



NARODOWY  
BANK POLSKI

Economic Analysis and Research Department

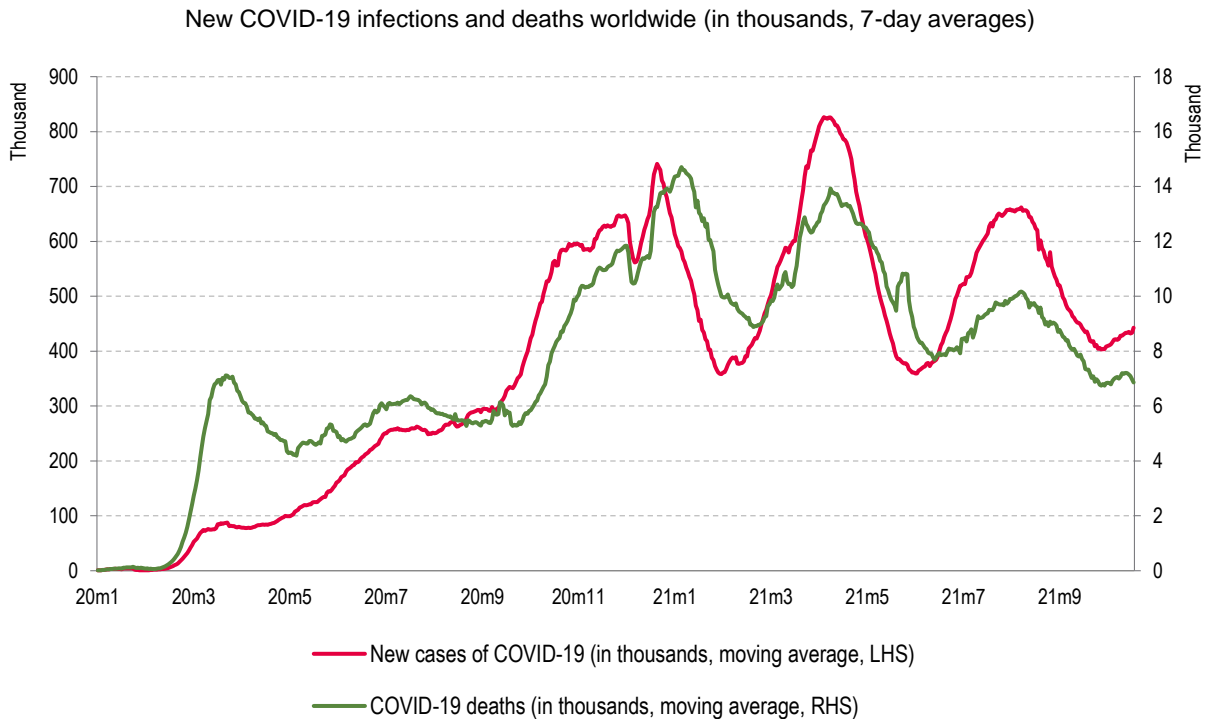
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# **Inflation and economic growth projection of Narodowy Bank Polski based on the NECMOD model**

Warsaw / 8th November 2021

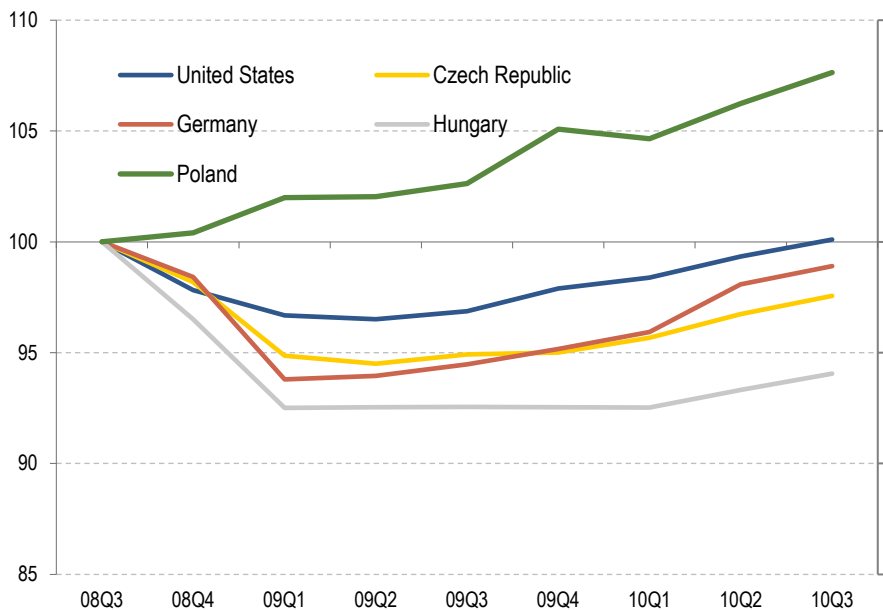


## Successive waves of the pandemic have been having weaker impact on the economy.

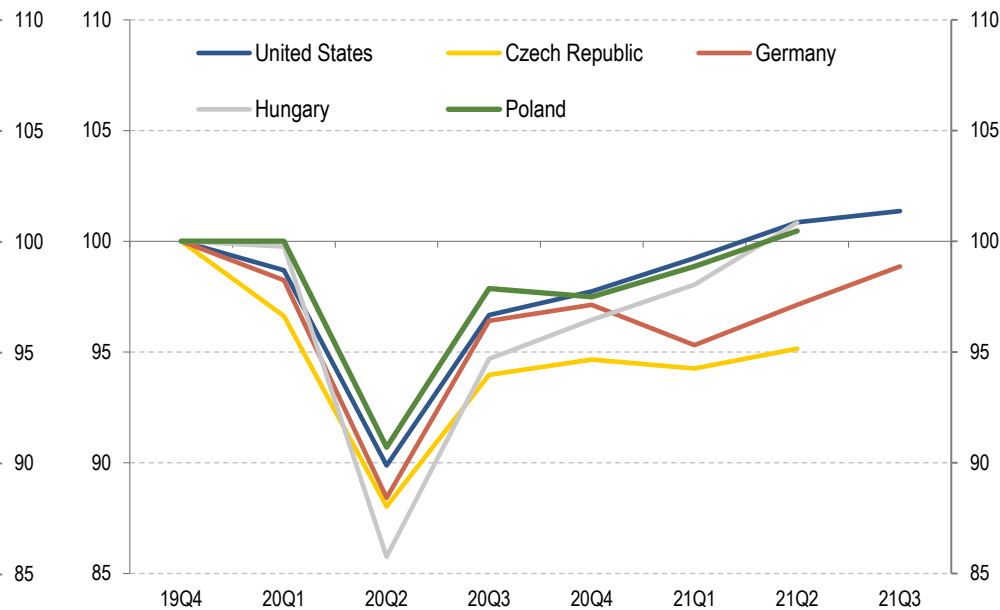


**The pandemic crisis has led to a sharp decline in GDP, although the recovery in global activity is progressing faster than after the 2008 financial crisis.**

Real GDP in 2008 Q3 - 2010 Q3 (index, 2008Q3 = 100)

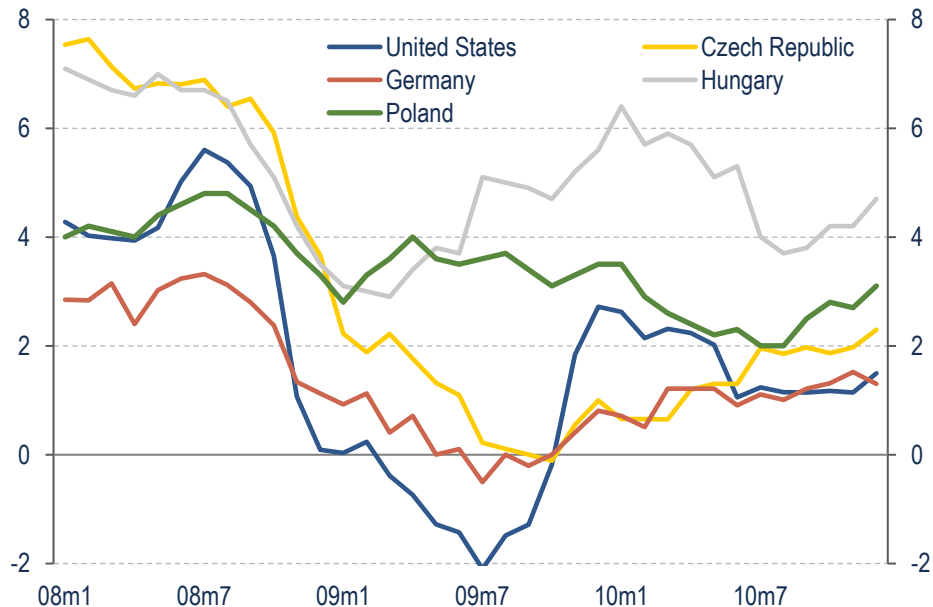


Real GDP in 2019 Q4 - 2021 Q3 (index, 2019Q4 = 100)

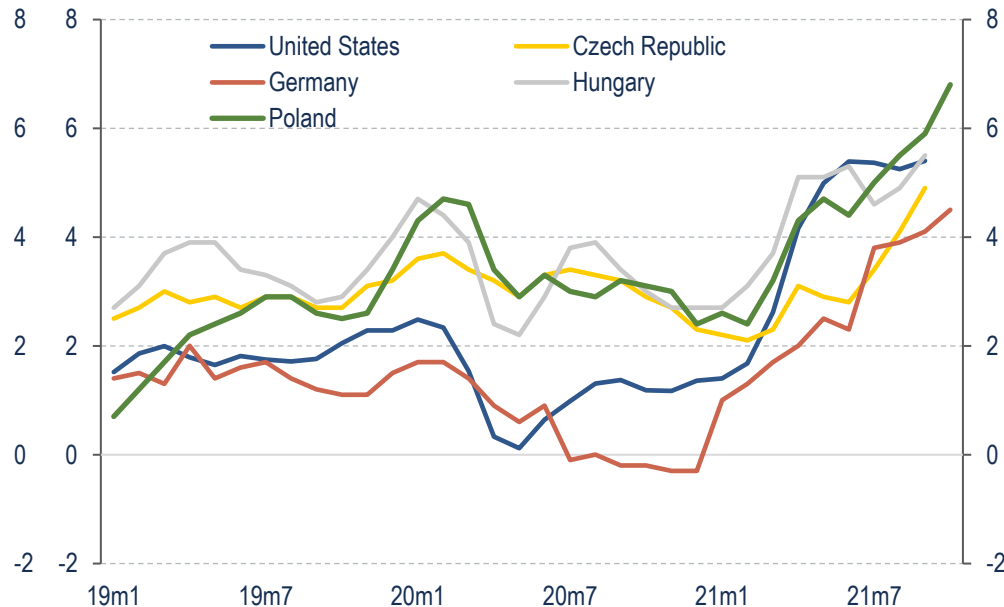


**The rapid recovery of global activity after the pandemic crisis is contributing to a marked increase in inflation in many economies.**

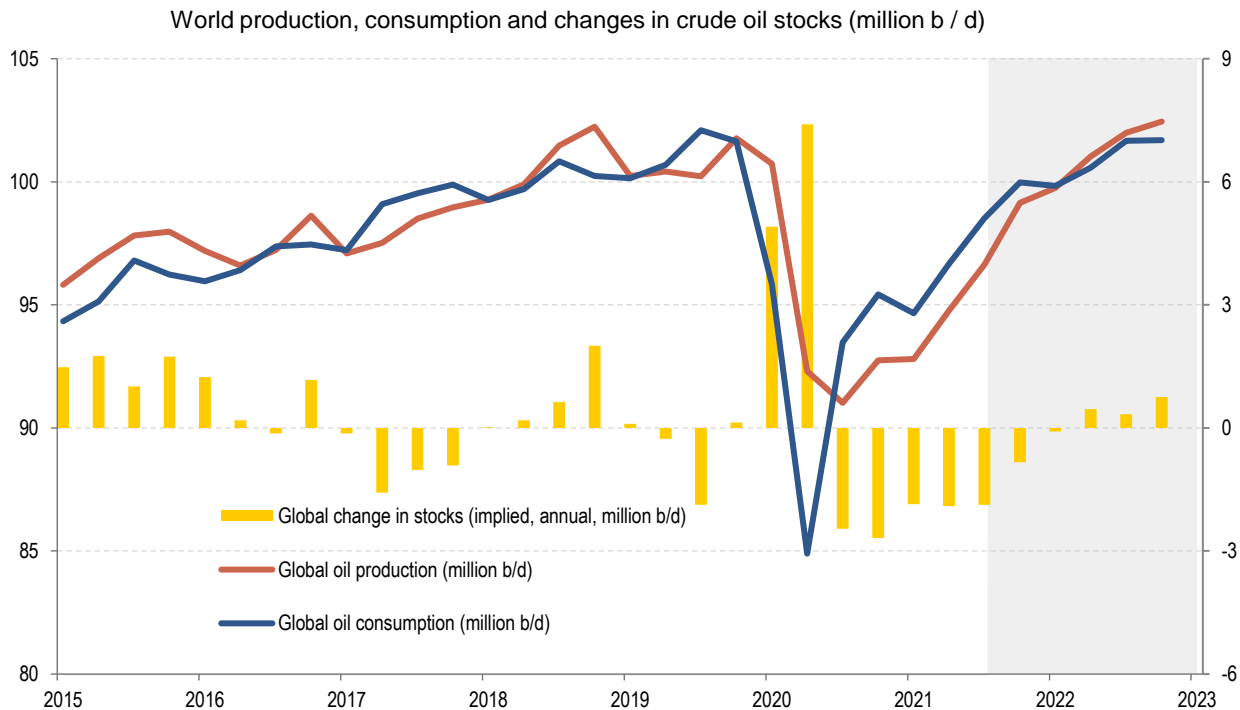
Inflation in selected economies in the years 2008-2010 (% , y/y)



Inflation in selected economies in the years 2019-2021 (% , y/y)

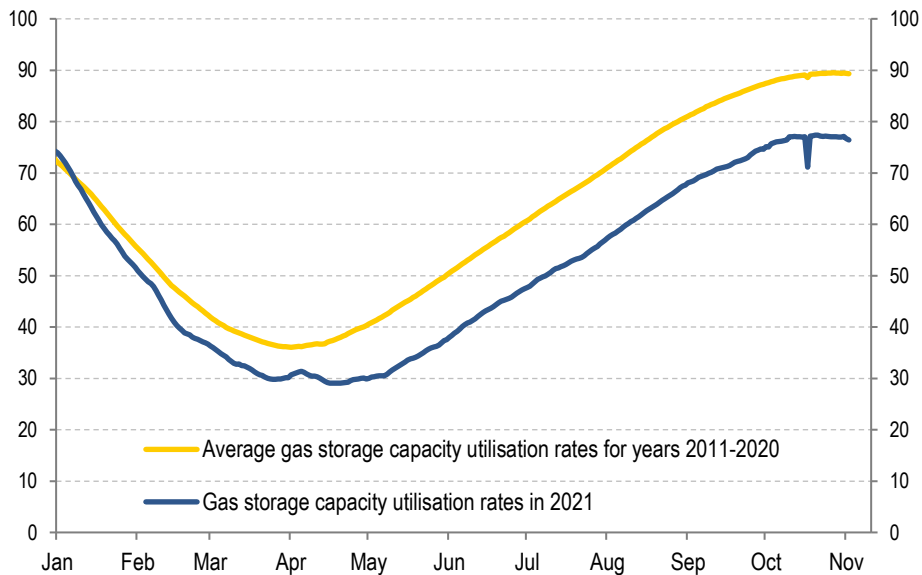


## Strong global economic growth and the recovery of energy demand, amid supply constraints, led to a significant decline in global crude oil reserves ...

