

Economic Alignment Among Euro Area Countries

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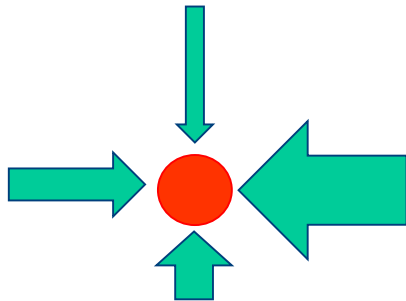
- I. Introduction (convergence x alignment)
- II. Real (and nominal) convergence and structural similarity
- III. Fiscal position
- IV. Inflation, bond yields
- V. Funding costs and bank loans
- VI. Property markets

It will be updated by the end of November 2023
with observations for 2022 or more recent.

I. Introduction

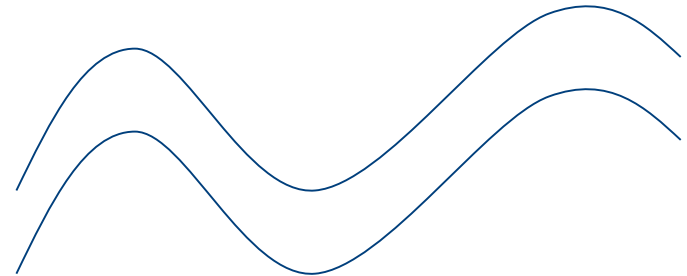
Convergence x Alignment

Convergence



The idea of convergence in economics (also sometimes known as the catch-up effect) is the hypothesis that poorer economies' per capita incomes will tend to grow at faster rates than richer economies. Opposite process = **divergence**

Alignment



Economic alignment of **business cycles** is important for the monetary union to function smoothly, because in the event of adverse asymmetric shocks individual countries cannot use autonomous monetary policy to reduce their cyclical swings and there is limited scope for fiscal policy.

Business and financial cycles of major global economies

https://www.cnb.cz/export/sites/cnb/en/monetary-policy/galleries/geo/geo_2023/gev_2023_09_en.pdf

List of countries by GDP (nominal) and GDP p.c. (nominal)

GDP (US\$ million) by country

	Country/Territory	Subregion	Region	IMF ^[1]		United Nations ^[12]		World Bank ^{[13][14]}	
				Estimate	Year	Estimate	Year	Estimate	Year
1	United States	Northern America	Americas	22,939,580	2021	20,893,746	2020	20,936,600	2020
2	China	Eastern Asia	Asia	16,862,979	^[n 2] 2021	14,722,801	^[n 3] 2020	14,722,731	2020
3	Japan	Eastern Asia	Asia	5,103,110	2021	5,057,759	2020	4,975,415	2020
4	Germany	Western Europe	Europe	4,230,172	2021	3,846,414	2020	3,806,060	2020
5	United Kingdom	Western Europe	Europe	3,108,416	2021	2,764,198	2020	2,707,744	2020
6	India	Southern Asia	Asia	2,946,061	2021	2,664,749	2020	2,622,984	2020
7	France	Western Europe	Europe	2,940,428	2021	2,630,318	2020	2,603,004	2020
8	Italy	Southern Europe	Europe	2,120,232	2021	1,888,709	2020	1,886,445	2020
9	Canada	Northern America	Americas	2,015,983	2021	1,644,037	2020	1,643,408	2020
10	South Korea	Eastern Asia	Asia	1,823,852	2021	1,637,896	2020	1,630,525	2020

GDP (in US\$) per capita by country or territory

	Country/Territory	Subregion	Region	IMF ^[4]		United Nations ^[5]		World Bank ^[6]	
				Estimate	Year	Estimate	Year	Estimate	Year
1	Liechtenstein *	Western Europe	Europe	N/A		180,227	2020	175,814	2019
2	Monaco *	Western Europe	Europe	N/A		173,696	2020	190,513	2019
3	Luxembourg *	Western Europe	Europe	131,302	2021	117,182	2020	115,874	2020
4	Bermuda *	Northern America	Americas	N/A		123,945	2020	107,080	2020
5	Ireland *	Northern Europe	Europe	102,394	2021	86,251	2020	85,268	2020
6	Cayman Islands *	Caribbean	Americas	N/A		95,191	2020	85,083	2020
7	Switzerland *	Central Europe	Europe	93,515	2021	86,919	2020	87,097	2020
8	Norway *	Northern Europe	Europe	82,244	2021	66,871	2020	67,390	2020
9	United States *	Northern America	Americas	69,375	2021	63,123	2020	63,414	2020
10	Iceland *	Northern Europe	Europe	68,844	2021	63,644	2020	59,270	2020

