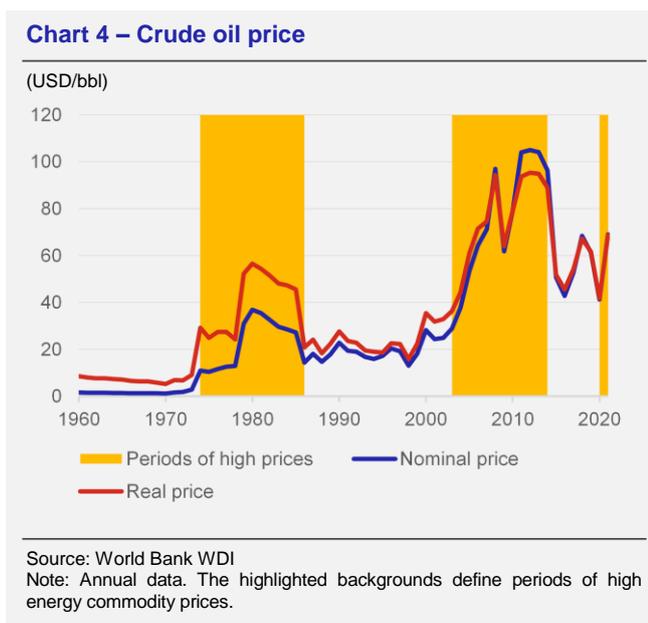
² This is well-known in public economics theory. Assuming there is a dominant energy exporter, it is much more efficient for an energy-importing country to use price instruments (taxes and tariffs) than quantitative ones (quotas and tradeable emission allowances) to regulate energy consumption – see Goulder and Schein (2013). This is because, in the case of qualitatively defined regulation, the dominant exporter can manipulate the price so as to obtain the entire rent from the source. In the case of price instruments, the government of the regulating economy can receive this rent and thus have room to compensate its subjects for the high energy prices. This finding applies regardless of the reason for regulating (environmental or geopolitical).

³ The economic mechanisms of technological change are described in the stylised growth model of Acemoglu et al. (2016). Popp et al. (2022) provide empirical evidence that periods of high oil prices are simultaneously periods of investment in new technologies (patents).

⁴ If energy prices increase asymmetrically, due, for example, to the unilateral introduction of environmental policy measures, a drop in energy intensity may also reflect reallocation of energy-intensive production to countries where energy prices are lower. The empirical strength of this effect has been tested by many environmental economics studies. This literature generally concludes that there is some degree of production reallocation between countries, but it is significant only for some sectors and explains less than one-third of the drop in energy intensity in advanced countries (see, for example, Metcalf, 2008, and Dechezleprêtre and Sato, 2017) The dominant explanation of the drop in energy prices is thus technological progress, induced by change in relative prices.

the EU. With the exception of the Czech Republic, Poland, Bulgaria and Estonia, the share of coal is small in Europe.⁵ Oil and gas are thus the most interesting items for our analysis of energy intensity. Due to data availability, this analysis focuses on energy intensity since the 1960s.

The period from 1960 to the present can be divided into sub-periods of different energy price levels. The 1960s and early 1970s were characterised by extremely cheap crude oil and natural gas. The first sudden change came with the oil shocks of the 1970s, when prices of oil and natural gas surged to previously unseen levels. They remained high until the oil price collapse in 1985. This was followed by a period of relatively low prices of energy commodities, which lasted until around 2005. Oil and natural gas prices then rose again before falling in autumn 2014. The period between 2015 and autumn 2021 was again characterised by low prices. The overall period can thus be divided into five sub-periods as shown in Chart 3. This division was based on economic intuition. We then tested it with machine learning methods using the fusion filter (Tibshirani et al., 2005).⁶ This filter also identified five sub-periods: with the exception of the start of the millennium they are identical for both commodities.



For each of the episodes defined above, we analyse the change in the energy intensity of crude oil and natural gas. We define energy intensity as the ratio of primary energy consumption to GDP in US dollars and analyse the average change in energy intensity for the above periods. The results are shown in the tables below. Negative figures indicate a drop in energy intensity, i.e. less energy is needed per unit of GDP.

The results for oil do indeed indicate a robust inverse relationship between oil prices and change in oil intensity (see Table 1, left-hand side). In the period of extremely cheap oil (i.e. until 1973), oil intensity increased in all the countries under review. This was linked, among other things, with growth in individual car travel. In the following period of oil shocks, oil intensity declined dramatically.⁷ On the other hand, it decreased further in the period of relatively cheap oil after 1985, though in most countries at a much slower pace than in previous years. The pace of decline in energy intensity accelerated after 2005, when oil became relatively expensive. It then slowed in most countries following the oil price collapse in 2014.⁸

The results for natural gas show an inverse relationship between gas prices and the energy intensity of gas in qualitative terms (see Table 1, right-hand side). This can be seen, for example, in the period of high gas prices between 2003 and 2014, when gas intensity was falling faster in most countries than in the preceding and following periods of relatively cheap gas. Unlike oil intensity, however, gas intensity was affected by additional factors in many countries. Particularly important is the fact that natural gas was preferred as a fuel by governments during many periods, and households were motivated to replace other fuels (mainly solid ones) with gas. This means that change of gas intensity may not have always followed a strict economic logic.

Based on the evidence of a drop in energy intensity, we can do a back-of-the-envelope calculation of its impacts on oil imports. By way of example, we choose the four largest euro area countries – Germany, France, Italy and Spain –

⁵ An analysis of the global coal market was presented in a previous issue of GEO – see Hošek (2020).

⁶ The fusion filter is a method enabling automatic identification of periods with different levels of a variable under analysis.

⁷ Except in two countries: Spain and Portugal, which underwent major political and economic changes in the 1970s. This was reflected in growth in industrial production and cautiously growing wealth of the population, manifested, among other things, in growth in individual car travel.

⁸ However, this does not apply universally. In the United Kingdom, for example, the rate of decline in oil intensity remained high even after 2015. This is explained by high fuel taxation, among other things.

Table 1 – Average change in energy intensity levels for different countries and different periods

	OIL					GAS				
	[1960,1973]	[1974,1985]	[1986,2004]	[2005,2014]	[2015,2021]	[1960,1973]	[1974,1985]	[1986,2002]	[2003,2014]	[2015,2020]
US	1.35	-3.81	-1.70	-3.06	-1.79	0.69	-4.79	-1.44	-0.62	0.98
AT	4.42	-3.74	-0.66	-2.95	-1.35	4.77	0.55	-0.14	-2.06	1.75
BE	3.35	-5.48	0.36	-2.55	-0.83	41.45	-1.62	1.25	-2.31	2.20
CZ			-0.37	-2.73	-1.71			2.47	-4.40	0.56
FI	5.87	-4.56	-2.88	-1.94	-2.91		4.02	6.23	-5.00	-5.22
FR	5.39	-5.62	-1.77	-3.37	-2.26	8.94	2.68	0.10	-2.28	1.14
DE	1.31	-3.91	-2.08	-2.73	-2.53	22.38	2.23	0.23	-2.55	2.11
IT	3.31	-4.42	-1.51	-4.20	-0.71	4.60	2.64	2.54	-0.87	3.00
NL	1.34	-4.51	-0.63	-2.38	-3.36	33.87	-0.66	-2.58	-2.59	-0.44
NO	2.40	-3.59	-2.28	-1.66	-2.76		10.54	4.31	-1.43	-0.50
PT	3.56	1.14	-0.31	-2.93	-3.26			31.44	2.41	5.70
ES	6.39	-0.92	-0.29	-3.27	-1.14	44.57	4.36	9.70	1.07	2.34
SE	1.28	-3.52	-3.85	-4.17	-3.13			7.87	-2.87	5.26
UK	1.26	-4.61	-2.46	-2.87	-3.72	40.15	3.58	0.85	-4.42	0.61
CN	13.48	-3.83	-2.18	-4.71	-1.43	14.75	-1.29	-4.28	5.90	3.90
JP	5.60	-5.42	-1.12	-3.05	-3.79	4.98	13.17	1.60	3.38	-2.96
KO	17.26	-2.08	-0.01	-3.15	-0.73			8.74	2.24	0.17
WD	2.31	-2.61	-1.45	-2.22	-2.08	2.29	0.08	-0.52	-0.55	0.15