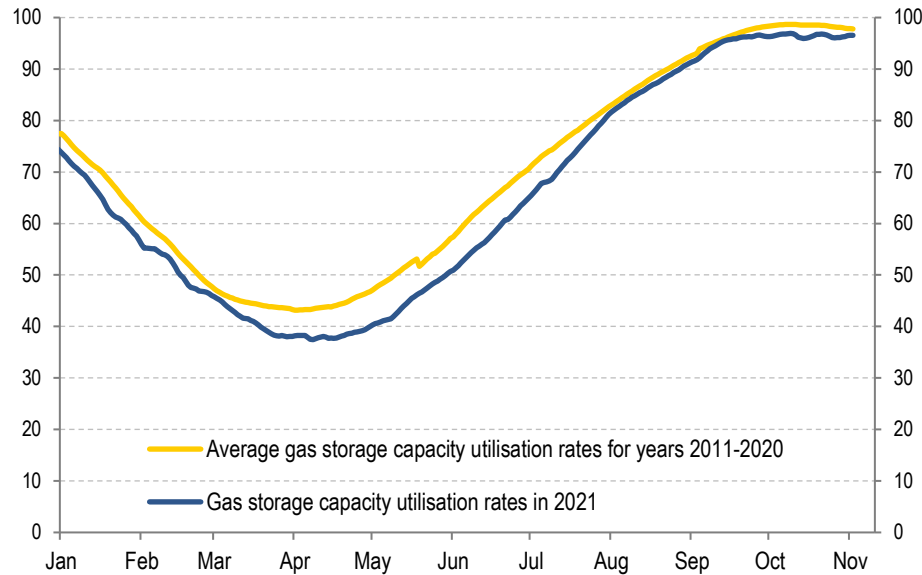


## ... and unusually low gas stocks in the EU.

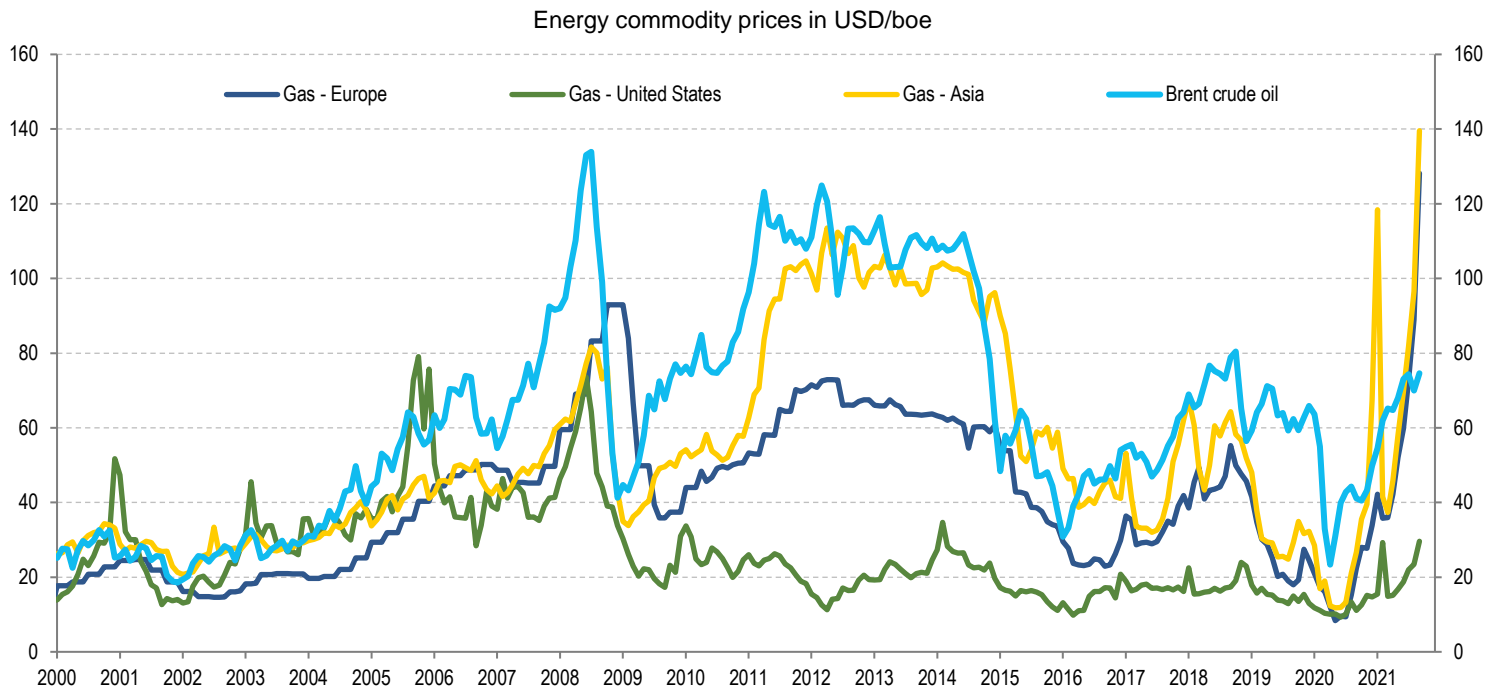
Natural gas storage capacity utilisation rates in Europe (%)



Natural gas storage capacity utilisation rates in Poland (%)



**As a result, in 2021 there was a sharp increase in the prices of energy commodities, while prices of natural gas in the European and Asian markets reached a record high level.**

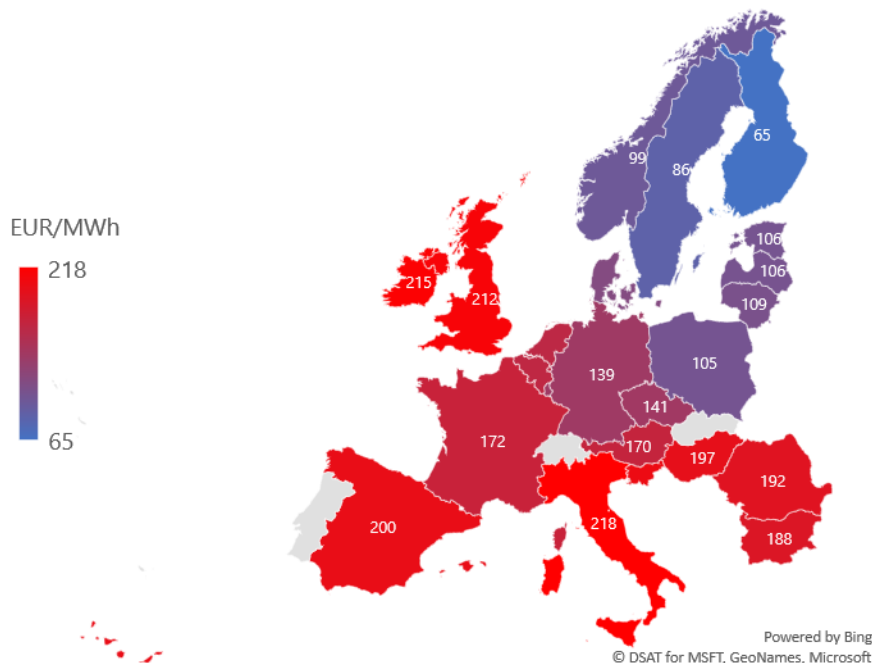


*Note: Energy commodity prices are expressed in a standardized unit of energy obtained by burning one barrel of crude oil.*

**In 2021, there was also a marked increase in electricity prices, especially in some Western European countries whose energy mix is heavily based on natural gas.**

**In Poland, the increase in energy prices is driven by record high prices of CO<sub>2</sub> emission allowances.**

Electricity prices in Europe in October 2021 (Spot base, EUR / MWh)



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**Outline:**

Starting point of the  
projection

Projection 2021-2023

- Economic conditions  
abroad
- Economic perspectives  
for Poland
- Inflation

Uncertainty

# Starting point of the projection

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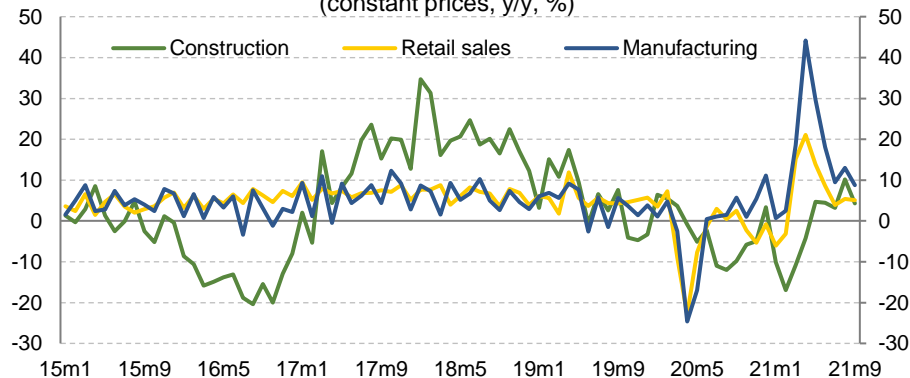
**The favourable epidemic situation translated into a quick recovery of activity in Q3 this year. Currently, the scale of the economic recovery is constrained by supply barriers and an increase in the prices of raw materials and energy.**

	21q3*		21q4*	
GDP (y/y) (%)	5.1	(4.3)	6.5	(6.4)
Domestic demand (y/y) (%)	7.9	(6.1)	8.3	(8.5)
Household consumption (y/y) (%)	4.1	(1.5)	8.4	(7.8)
Public consumption (y/y) (%)	3.6	(3.6)	3.0	(0.9)
Gross fixed capital form. (y/y) (%)	7.6	(10.9)	11.5	(16.4)
Exports (y/y) (%)	8.2	(8.8)	6.6	(6.2)
Imports (y/y) (%)	13.8	(12.3)	9.8	(9.8)
Net exports contribution (pp.)	-2.3	(-1.6)	-1.3	(-1.9)

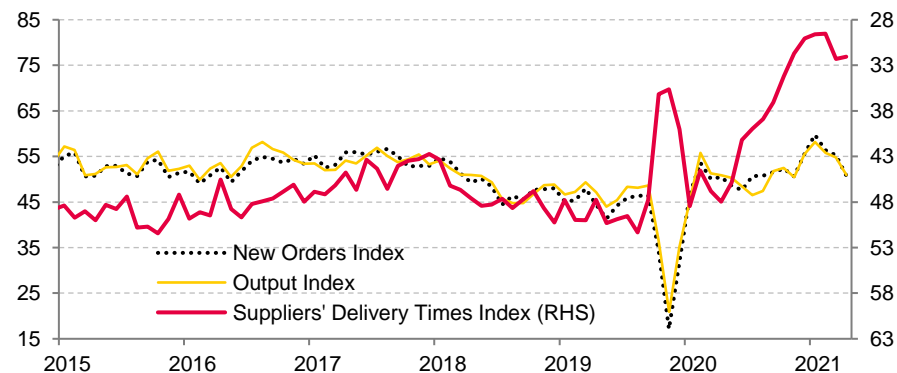
\* - forecast

Values from the July projection are given in brackets (seasonally adjusted). Indicators with values higher than in the July projection are marked green, and indicators with lower values are marked red.