II. Real Convergence (GDP and unemployment)

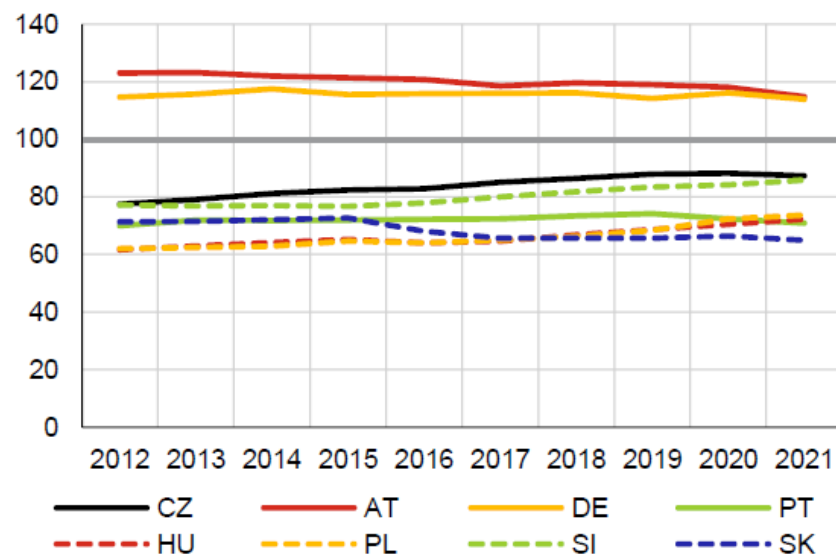
II. Real convergence (GDP)

GDP per capita in EA and price level of GDP

- Czech GDP per capita at purchasing power parity exceeds that of other Central European countries, but the lag behind the more advanced euro area countries remains significant.
- The gap between the price level of Czech GDP and advanced EA countries is even more pronounced but decreased slightly during last year.

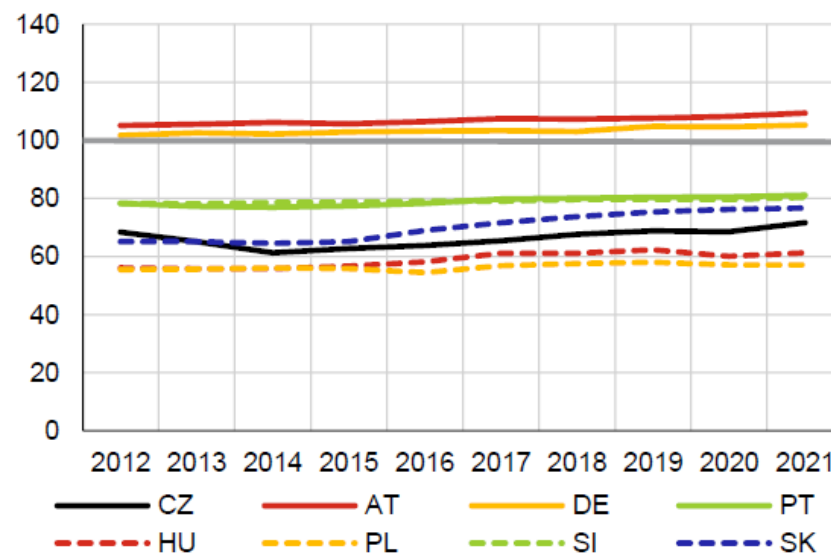


GDP per capita at purchasing power parity (PPP)
(EA = 100)



Source: Eurostat, CNB calculations.

Price level of GDP
(EA = 100)



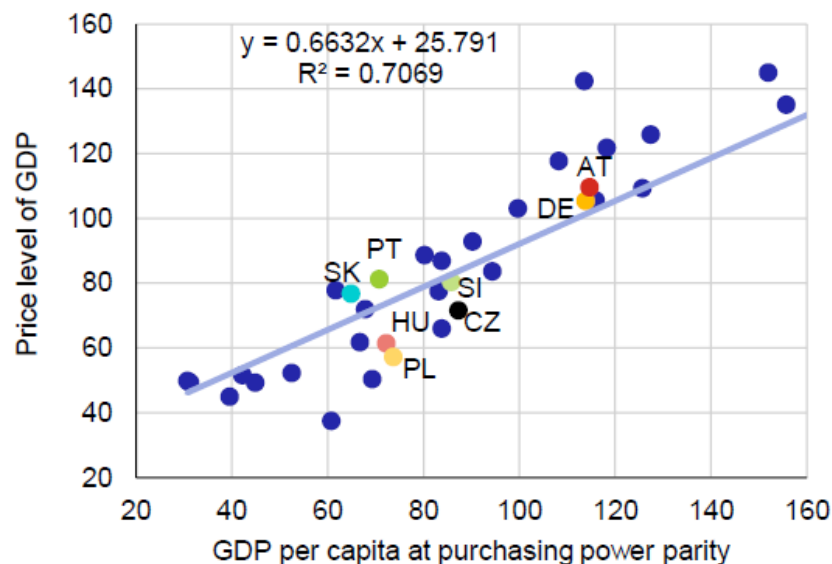
Source: Eurostat, CNB calculations.