Source: World Bank World Development Indicators, BP, authors' calculations

Note: Periods are identified based on the fusion filter. US = United States, AT = Austria, BE = Belgium, CN = China, CZ = Czech Republic, DE = Germany, ES = Spain, FI = Finland, FR = France, IT = Italy, JP = Japan, KO = Korea Republic, NL = Netherlands, NO = Norway, PT = Portugal, SE = Sweden, UK = United Kingdom, WD = World.

between 2005 and 2019. We know from the analysis above that the oil intensity of these economies declined more in the 2005–2014 period of high oil prices than in periods when prices were relatively low. We can therefore ask the counterfactual question of how high oil imports to these economies would have been if their energy intensity had declined over the entire period at the slower pace typical of periods of low prices.⁹ The results of this counterfactual simulation are shown in Charts 6-9. The left-hand column shows actual oil imports (in thousands of tonnes) to the above four economies and compares them with the counterfactual scenario. It is evident that the counterfactual oil imports are much higher than the actual ones. The right-hand column depicts actual and counterfactual expenditure on oil imports as a percentage of GDP. It is clear that lower oil intensity also results in economies paying a smaller share of their GDP for oil than they would if oil intensity did not decline. The differences range from 0.1 pp (in the case of Germany) to almost 1 pp (in the case of Italy).

The simulations show that growth in oil prices is costly for oil importers in the short run, but in the long run, the high energy prices stimulate a decline in oil intensity and hence in oil imports per unit of GDP. This means that, in the long run, these countries need to import increasingly less oil per unit of GDP and thus pay a smaller share of their output for the imports. If prices of energy fall again, this effect will be all the more painful for oil exporters.

Conclusion

A sudden sharp rise in energy prices poses a challenge to the economy and to economic policy-makers. It raises corporate costs and tightens household budgets while reducing aggregate demand for other goods. The regressive nature of household energy expenditure represents a socio-economic problem that puts pressure on fiscal and social policy. A period of high growth in energy prices also creates a monetary policy dilemma, as the high prices on the one hand cause economic activity to decline but on the other hand raise inflation. Historical experience meanwhile shows that the second-round effects of these high prices cannot be ignored, as they may become embedded in high inflation expectations.

In the longer run, however, high energy prices have a downward effect on energy intensity, which reduces their negative impact on economic agents. The downward effect of high energy prices on energy intensity is not only consistent with the findings of endogenous growth theory, but can also be illustrated on data. In this article, we showed that periods of high energy prices are indeed usually also periods of sharp falling energy intensity.

Energy sources are unevenly distributed between countries. Periods of high energy prices naturally benefit energy exporters (from their point of view, high prices are a favourable shock to the terms of trade). However, as high prices are accompanied by an above-average decline in energy intensity, these exporters get a smaller share of energy importers' GDP in the longer run.

High energy prices are painful for the economy but, looking from a longer-term perspective, there is a light at the end of the tunnel. Based on historical experience, market processes can be expected to lead to adaptation by economic agents. This in turn will reduce their need for energy imports, making European countries less vulnerable to energy shocks

⁹ These are back-of-the-envelope calculations, which means we abstract from some general equilibrium effects. We assume identical GDP values in both scenarios, so the differences between the actual figures and the counterfactual scenarios are conservative estimates of the analysed effect. The changes in oil intensity for individual countries in the periods of low and high oil prices were taken from Table 1.

in the future. Rational, evidence-based economic policy can greatly aid this process of adaptation, as the experience of previous crises has shown.¹⁰

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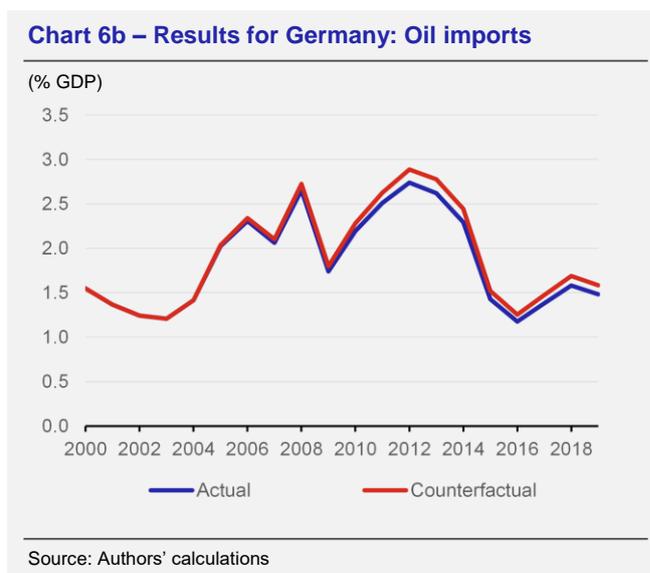
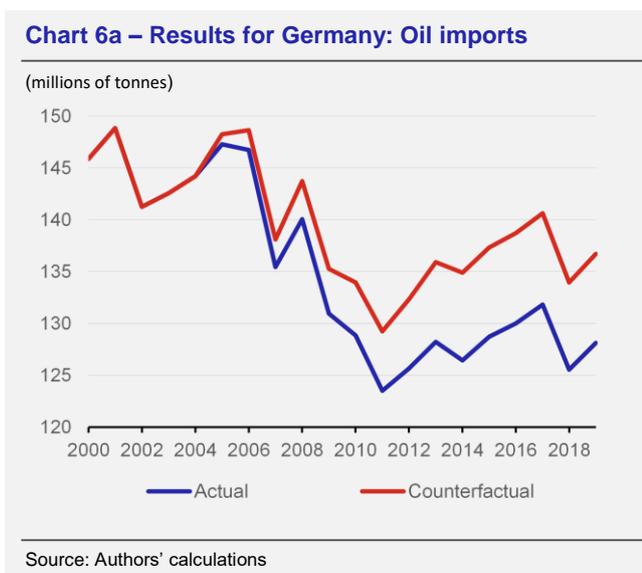
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Keywords

Energy prices, energy commodity imports, terms of trade

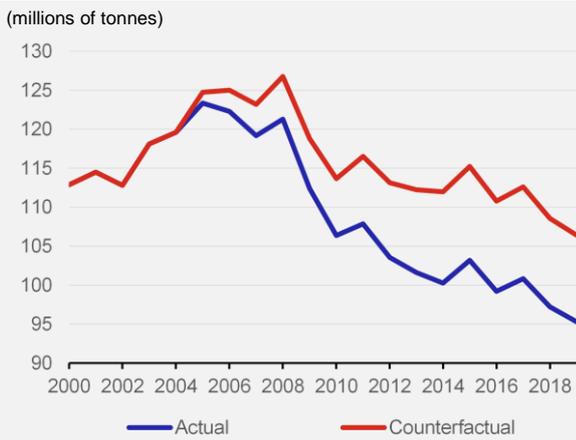
JEL Classification

O33, Q41



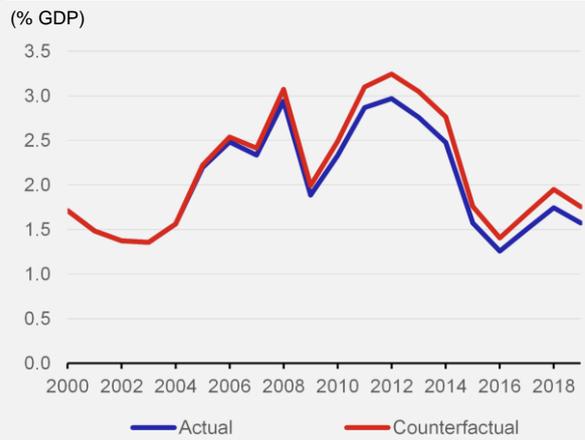
¹⁰ Babecká Kucharčuková and Brůha (2017) showed that countries with high quality of governance and regulation overcame the Great Recession at a systematically lower macroeconomic cost.