Manufacturing, construction and retail sales dynamics  
(constant prices, y/y, %)



PMI: suppliers' delivery time index, new orders index and output index





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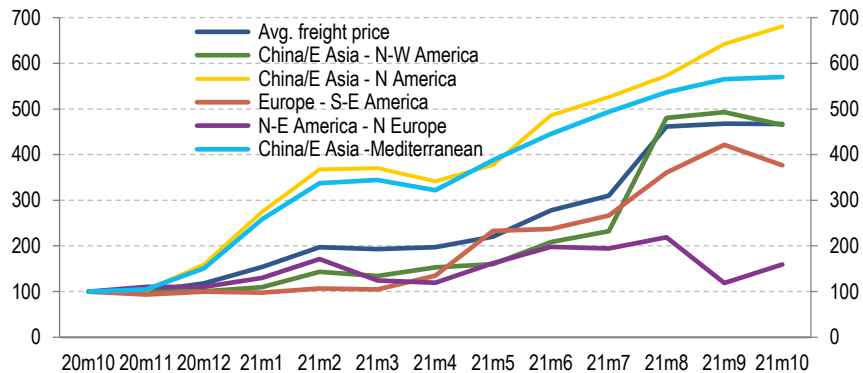
Uncertainty

## Projection 2021-2023

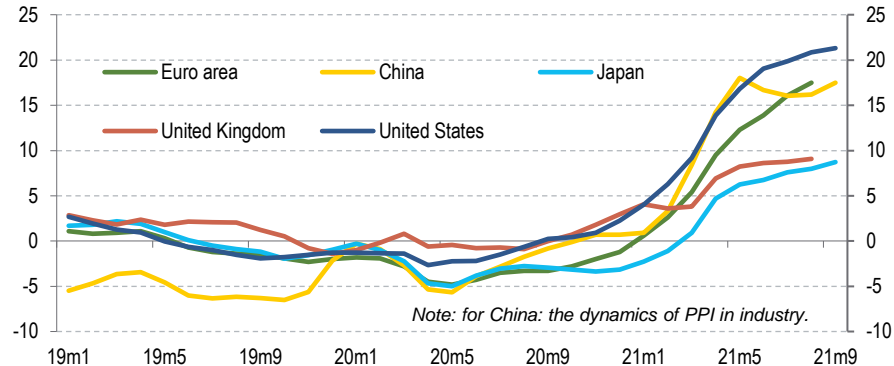
### Economic conditions abroad

## Disruptions in global supply chains, currently having a negative impact on production and contributing to higher inflation, will gradually fade away in 2022.

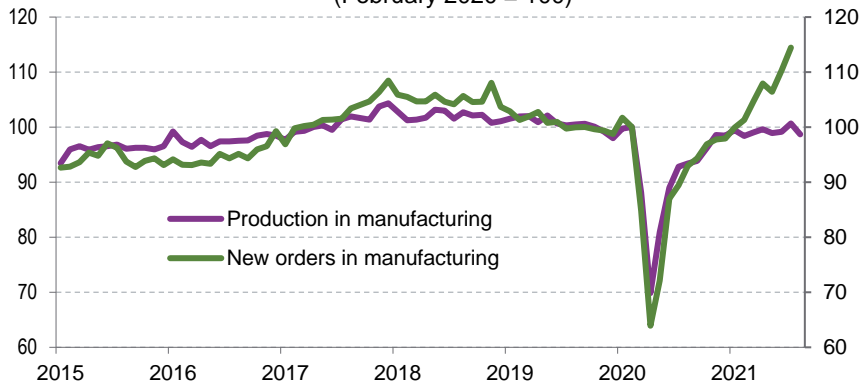
Freight prices on selected routes (current prices, 2020M10=100)



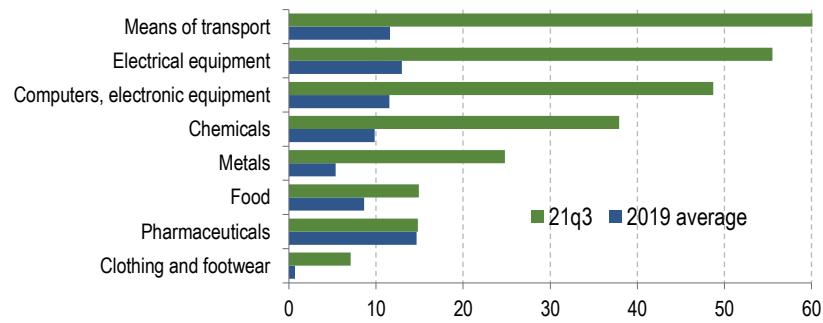
The dynamics of producer prices of intermediate goods in selected economies (% y/y)



New orders and production in manufacturing in the euro area (February 2020 = 100)

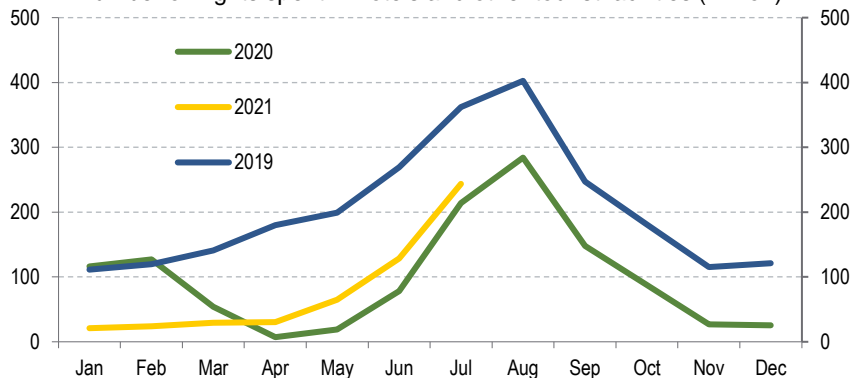


Percentage of manufacturing companies in the euro area indicating the lack of materials and equipment as a factor limiting production (%)

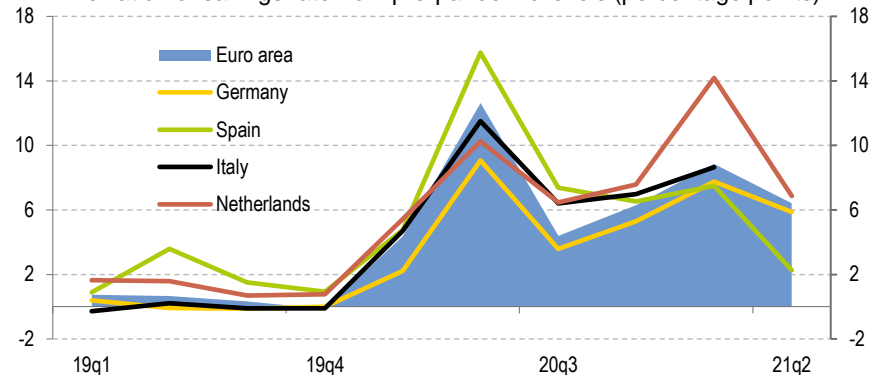


## Euro area: GDP growth supported by the ongoing recovery of consumption (including services) and from Q4 2021 by the Next Generation programme.

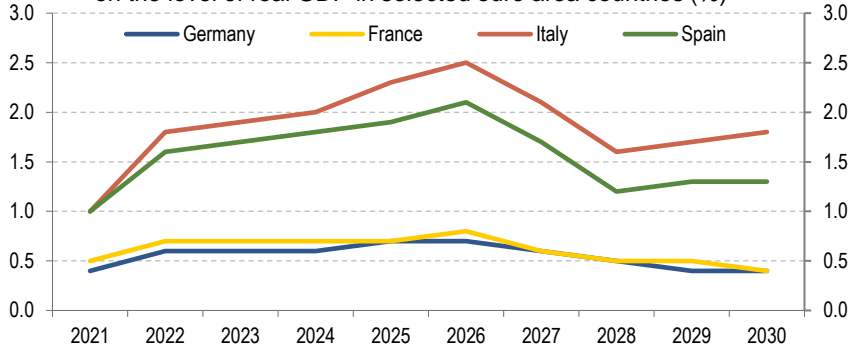
Number of nights spent in hotels and other tourist facilities (million)



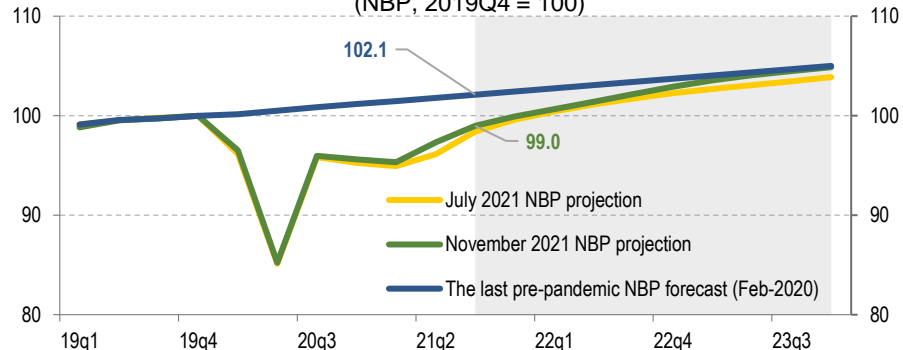
Deviation of savings rate from pre-pandemic levels (percentage points)



Estimates \* of the impact of the *Next Generation* package on the level of real GDP in selected euro area countries (%)



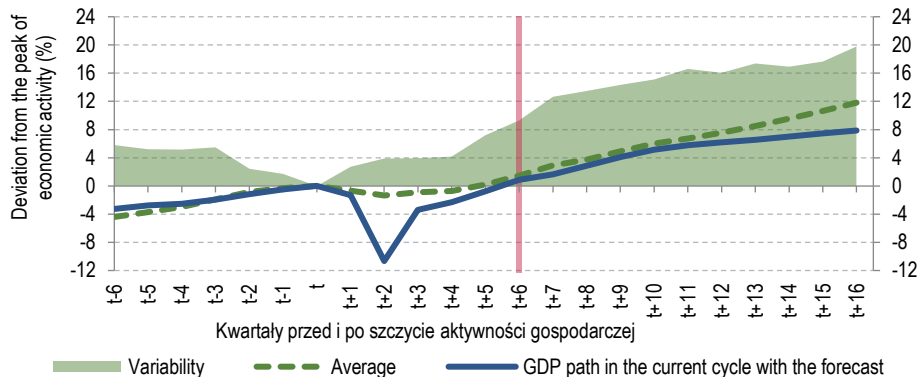
GDP projections for euro area: the recent versus the pre-pandemic forecast (NBP, 2019Q4 = 100)



\* Pfeiffer P., J. Varga, J. in 't Veld, *Quantifying Spillovers of Next Generation EU Investment*, EC, Discussion Paper No. 144, July 2021.

## The United States: after a temporary slowdown in Q3 2021, acceleration of economic growth supported by the new fiscal package.

Real GDP in the United States



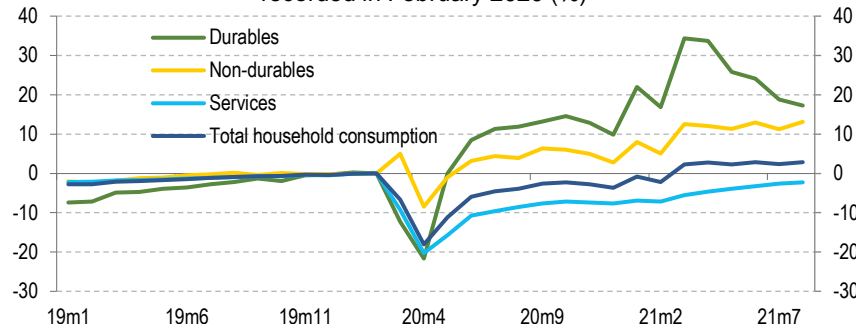
Notes: quarter t represents the peak of economic activity according to the NBER; the volatility (defined as the range) and the mean result from the trajectory of the real GDP level in 1947-2011; a red vertical line marks Q2 2021.

### Infrastructure Investment and Jobs Act (adopted by the Senate in August this year):

Spending approximately USD 550 billion (2.6% of GDP) in 2022-2026 on public investment in physical infrastructure, of which:

- approx. USD 290 billion for transport infrastructure (including highways and railroads),
- approx. USD 260 billion, i.a. on improving water management, modernising energy networks and broadband connections.

Deviation of real household consumption from the the level recorded in February 2020 (%)



Unemployment rate and its adjustments (%)



## World economy: recovery continues despite supply disruptions.

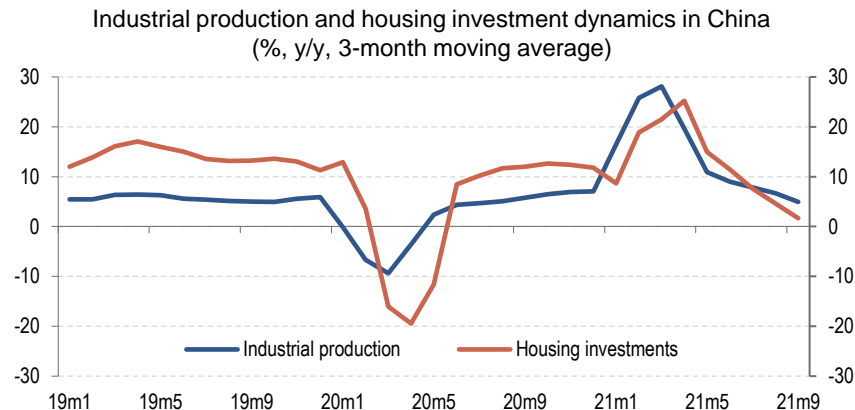
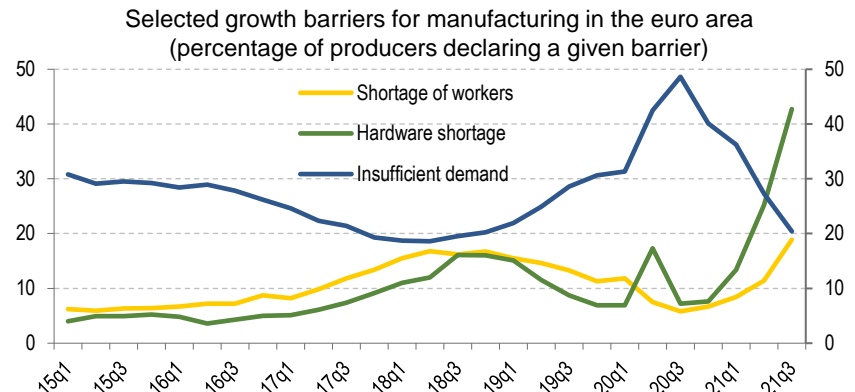
### Factors determining the forecast of economic growth:

- ↑ Expected milder course of the pandemic, allowing restrictions to be kept low in the most of developed economies
- ↑ Realisation of the pent-up demand
- ↑ Expansive monetary and fiscal policy in the United States and Europe (including the US infrastructure investment plan and the start of the *Next Generation EU*)
- ↘ A prolonged period of supply and logistics disruptions and an increase in raw material prices negatively affecting the level of production in manufacturing and construction
- ↘ After a quick post-pandemic rebound, a return to a slower growth path in China, driven by i.a. a policy limiting the real estate developers' indebtedness and the scale of CO<sub>2</sub> emissions.