Chart 7a – Results for France: Oil imports



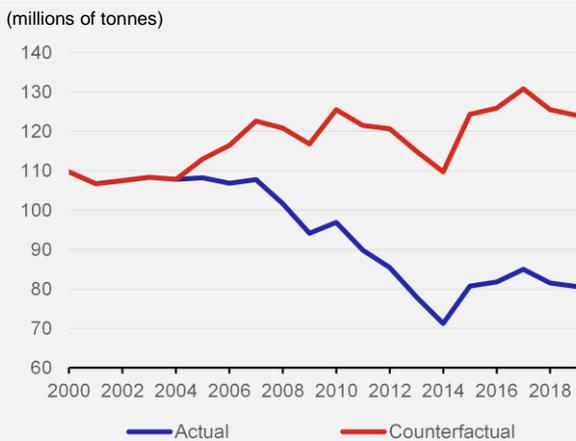
Source: Authors' calculations

Chart 7b – Results for France: Oil imports



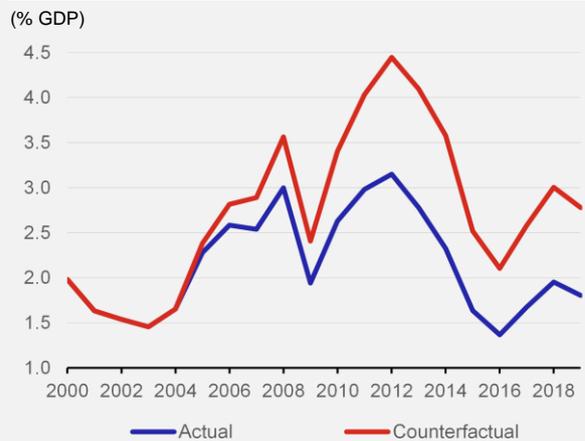
Source: Authors' calculations

Chart 8a – Results for Italy: Oil imports



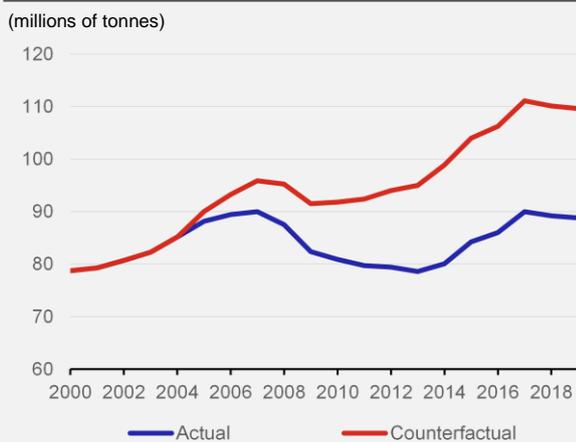
Source: Authors' calculations

Chart 8b – Results for Italy: Oil imports



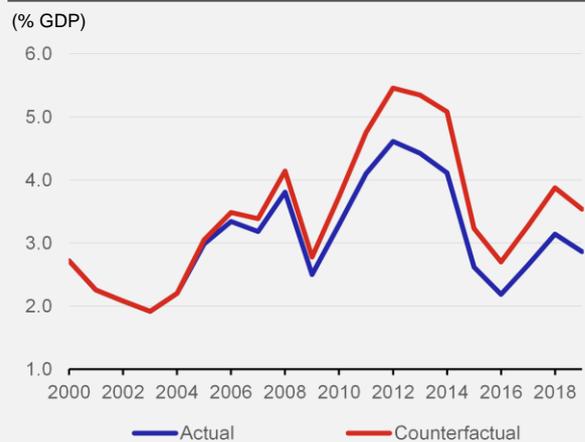
Source: Authors' calculations

Chart 9a – Results for Spain: Oil imports



Source: Authors' calculations

Chart 9b – Results for Spain: Oil imports



Source: Authors' calculations

A1. Change in predictions for 2022

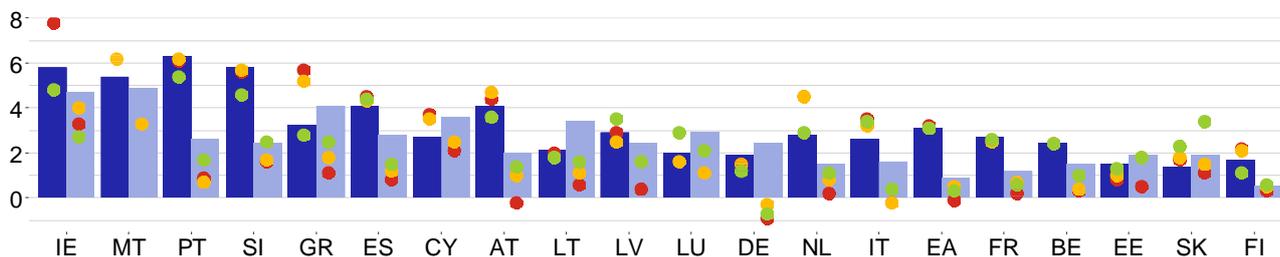
	GDP growth, %				Inflation, %			
	CF	IMF	OECD	CB / EIU	CF	IMF	OECD	CB / EIU
EA	+0.2	+0.5	+0.5	+0.3	+0.2	+3.0	+1.1	+1.3
US	+0.1	-0.7	-1.0	-1.5	+0.1	+0.4	-0.8	+0.2
UK	+0.1	+0.4	-0.2	+0.8	0	+1.7	0	-2.7
JP	0	0	-0.1	-0.4	+0.1	+1.0	+0.3	+0.6
CN	0	-0.1	-1.2	0	0	+0.1	+0.2	-0.1
RU	+0.5	+2.6	+4.5	0	-0.1	-7.5	-2.3	0

A2. Change in predictions for 2023

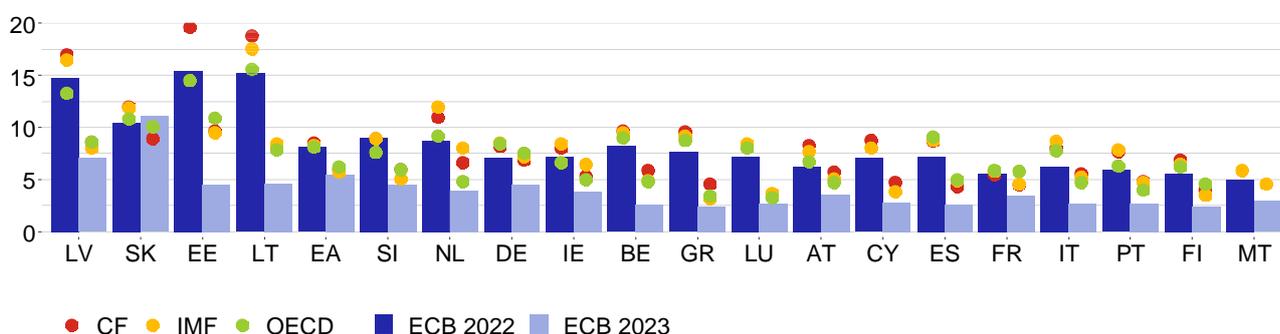
	GDP growth, %				Inflation, %			
	CF	IMF	OECD	CB / EIU	CF	IMF	OECD	CB / EIU
EA	-0.1	-0.7	-1.3	-1.2	+0.2	+3.4	+1.6	+2.0
US	0	0	-0.7	-0.5	+0.2	+0.6	-0.1	+0.2
UK	-0.6	-0.2	0	0	+0.7	+3.7	-1.5	-0.2
JP	-0.1	-0.1	-0.4	-0.1	+0.1	+0.6	+0.1	+0.2
CN	-0.2	-0.2	-0.2	-0.7	+0.1	+0.4	+0.1	+0.1
RU	-0.2	+1.2	-0.5	-0.1	0	-9.3	-6.4	0

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

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



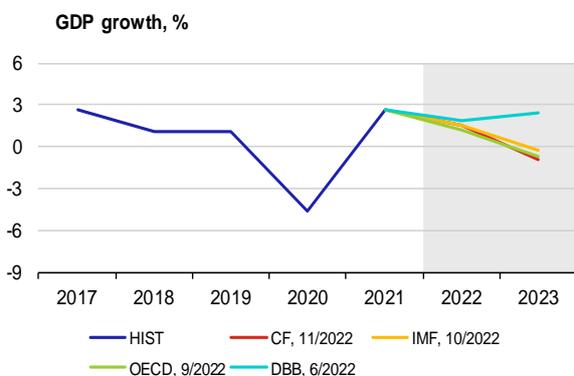
Inflation in the euro area countries in 2022 and 2023, %



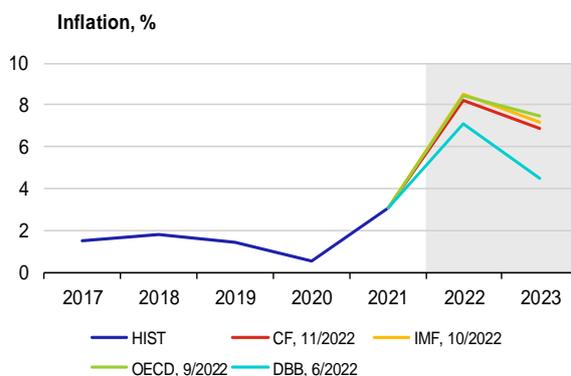
Note: Charts show institutions' latest available outlooks of for the given country.

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

Germany

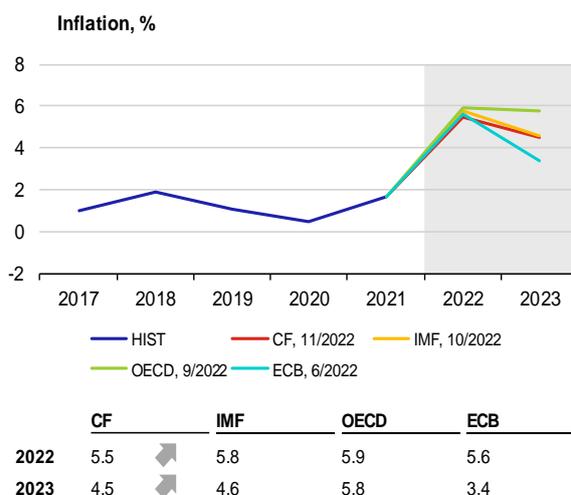
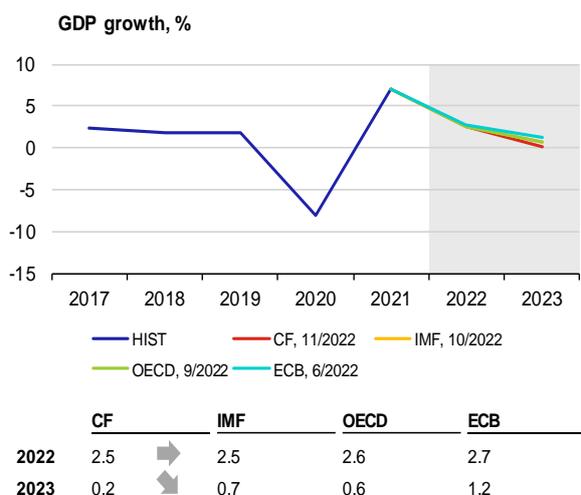


	CF	IMF	OECD	DBB
2022	1.5	1.5	1.2	1.9
2023	-0.9	-0.3	-0.7	2.4

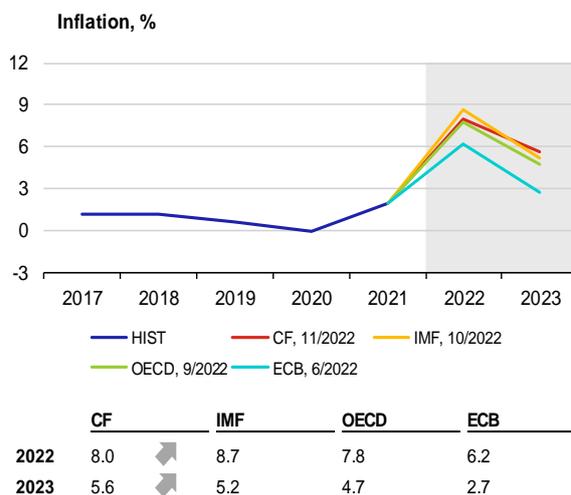
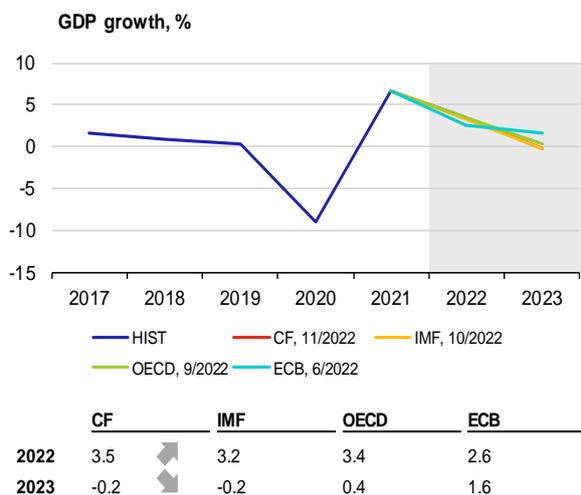


	CF	IMF	OECD	DBB
2022	8.2	8.5	8.4	7.1
2023	6.9	7.2	7.5	4.5

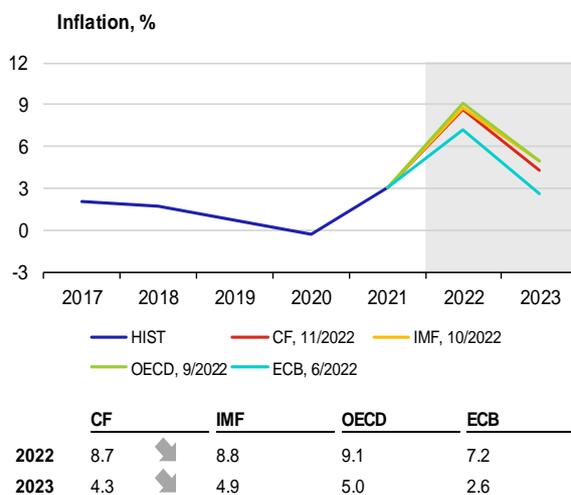
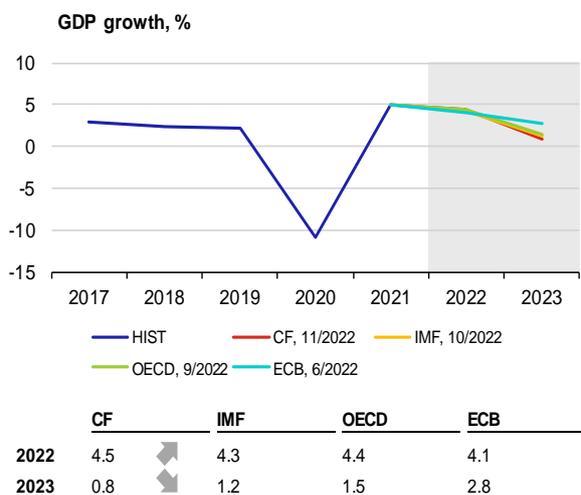
France