NBP GDP forecast for the selected economies

GDP y/y, %	2021	2022	2023
Euro area	4.9 (4.5)	4.0 (4.2)	2.4 (1.8)
Germany	2.6 (3.4)	4.3 (4.5)	2.8 (1.5)
United Kingdom	7.0 (7.1)	4.8 (4.7)	1.9 (1.8)
USA	5.7 (6.5)	4.2 (3.6)	1.9 (1.8)
China	8.1 (8.2)	5.5 (5.5)	5.4 (5.4)

Values from the July projection are given in brackets. Indicators with values higher than in the July projection are marked green, and indicators with lower values are marked red.



Source: Thomson Reuters, Eurostat, NBP.



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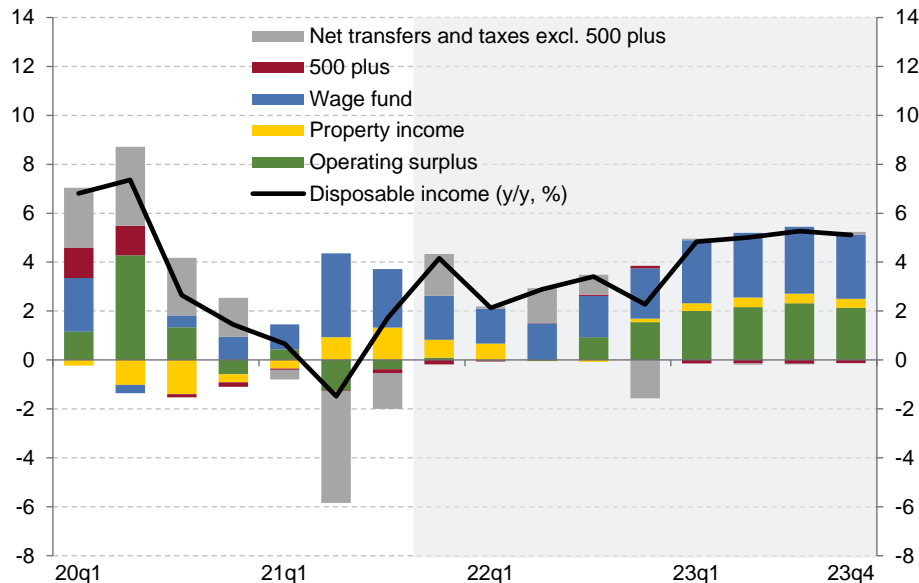
## Projection 2021-2023

### Economic perspectives for Poland

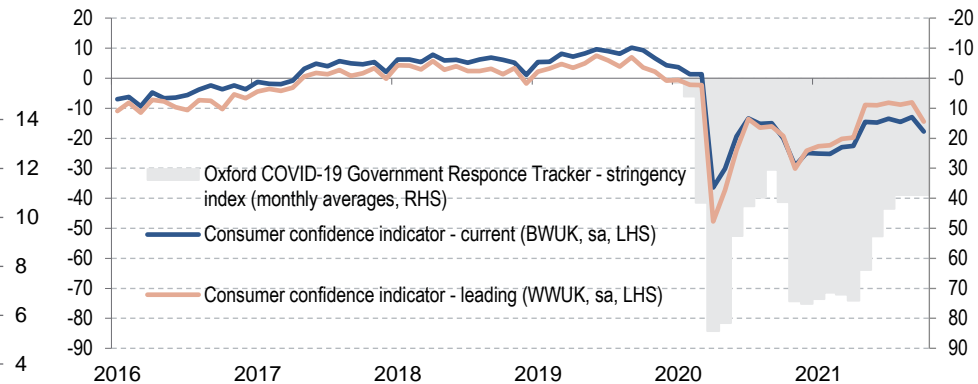


## Deterioration of consumer sentiment in October

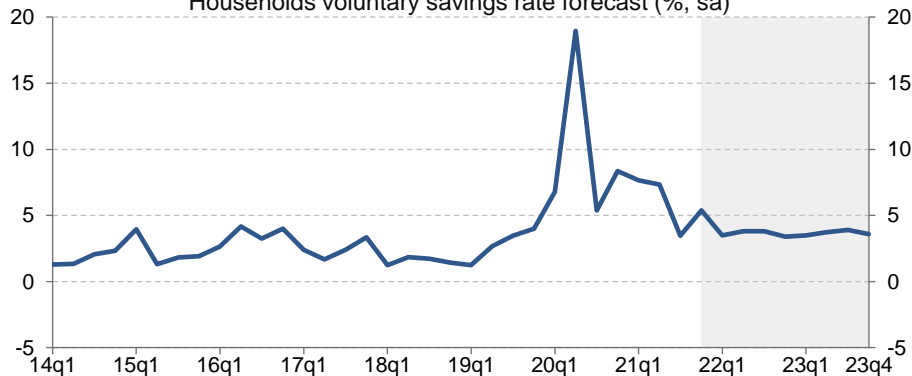
Decomposition of disposable income (constant prices) (y/y, %)



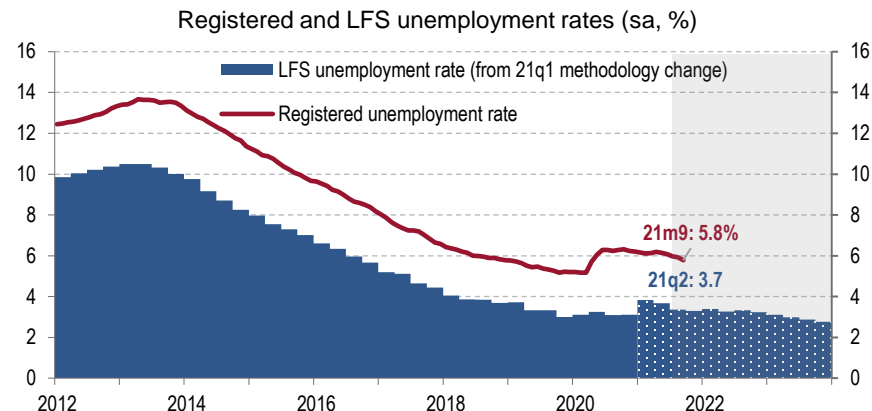
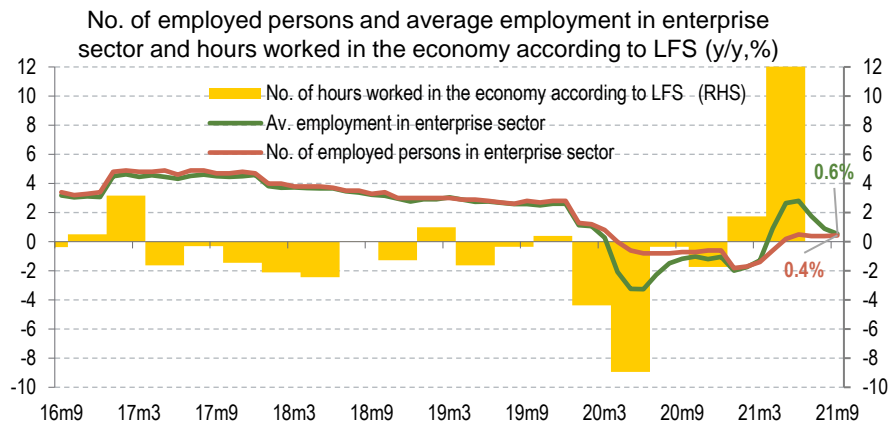
Consumer confidence indicators vs. pandemic restrictions  
(Oxford COVID-19 Government Response Tracker – monthly averages)



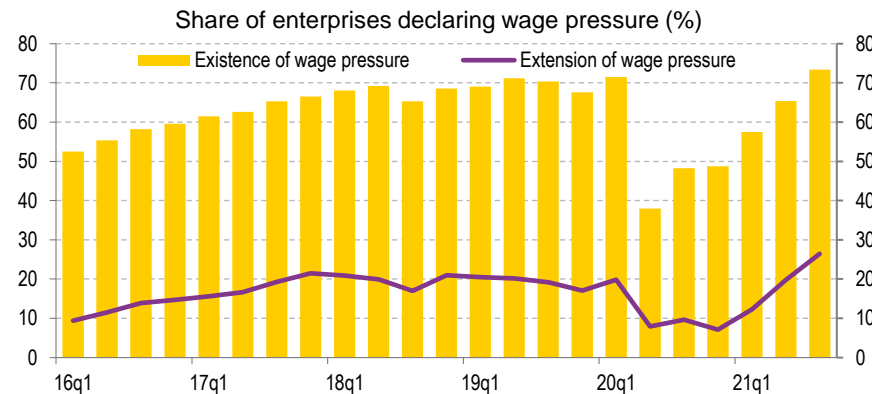
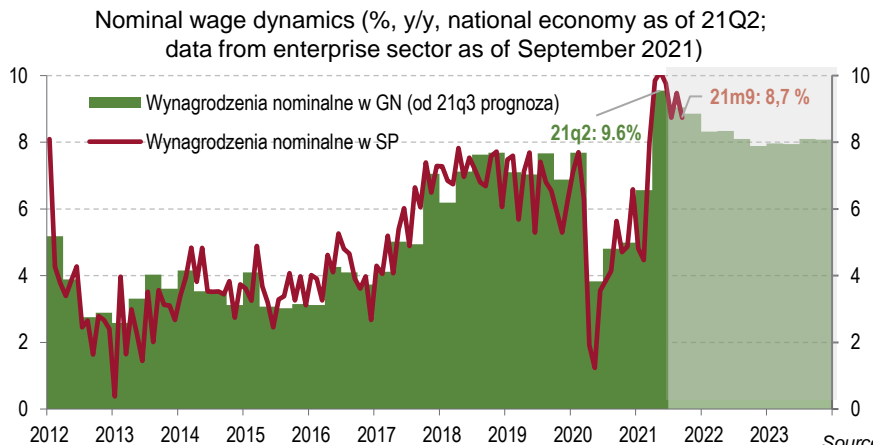
Households voluntary savings rate forecast (% , sa)



## The labour market improvement temporarily on hold. Wages continue to rise throughout the projection horizon.



Note: Due to the change in the methodology, the LFS data until 2020 and from 2021 are not fully comparable.



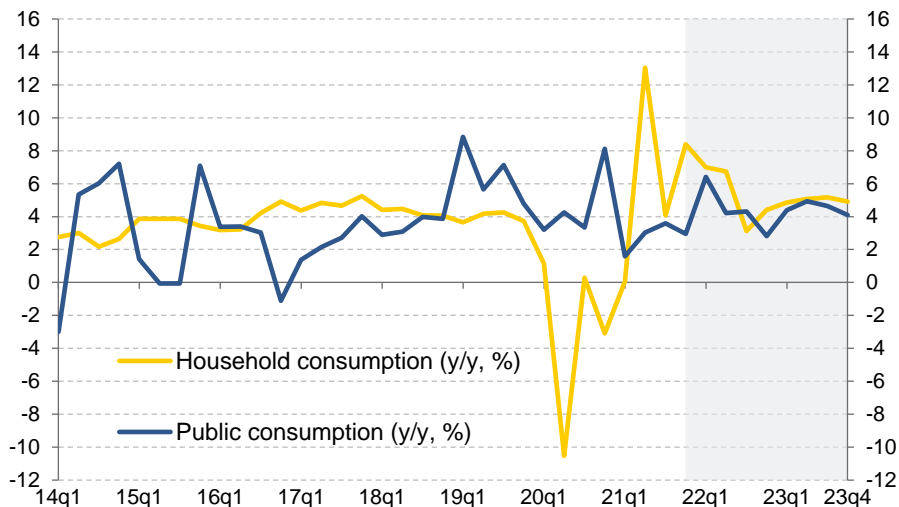
## The changes introduced under the Polish Deal programme will contribute to a deterioration in the general government balance and an increase in household consumption growth over the projection horizon.