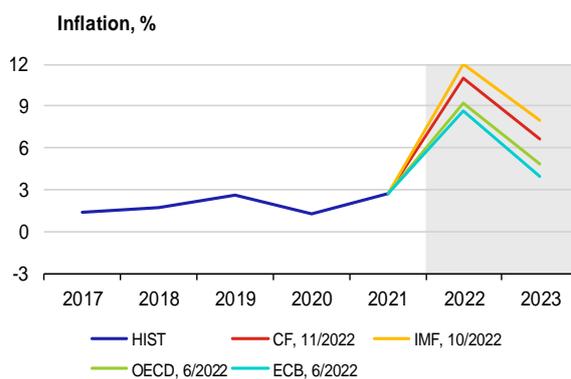
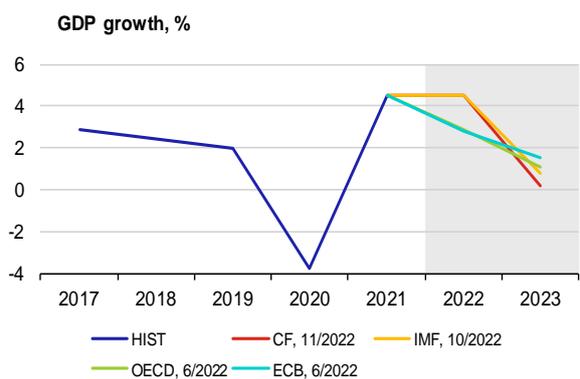
Italy



Spain



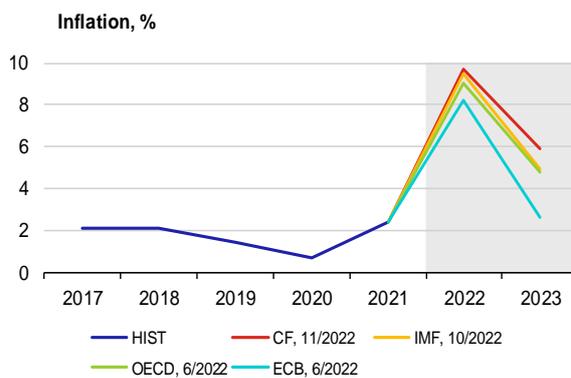
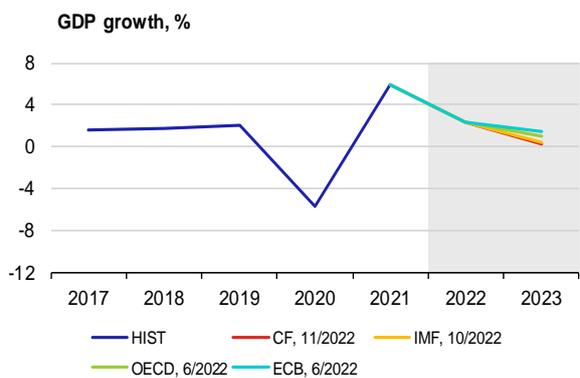
Netherlands



	CF	IMF	OECD	ECB
2022	4.5	4.5	2.9	2.8
2023	0.2	0.8	1.1	1.5

	CF	IMF	OECD	ECB
2022	11.0	12.0	9.2	8.7
2023	6.6	8.0	4.8	3.9

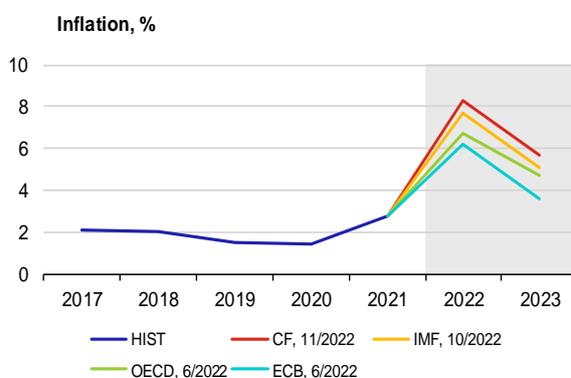
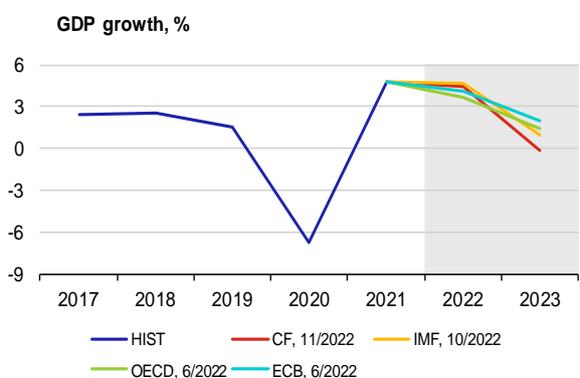
Belgium



	CF	IMF	OECD	ECB
2022	2.4	2.4	2.4	2.4
2023	0.3	0.4	1.0	1.5

	CF	IMF	OECD	ECB
2022	9.7	9.5	9.0	8.2
2023	5.9	4.9	4.8	2.6

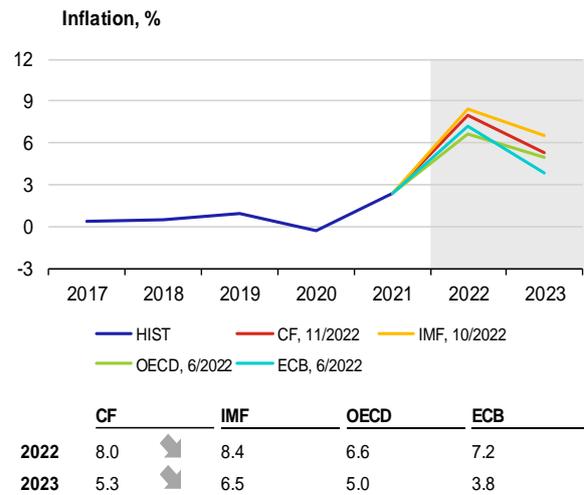
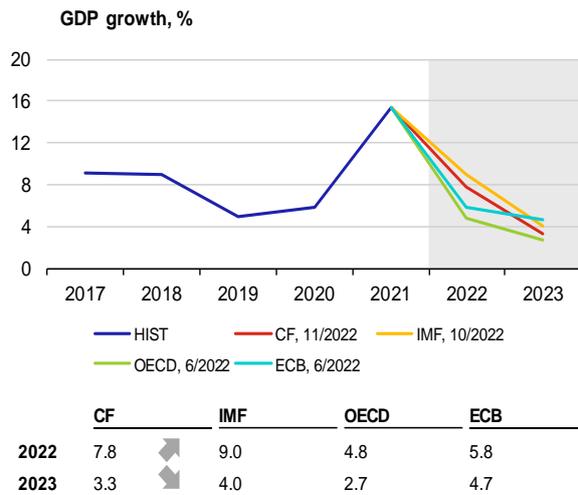
Austria



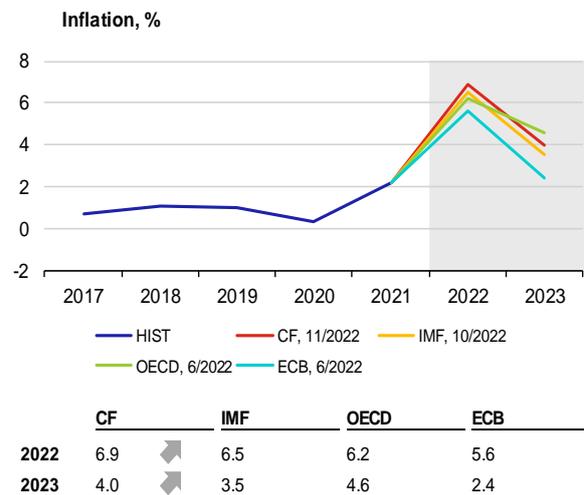
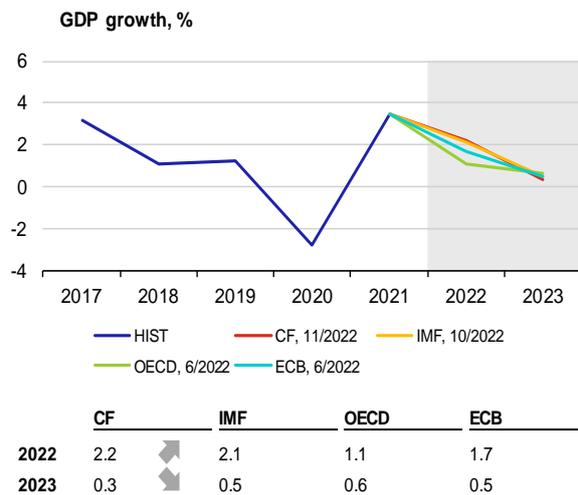
	CF	IMF	OECD	ECB
2022	4.4	4.7	3.6	4.1
2023	-0.2	1.0	1.4	2.0

	CF	IMF	OECD	ECB
2022	8.3	7.7	6.7	6.2
2023	5.7	5.1	4.7	3.6

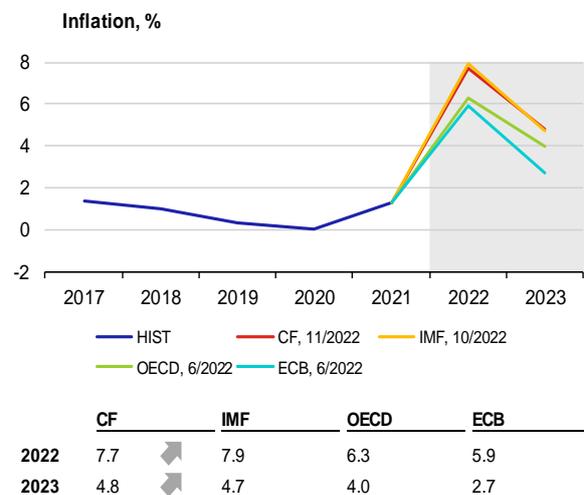
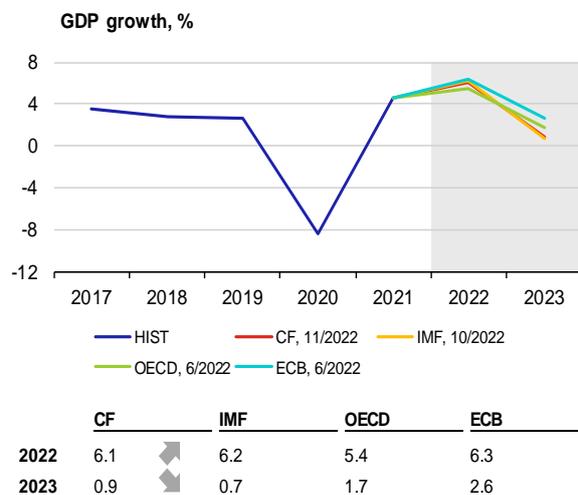
Ireland