The impact of changes introduced under the Polish Deal programme on the general government balance  
(in PLN billion and % of GDP)

	2022	2023	2022	2023
	PLN billion		% of GDP	
Family Welfare Capital	-3.1	0.6	-0.1	0.0
Higher tax-free amount and income threshold in PIT, abolition of the deducting part of the health contribution from the PIT installments, various reliefs in PIT and CIT	-24.3	-0.4	-0.9	0.0
Changes in calculation of the health insurance contribution in case of entrepreneurs	7.0	-0.4	0.3	0.0
Increasing the subsidies to agricultural fuel	-0.2		0.0	
Other tax changes (introduction of VAT groups, minimum corporate tax for large enterprises, change of taxation rules for renting apartments)	-0.4	2.0	0.0	0.1
Housing policy (state guarantees on mortgage loans, partial loan repayments by the government in case of the birth of a child/children)	-0.2	-0.3	0.0	0.0
<b>Total impact on general government balance</b>	<b>-21.1</b>	<b>1.5</b>	<b>-0.8</b>	<b>0.1</b>

## Economic activity will be supported by household consumption

Consumption forecast



y/y, %	2020	2021	2022	2023
Household consumption	-3.0	6.1	5.3	5.0
Public consumption	4.9	2.9	4.4	4.5

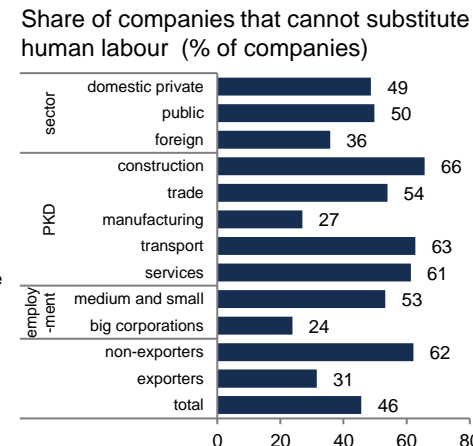
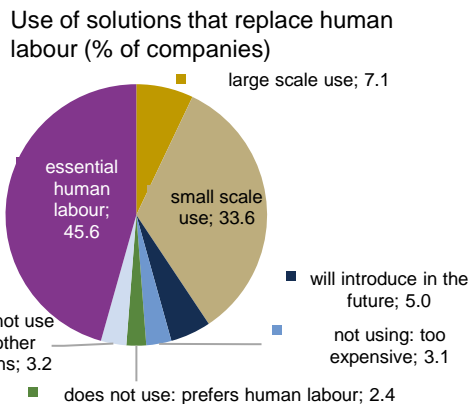
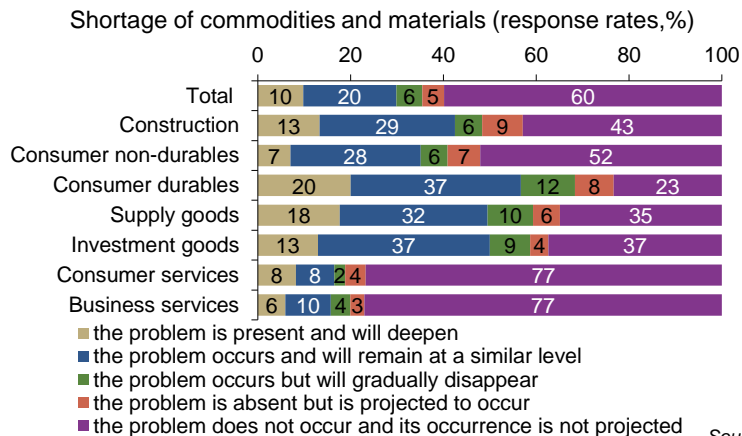
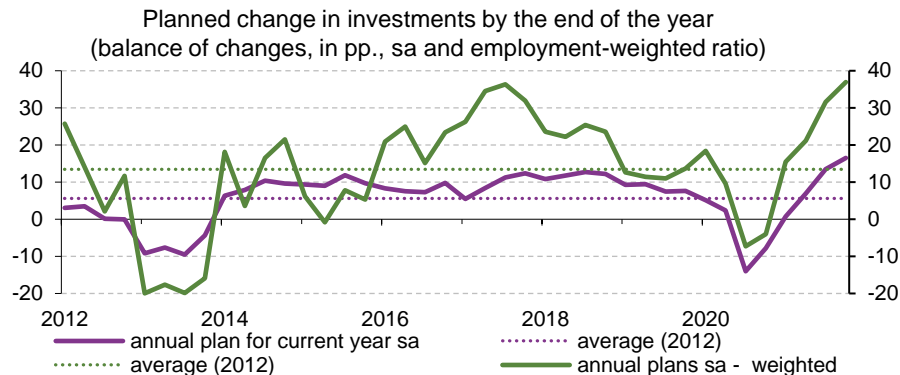
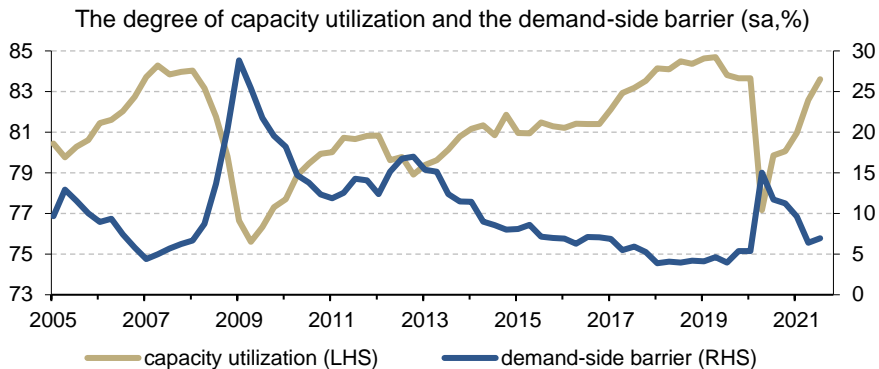
### Private consumption:

- ↑ Consumers adapting to functioning in pandemic.
- ↓ Deterioration of consumer sentiment.
- ↑ Still relatively high level of the household savings rate.
- ↑ Tax changes coming into force from 2022 (under the Polish Deal programme), increasing the disposable income of households.

### Public consumption:

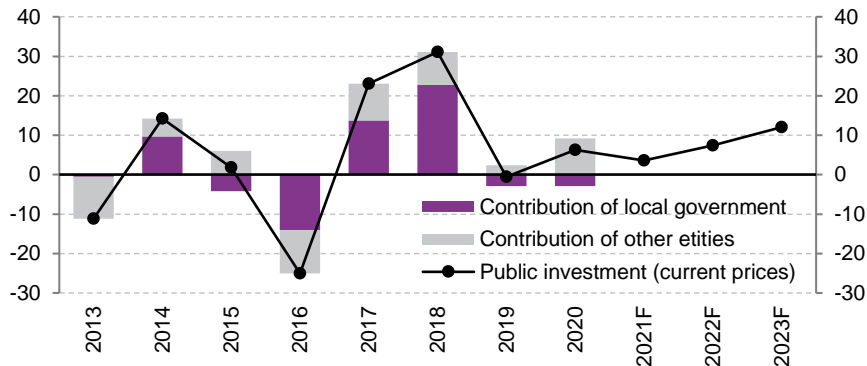
- ↑ Increase in salaries in public administration in 2022 and raising the incentive fund in 2021.
- ↑ One-off expenses for the purchase of vaccines in 2021.
- ↓ Expiry of expenditure on counteracting the effects of the COVID-19 pandemic (including the purchase of vaccines and the Polish Tourist Voucher) in 2022.

## Investment activity will be driven by favourable demand perspectives and automation. The continuing disruptions in global supply chains and raw material markets may limit the flexibility of production adjustment.

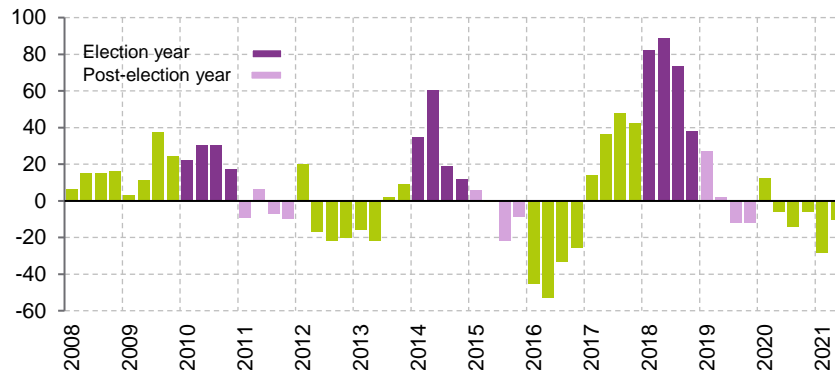


## Public investment is expected to accelerate moderately over the projection horizon

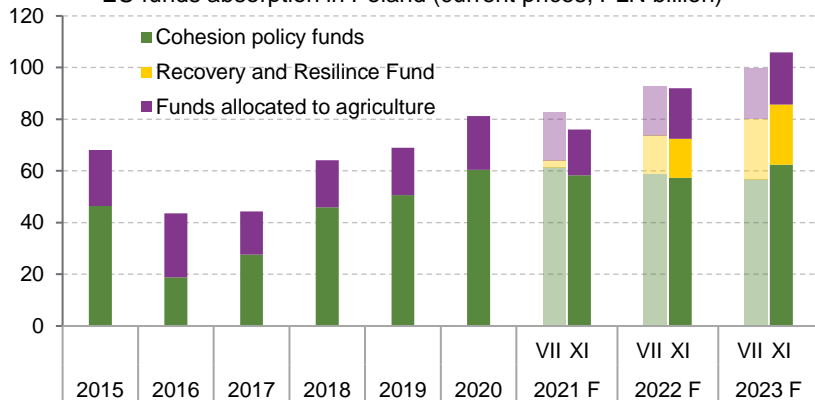
Contributions to public investment growth (current prices, y/y, %)



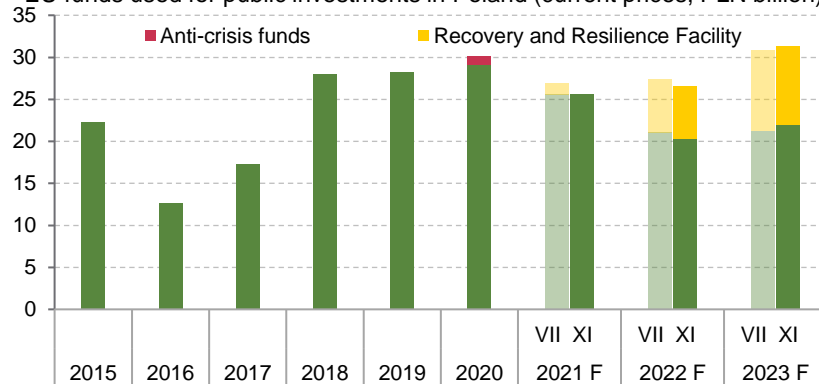
Local Government investment (quarterly data, y/y, %, current prices)



EU funds absorption in Poland (current prices, PLN billion)



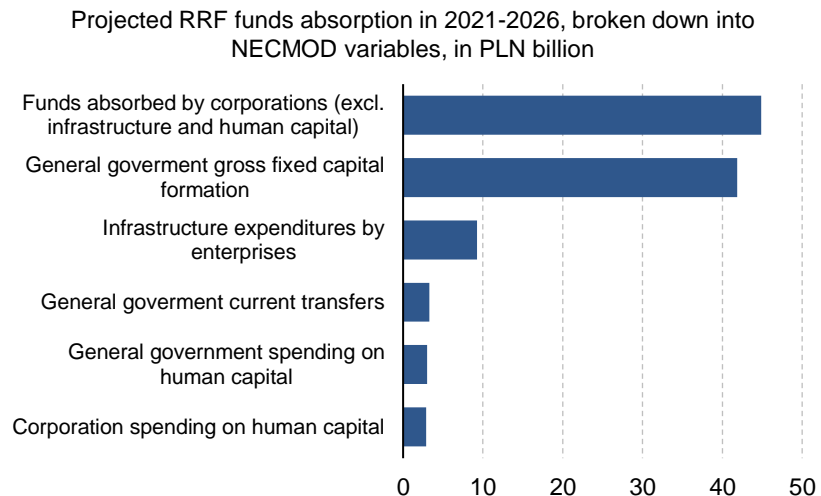
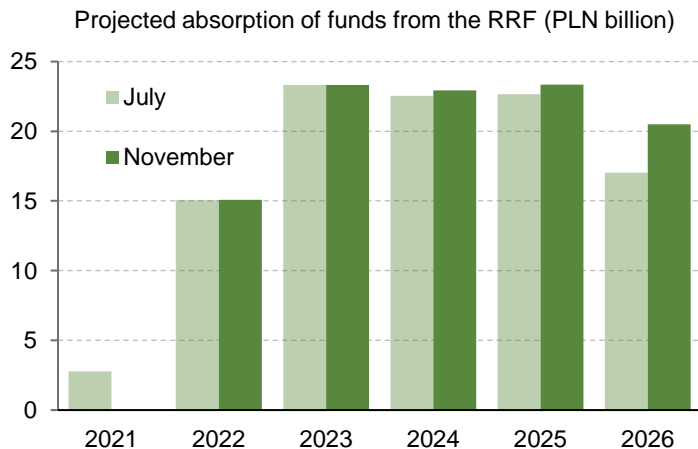
EU funds used for public investments in Poland (current prices, PLN billion)



F - forecast

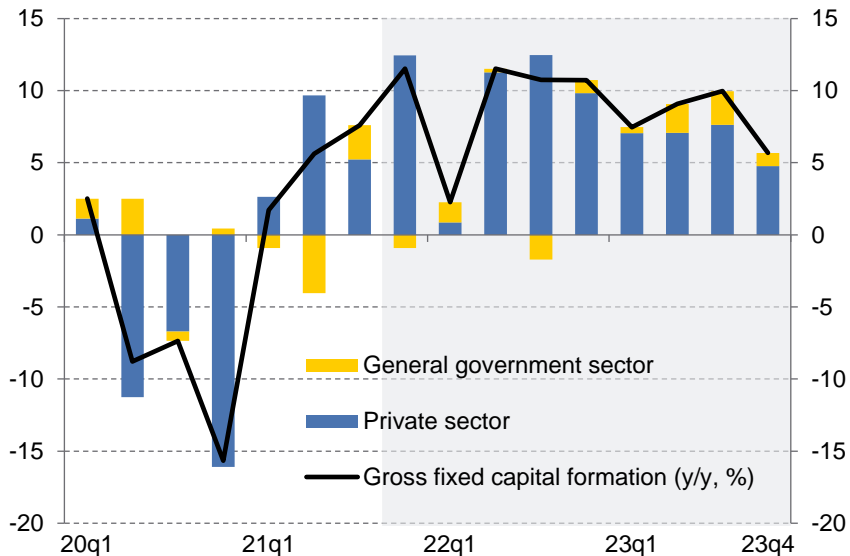
## The main factor of uncertainty is the pace of implementation of investment projects from the National Recovery and Resilience Plan.