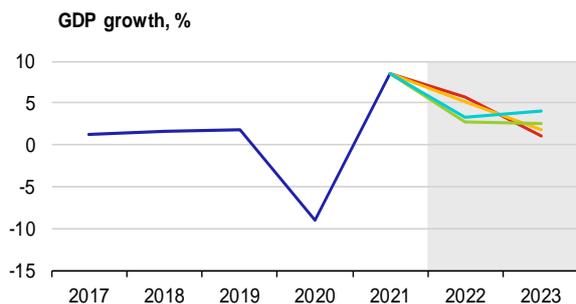
Finland



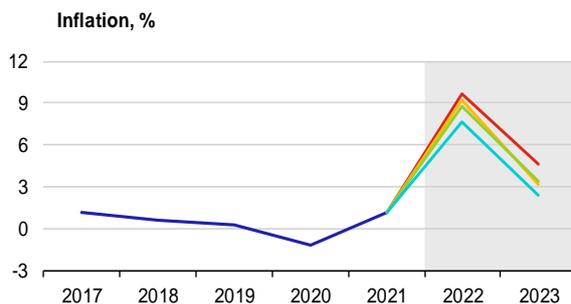
Portugal



Greece

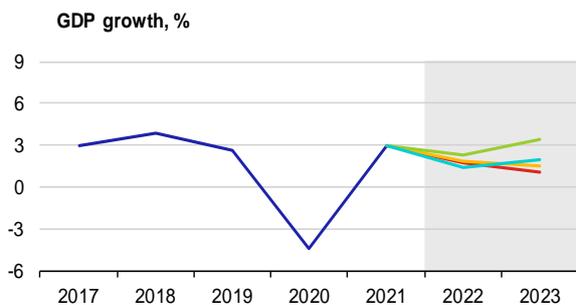


	CF	IMF	OECD	ECB
2022	5.7	5.2	2.8	3.2
2023	1.1	1.8	2.5	4.1

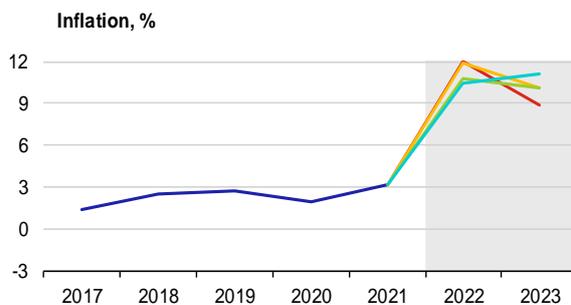


	CF	IMF	OECD	ECB
2022	9.6	9.2	8.8	7.6
2023	4.6	3.2	3.4	2.4

Slovakia

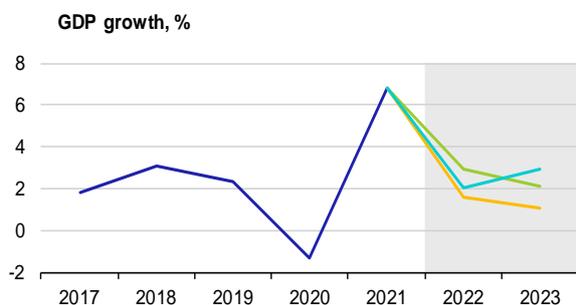


	CF	IMF	OECD	ECB
2022	1.7	1.8	2.3	1.4
2023	1.1	1.5	3.4	1.9

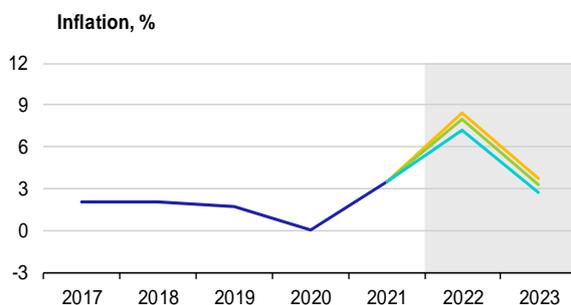


	CF	IMF	OECD	ECB
2022	12.0	11.9	10.8	10.4
2023	8.9	10.1	10.1	11.1

Luxembourg

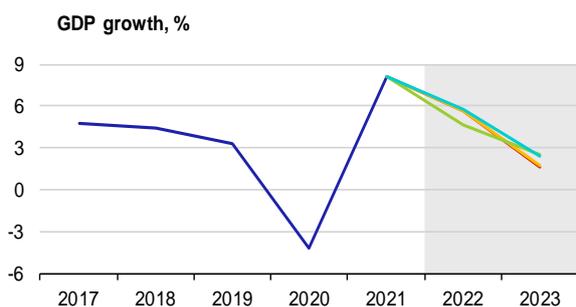


	CF	IMF	OECD	ECB
2022	n. a.	1.6	2.9	2.0
2023	n. a.	1.1	2.1	2.9

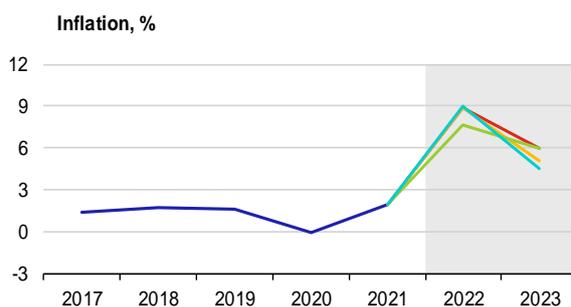


	CF	IMF	OECD	ECB
2022	n. a.	8.4	8.0	7.2
2023	n. a.	3.7	3.3	2.7

Slovenia

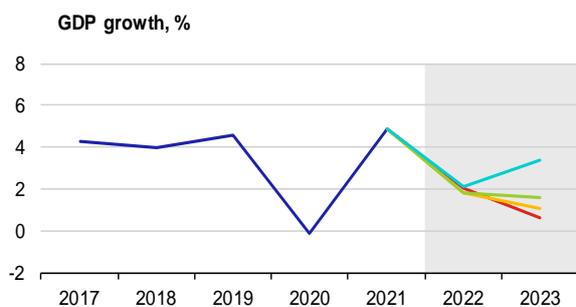


	CF	IMF	OECD	ECB
2022	5.6	5.7	4.6	5.8
2023	1.6	1.7	2.5	2.4

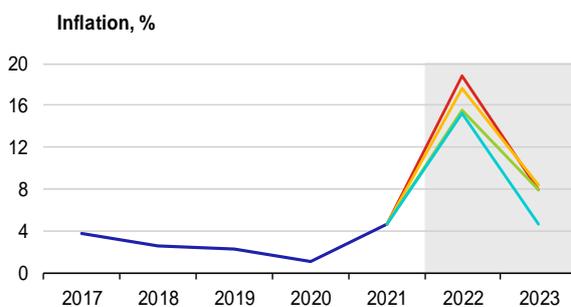


	CF	IMF	OECD	ECB
2022	8.9	8.9	7.6	9.0
2023	6.0	5.1	6.0	4.5

Lithuania

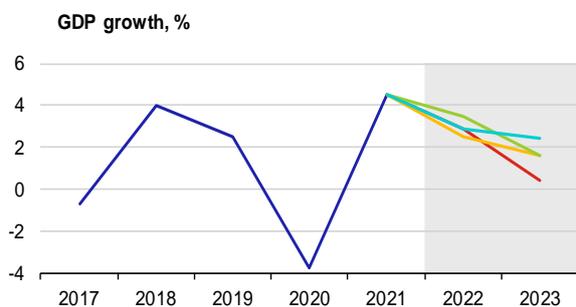


	CF	IMF	OECD	ECB
2022	2.0	1.8	1.8	2.1
2023	0.6	1.1	1.6	3.4

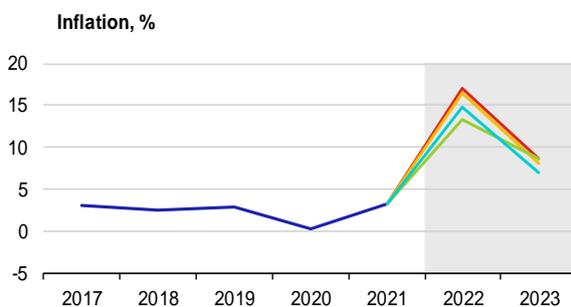


	CF	IMF	OECD	ECB
2022	18.8	17.6	15.6	15.2
2023	7.9	8.4	7.9	4.6

Latvia

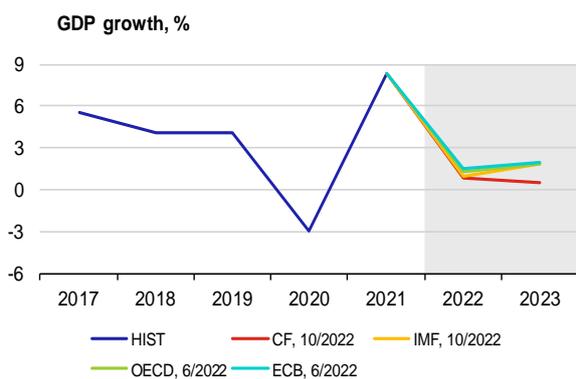


	CF	IMF	OECD	ECB
2022	2.9	2.5	3.5	2.9
2023	0.4	1.6	1.6	2.4

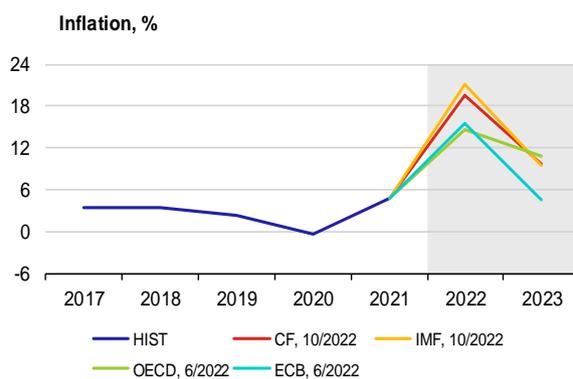


	CF	IMF	OECD	ECB
2022	17.0	16.5	13.3	14.8
2023	8.6	8.0	8.6	7.0

Estonia

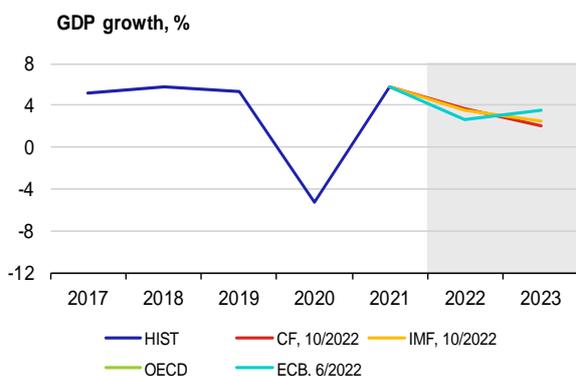


	CF	IMF	OECD	ECB
2022	0.8	1.0	1.3	1.5
2023	2.2	1.8	1.8	1.9

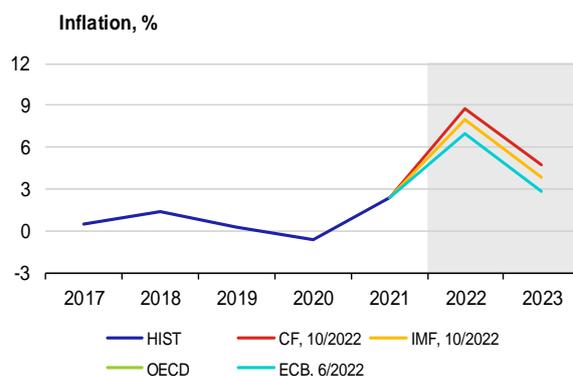


	CF	IMF	OECD	ECB
2022	19.6	21.0	14.5	15.4
2023	9.7	9.5	10.9	4.5

Cyprus

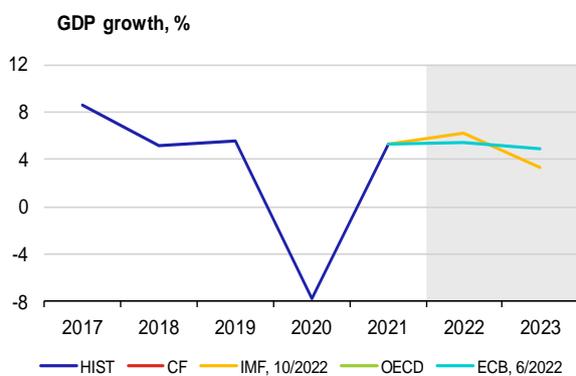


	CF	IMF	OECD	ECB
2022	3.7	3.5	n.a.	2.7
2023	2.1	2.5	n.a.	3.6

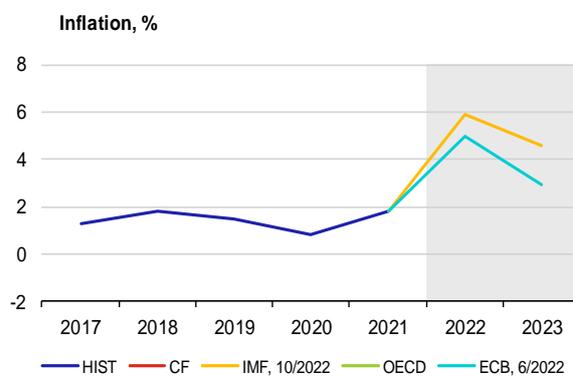


	CF	IMF	OECD	ECB
2022	8.8	8.0	n.a.	7.0
2023	4.7	3.8	n.a.	2.8

Malta



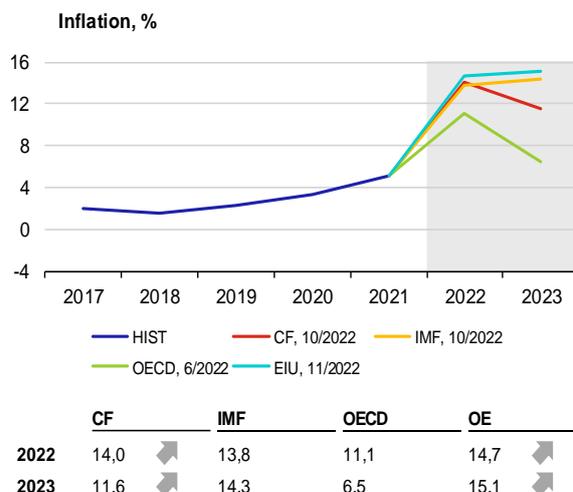
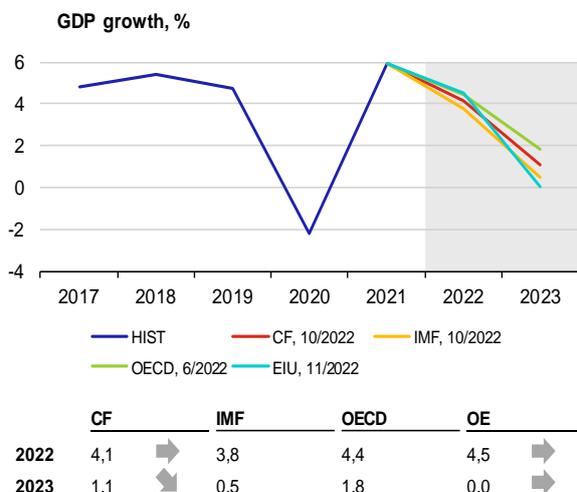
	CF	IMF	OECD	ECB
2022	n.a.	6.2	n.a.	5.4
2023	n.a.	3.3	n.a.	4.9



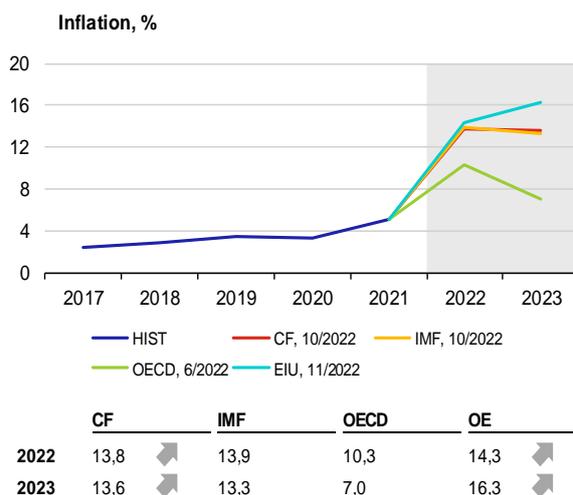
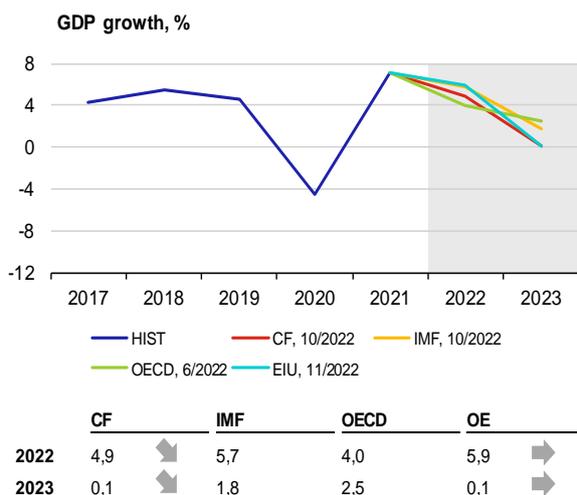
	CF	IMF	OECD	ECB
2022	n.a.	5.9	n.a.	5.0
2023	n.a.	4.6	n.a.	2.9

A5. GDP growth and inflation in other selected countries

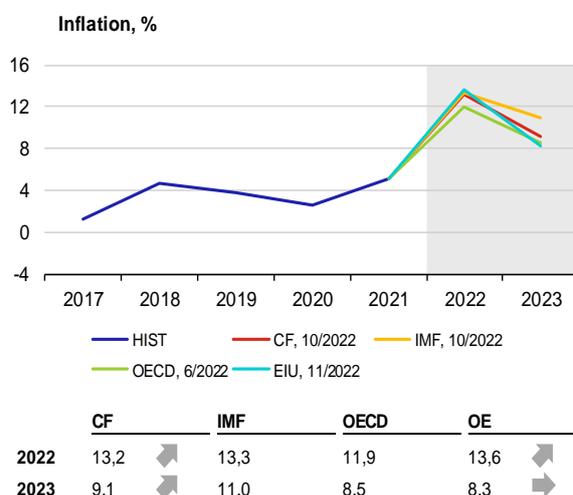
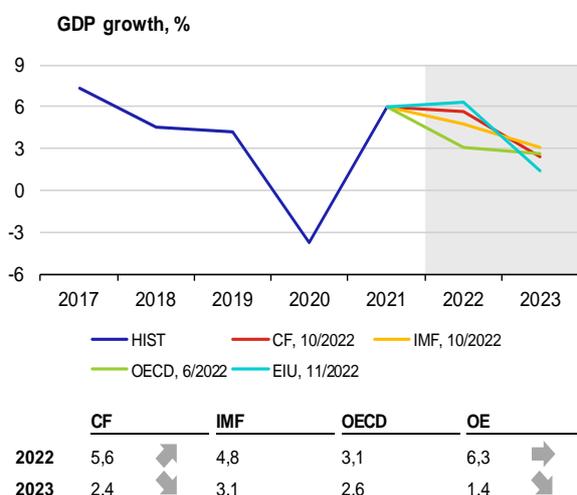
Poland



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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