- The National Recovery and Resilience Plan (*Krajowy Plan Odbudowy*) has not been approved by the European Commission so far, which is a necessary condition for gaining access to support from the so-called Recovery and Resilience Facility (RRF).
- The preliminary 2022 Budget Act draft, adopted by the government, is based on macroeconomic assumptions not taking into account the funds from the RRF.
- The RRF funds absorption path in the November projection is slightly delayed in comparison to the assumptions of the previous round. We currently assume that in the years 2021-2023 ca. PLN 38.4 billion will be absorbed (37% of the entire allocation), compared to PLN 41.1 billion assumed in July (40% of the allocation).



## Return of the investment to the pre-pandemic level at the beginning of 2022

Investment dynamics and its decomposition (y/y %)



y/y, %	2020	2021	2022	2023
Gross fixed capital formation	-9.0	6.2	8.7	8.0

### Private investment:

- ↑ The return of corporate investment sentiment to pre-pandemic levels
- ↑ Low degree of automation and robotization of the Polish industry and rising labour costs.
- ↑ Relatively high housing demand, supported by the increased level of savings of some households, the low level of interest rates and the support under the Polish Deal programme.
- ↑ Implementation of the National Recovery and Resilience Plan.
- ↓ Disruptions in global supply chains and high costs of raw materials and energy.

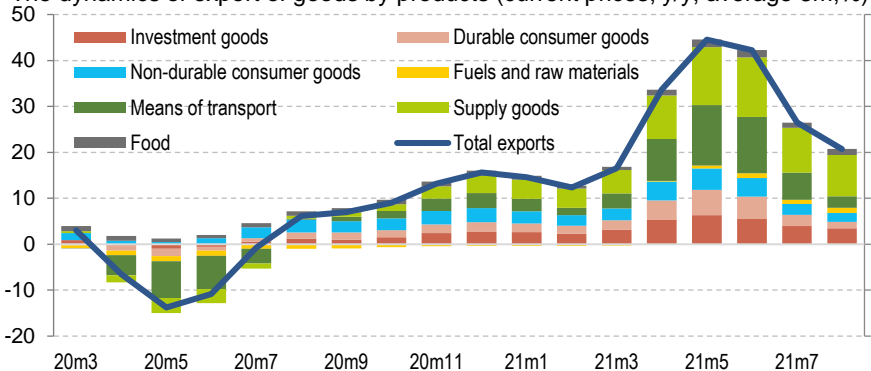
### General government investment:

- ↓ Decline in funds from the 2014-2020 EU perspective, which, according to the *n + 3 rule*, ends in 2023.
- ↑ Implementation of the National Recovery and Resilience Plan.
- ↑ In 2023 beginning of the absorption of the funds from 2021-2027 perspective.

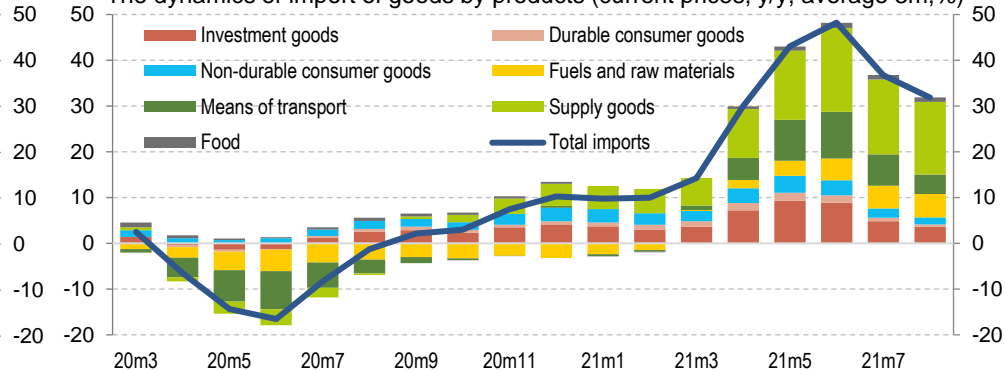


## Lower dynamics of exports in 2021Q3 with a relatively high increase in domestic supply demand

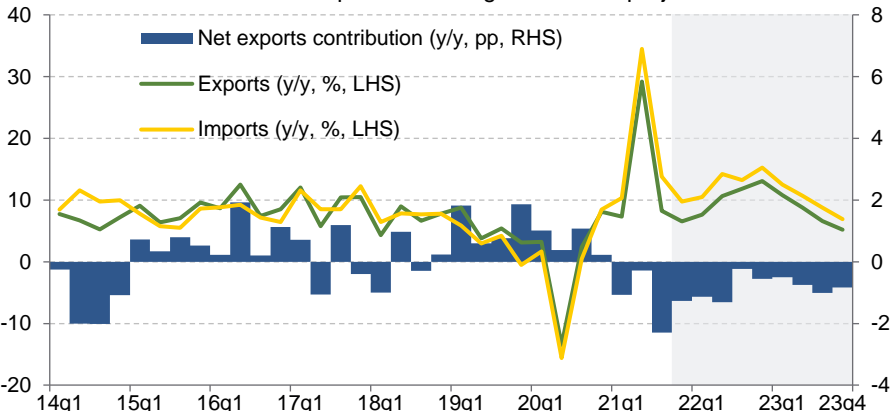
The dynamics of export of goods by products (current prices, y/y, average 3m,%)



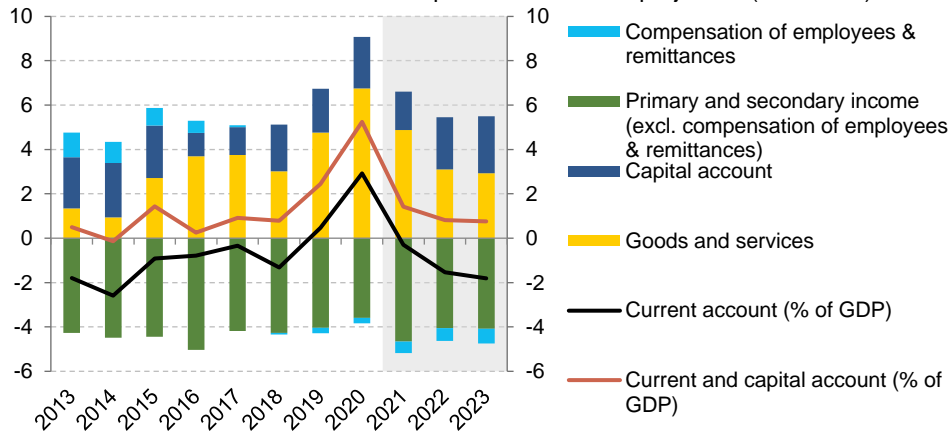
The dynamics of import of goods by products (current prices, y/y, average 3m,%)



Contribution of net exports to GDP growth in the projection

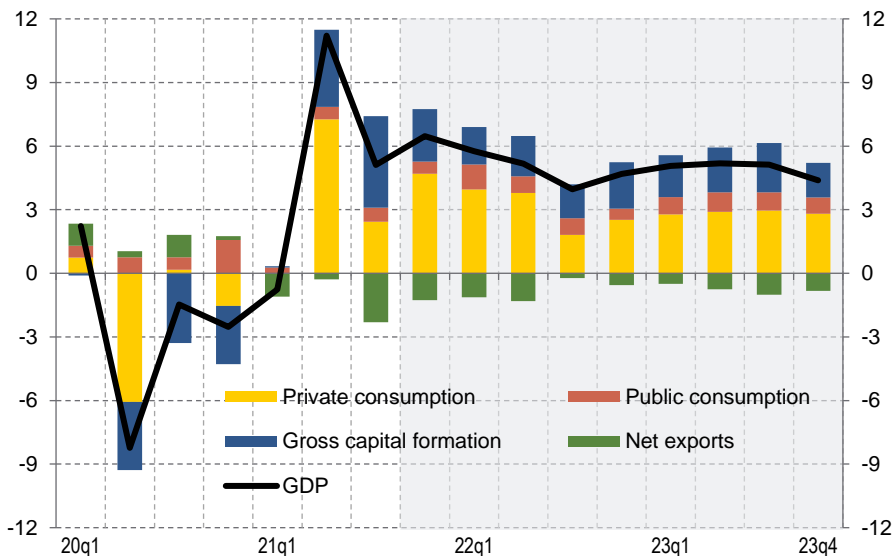


Balance of the current and capital account in the projection (% of GDP)



## The economy will grow at an average pace close to 5% y/y over the projection horizon.

GDP dynamics and decomposition (y/y, %, pp)

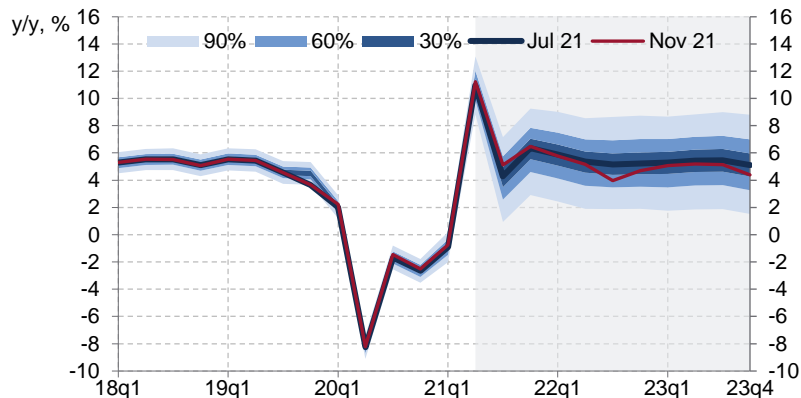
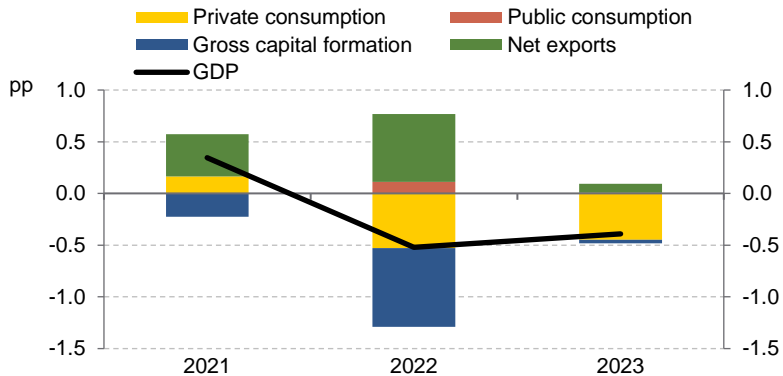


y/y, %	2020	2021	2022	2023
GDP	-2.5	5.3	4.9	4.9

- ↑ Expected **sustained economic recovery** over the projection horizon, thanks to the assumed successful overcoming of the health crisis and the rebound in economic activity abroad.
- ↑ Rapid GDP growth will mainly be driven by **household consumption**, however **private investment** will also be an important source the growth.
- ↑ In the years 2022-2023, economic activity will be additionally supported by the launch of the **Polish Deal** programme and the inflow of EU funds related to the implementation of the **National Recovery and Resilience Plan**.
- ↑ The GDP projection is also driven by the **assumption that nominal NBP interest rates remain unchanged over the projection horizon** at a historically very low level (with the reference rate at 0.5%).
- ↓ On the other hand, GDP growth will be limited by a **negative supply shock**, which includes: a sharp increase in global energy commodity prices and CO<sub>2</sub> emission allowances, as well as disruptions in global supply chains.

## November projection of GDP compared to the July projection

Decomposition of changes in GDP dynamics (y/y, pp)



- ⬆ Economic results in Q2 and Q3 2021 more favourable than expected.
- ⬇ Higher inflation limiting the purchasing power of households.
- ⬇ Lower EU funds absorption in 2021 caused by the delay in the approval of the National Recovery and Resilience Plan by the European Commission.
- ⬇ Reduction of the household savings rate this year, limiting the space for the maintenance of an equally high consumption dynamics in the coming years.
- ⬇ Increase in costs limiting investment activity.
- ⬇ Stronger tensions in global supply networks.
- ⬇ Monetary policy tightening reflected in the NBP reference rate increase by 0.40 percentage point in October this year.
- ⬆ The Polish Deal, which reduces the net tax burden, included in the current projection.

GDP y/y, %	2021	2022	2023
July 2021	5.0	5.4	5.3
November 2021	5.3	4.9	4.9



## Outline:

Starting point of the  
projection

Projection 2021-2023

- Economic conditions  
abroad
- Economic perspectives  
for Poland
- Inflation

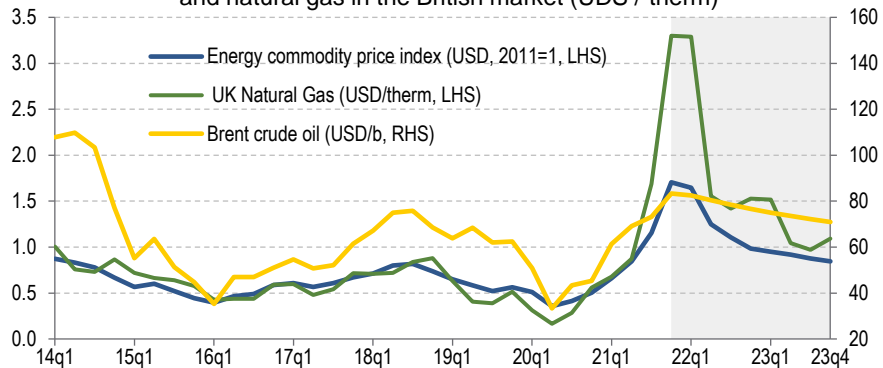
Uncertainty

# Projection 2021-2023

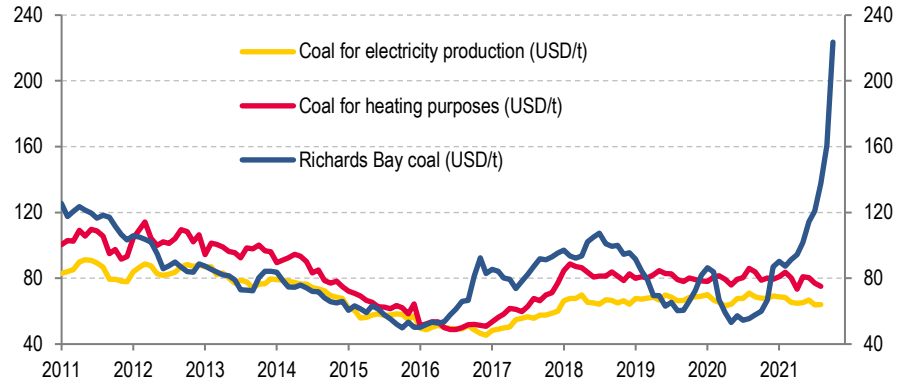
## Inflation

## Electricity price spikes due to increasing prices of coal, gas and CO<sub>2</sub> emission allowances.

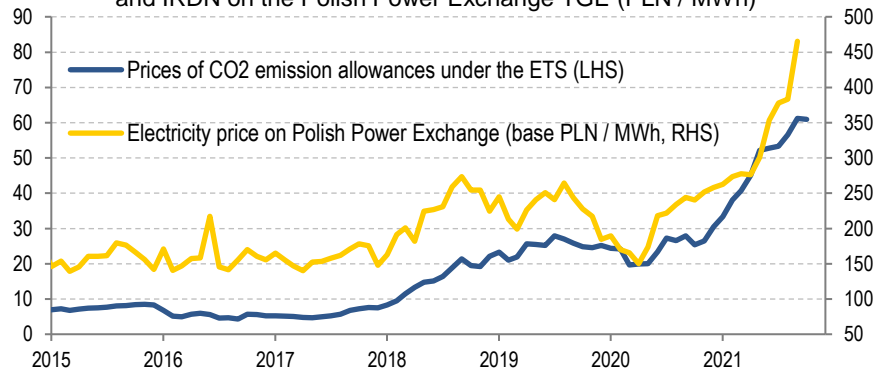
Index of global energy commodity prices (USD), the price of crude oil (USD/b) and natural gas in the British market (USD / therm)



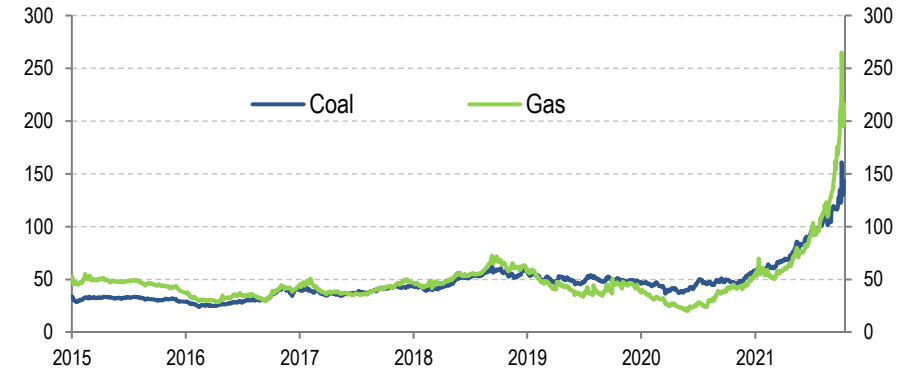
Prices of hard coal in Poland and Richards Bay coal (USD / t)



Price of CO<sub>2</sub> emission allowances (EUR / t) and IRDN on the Polish Power Exchange TGE (PLN / MWh)

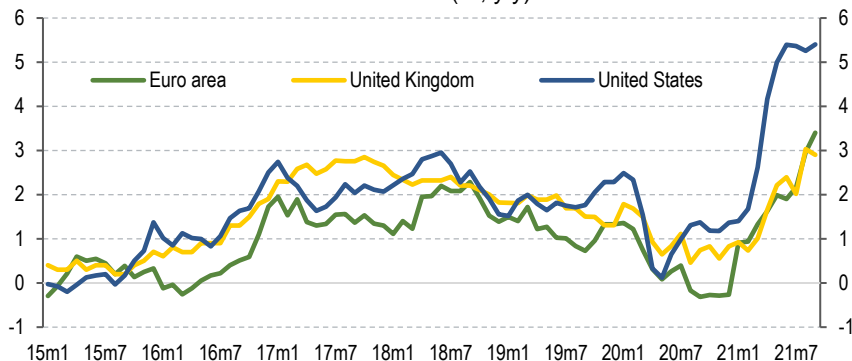


Electricity production cost in Europe (EUR / MWh)

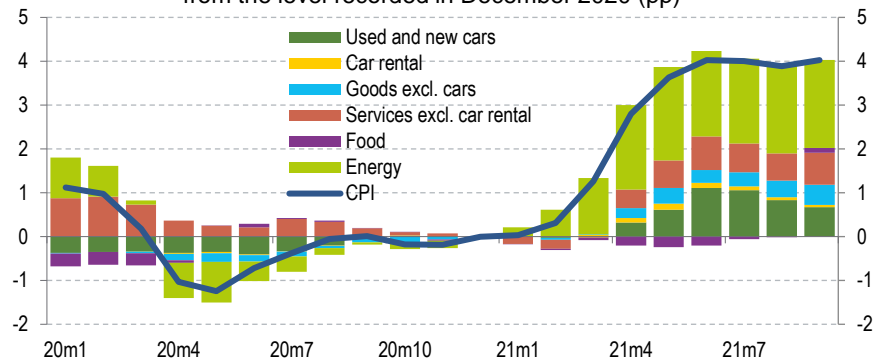


## Strong inflation growth in the global economy due to higher commodity prices, base effects and prolonged disruptions in supply networks

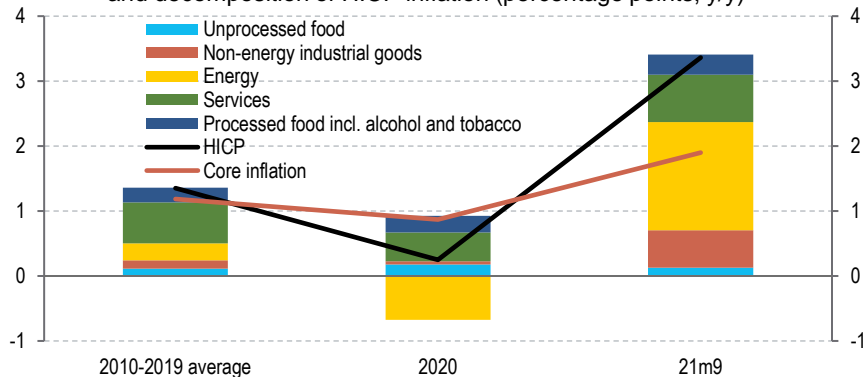
Inflation abroad (% y/y)



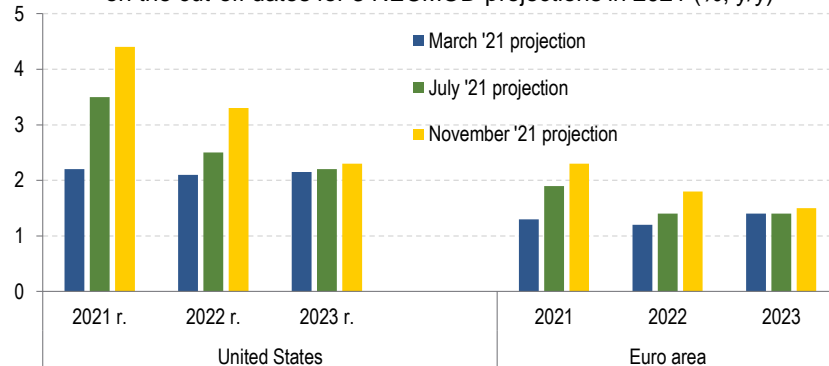
Decomposition of the deviation of CPI inflation in the United States (y/y) from the level recorded in December 2020 (pp)



HICP inflation and core inflation (% y/y) in the euro area and decomposition of HICP inflation (percentage points, y/y)

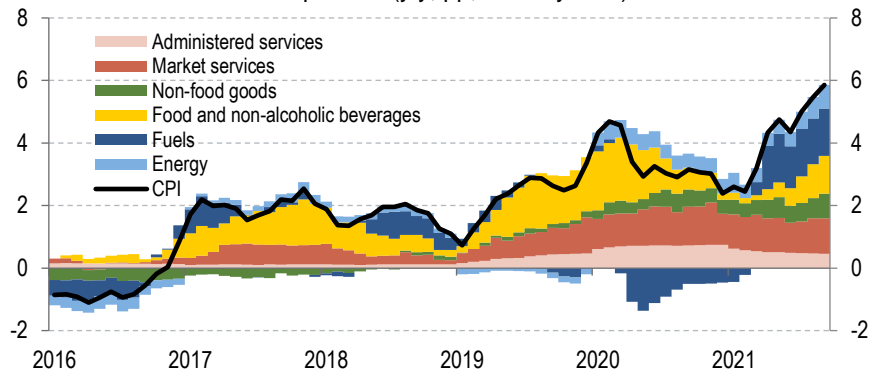


Market forecasts of inflation in the United States and the euro area on the cut-off dates for 3 NECMOD projections in 2021 (% y/y)

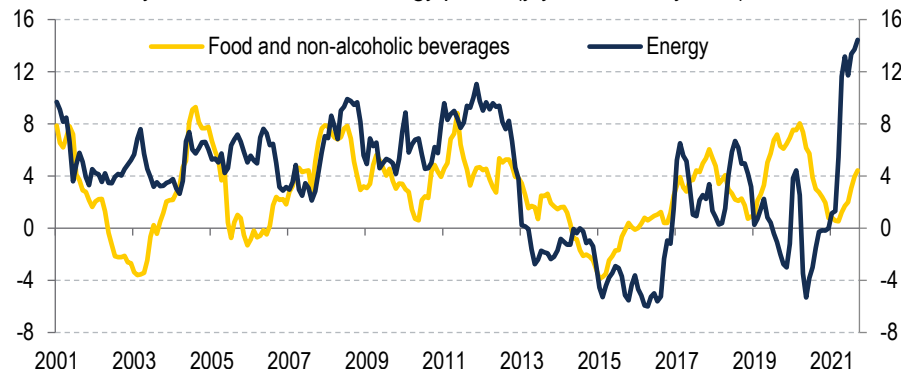


## Strong increase in energy and food price inflation in Poland over 2021. Rise in core inflation due to growing commodity prices (the effect of rebuilding demand amid supply constraints).

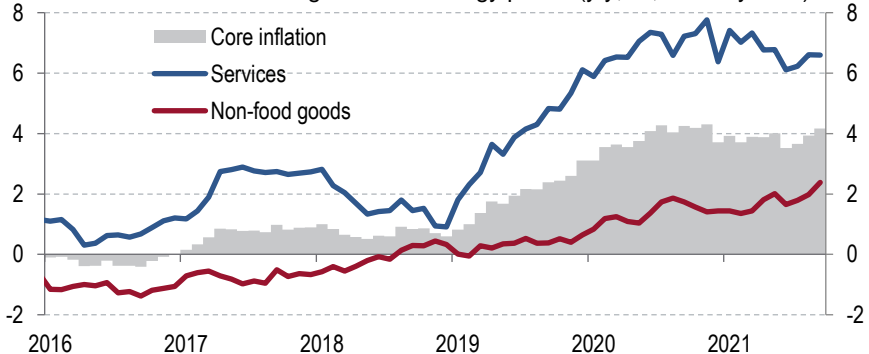
CPI decomposition (y/y, pp, monthly data)



Dynamics of food and energy prices (y/y, %, monthly data)



CPI inflation excluding food and energy prices (y/y, %, monthly data)



Inflation in 2021 - projection (y/y, %)

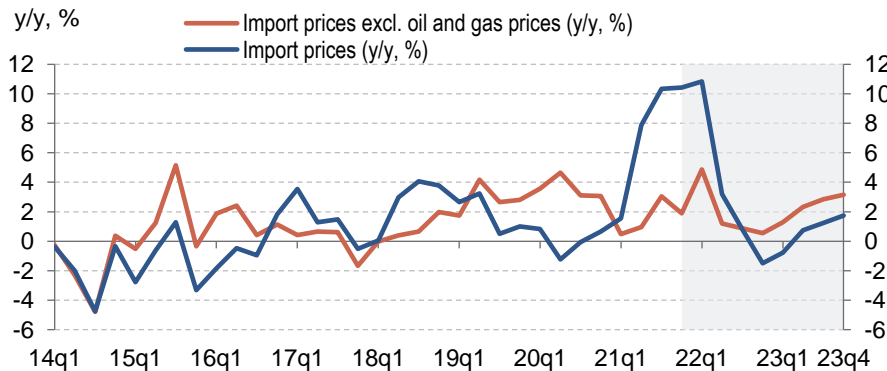
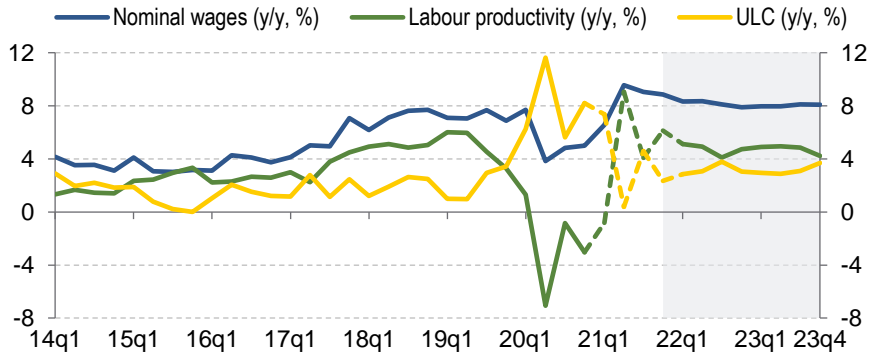
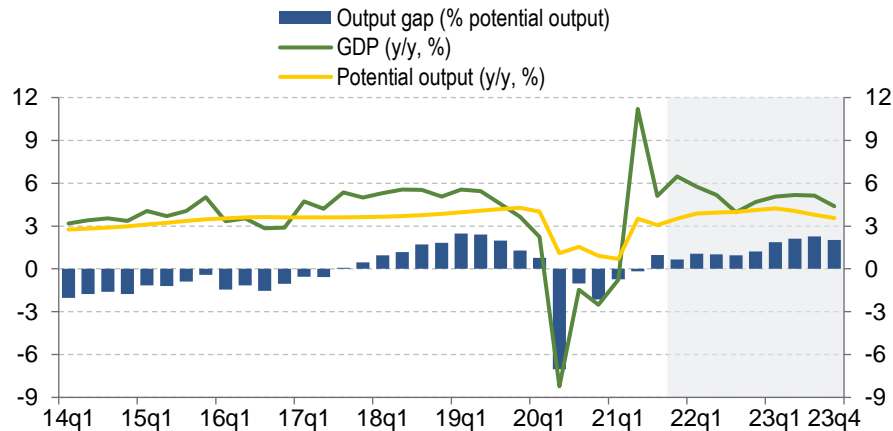
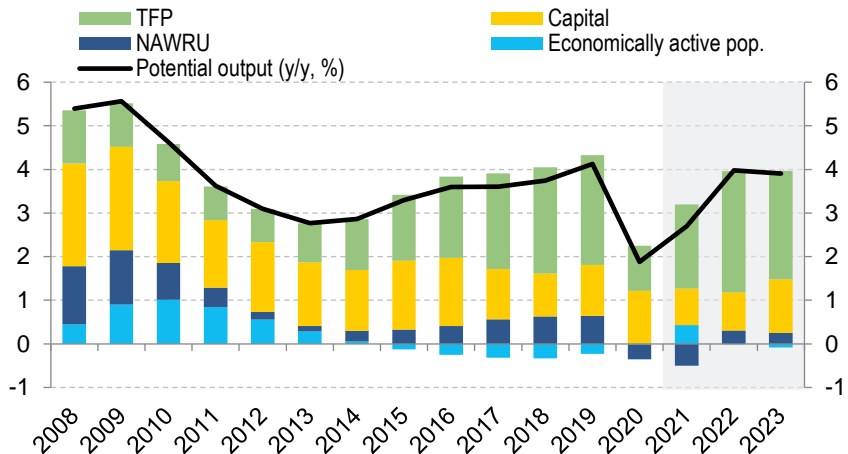
y/y, %	21q2	21q3	21q4*
CPI inflation	4.5 (4.5)	5.4 (4.6)	6.7 (4.7)
Core inflation	3.8 (3.8)	3.9 (3.5)	4.3 (3.3)
Food prices	1.6 (1.5)	3.8 (3.2)	5.3 (4.2)
Energy prices	12.2 (12.2)	13.8 (11.4)	17.8 (10.6)

\* - 21Q4 - forecast.

Values from the July projection are given in brackets.

Indicators with values higher than in the July projection are marked green.

## Inflation over the projection horizon under the increasing impact of recovery in domestic and foreign demand

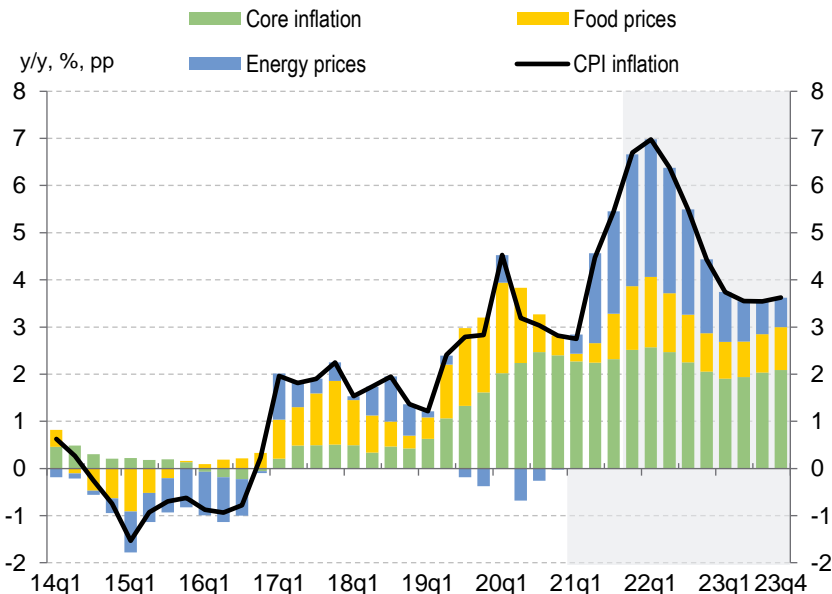


Note: Due to the change in the methodology, the LFS data until 2020 and from 2021 are not fully comparable.

Source: GUS, NBP calculations.



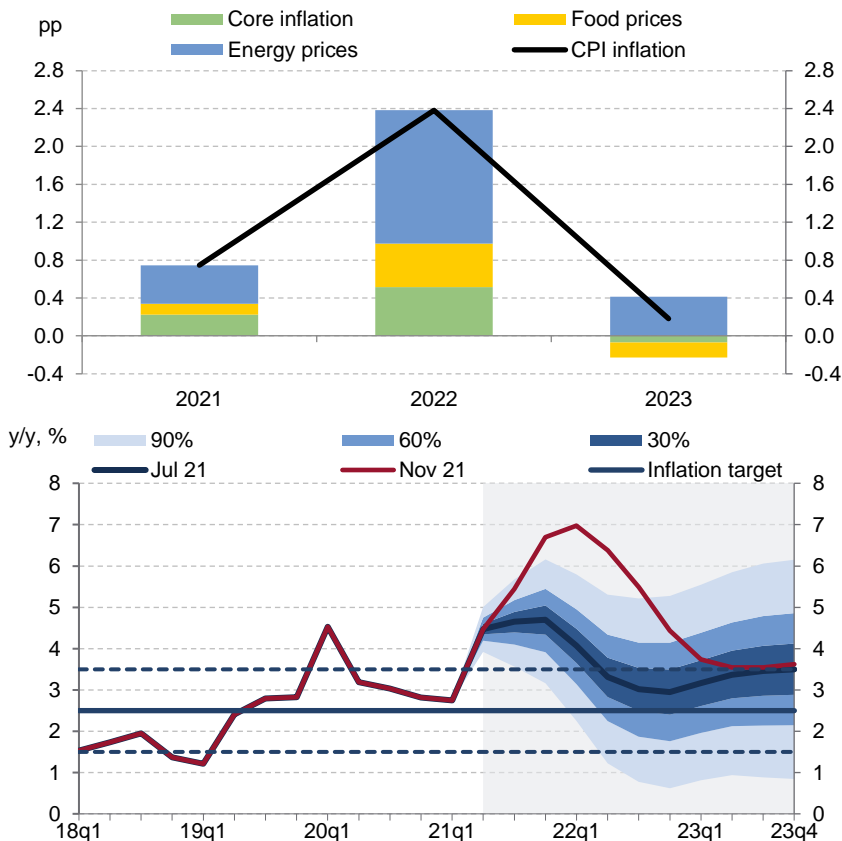
**In the period 2022-2023, inflation will decline, but under the assumption of unchanged interest rates, it will remain close to 3.5% at the end of the projection horizon.**



y/y, %	2020	2021	2022	2023
CPI inflation	3.4	4.9	5.8	3.6

- ⬆ A strong increase in energy resources on global markets and the prices of CO<sub>2</sub> emission allowances.
- ⬇ Decline in the growth rate of energy commodities prices in the years 2022-2023 (direct impact on fuel prices, delayed impact on household bills - tariffication).
- ⬆ Increase in agricultural production costs (higher prices of feed, energy, fertilizers).
- ⬆ Supply-side tensions on the meat market related to animal diseases, deepened by unblocking the demand from the HoReCa sector.
- ⬆ ⬇ Realisation of pent-up demand in sectors where restrictions imposed during the pandemic have been eased. Impact expiring in 2022.
- ⬆ ⬇ Disruptions in global supply networks. Impact expiring in 2022.
- ⬆ ⬇ Rises of certain administered prices. Impact expiring in 2022.
- ⬆ The spread over time impact of the demand recovery and high wage dynamics on prices.

## November CPI projection compared to the July projection



- ↑ Increase in crude oil prices in global markets after the *cut-off date* of the previous projection, translating into an increase in fuel prices for private means of transport this year.
- ↑ Record high levels of prices of natural gas and CO<sub>2</sub> emission allowances in recent months, which - due to the tariffication process - will translate with a delay in gas and electricity price increases for households.
- ↑ Higher prices of production and distribution of goods and services resulting from an increase in energy prices (impact on i.a. food market).
- ↑ Faster than expected global demand recovery and the accompanying stronger effects of disruptions in global supply networks.
- ↑ Higher increase in prices of services whose provision was previously severely restricted.
- ↓ Slower growth of domestic demand in 2022-2023.

CPI y/y, %	2021	2022	2023
July 2021	4.2	3.3	3.4
November 2021	4.9	5.8	3.6



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Uncertainty

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## Uncertainty

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- Risks
- Fan charts

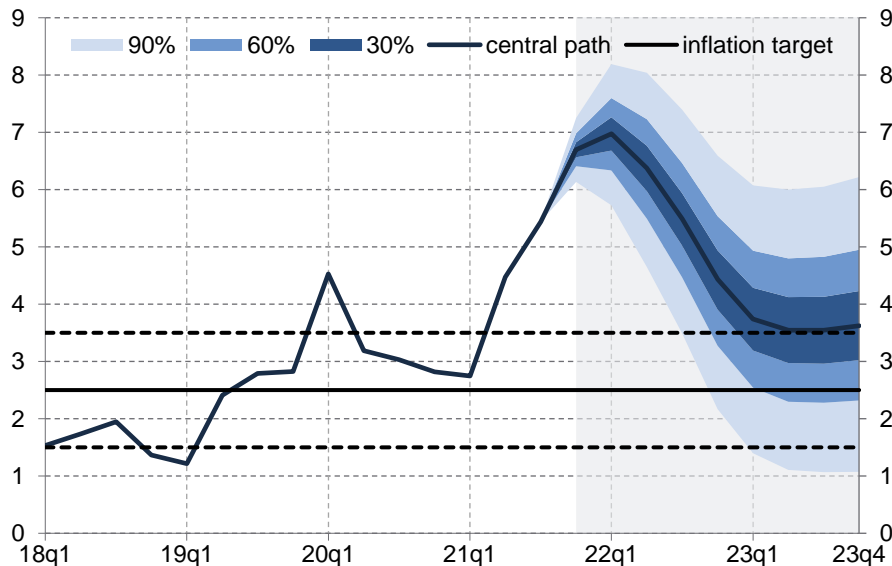
## Risks:

- **The further development of the pandemic in economies with a low vaccination rates** (especially in Asia)
- **Continuing disruptions in global supply chains**
- **China's economic challenges** (real estate imbalances, government policy aimed at reducing CO<sub>2</sub> emissions, difficulties in the supply of energy and energy commodities)
- **Energy commodity prices and the EU climate policy** (prices of CO<sub>2</sub> emission allowances, *Fit for 55* package)
- **The rate of *Next Generation EU* funds absorption**

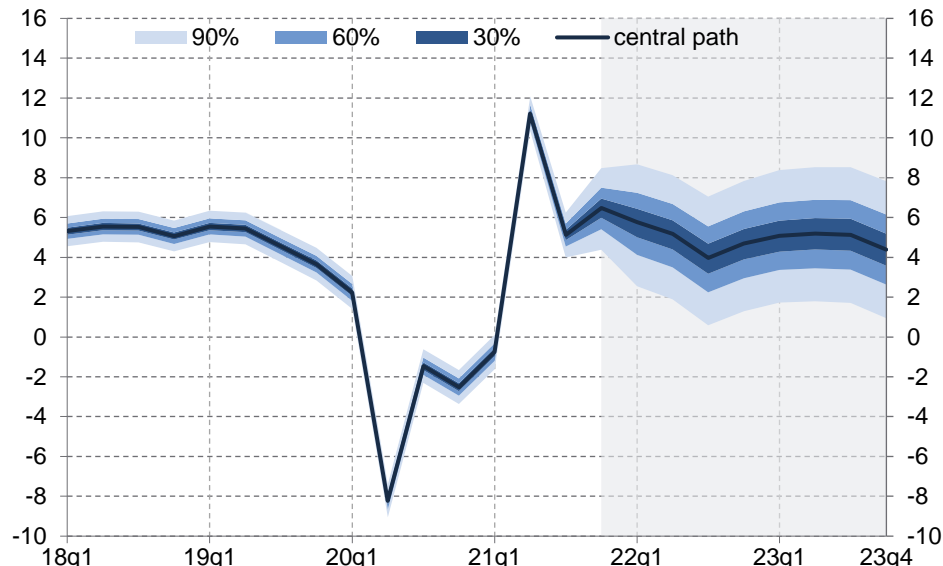
⇩ Higher probability of **economic activity running below the central projection path**. The most important sources of risk for economic activity are **the further course of the global pandemic and the effects of raw material shocks**.

↔ **Distribution of risks for inflation close to symmetrical** - uncertainty related mainly to the **situation on the energy commodities market and planned changes in the EU climate policy**.

Inflation CPI y/y, %



GDP y/y, %



CPI y/y, %	below 1.5%	below 2.5%	below 3.5%	below centr. path	within 1.5-3.5% range
2021	0%	0%	0%	50%	0%
2022	0%	0%	1%	51%	1%
2023	6%	21%	47%	50%	40%

CPI y/y, %	central path	50% probability interval	
2021	4.9	4.8	4.9
2022	5.8	5.1	6.5
2023	3.6	2.7	4.6

GDP y/y, %	central path	50% probability interval	
2021	5.3	4.9	5.8
2022	4.9	3.8	5.9
2023	4.9	3.8	6.1



**NARODOWY  
BANK POLSKI**