II. Real convergence (GDP and other indicators)

GDP per capita in EA and price level of GDP

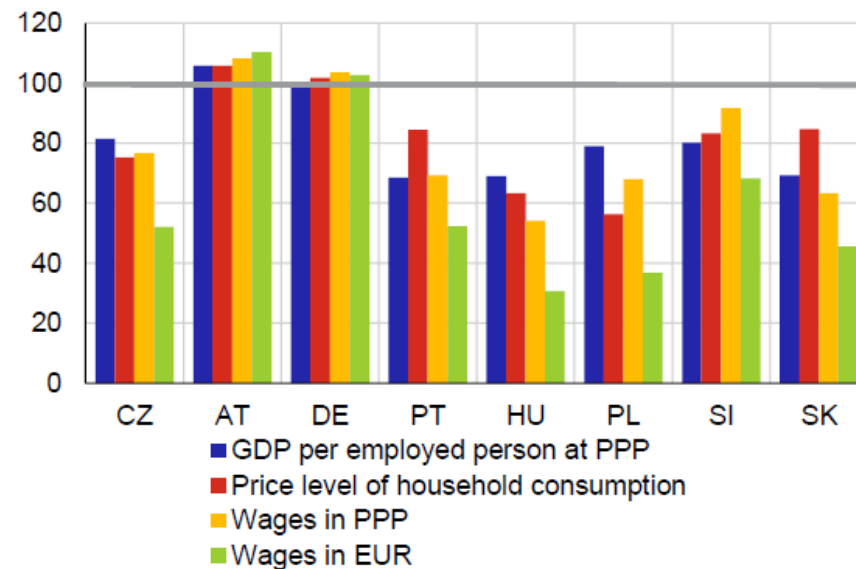
- The Czech price level is still below the level corresponding to domestic GDP per capita by international comparison.
- Czech wages at purchasing power parity are roughly 77% of the euro area average. Wages in euro terms, they are only around 52%.

GDP per capita at purchasing power parity versus the price level
(2021, EA = 100)



Source: Eurostat, CNB calculations.

Other indicators of long-term convergence
(2021, EA = 100)

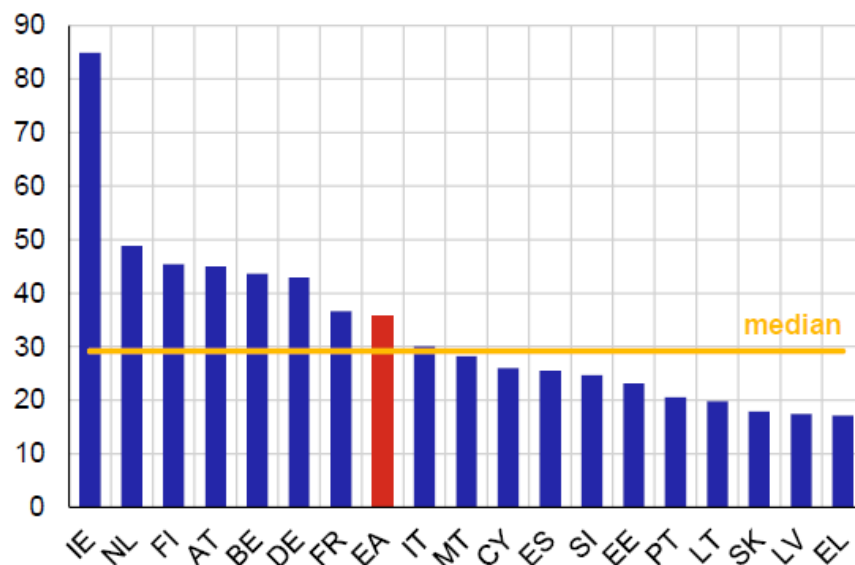


Source: Eurostat, EC, CNB calculations.

II. Real convergence (GDP per capita)

GDP per capita in euro area countries

(2021, GDP at current prices in EUR thousands)



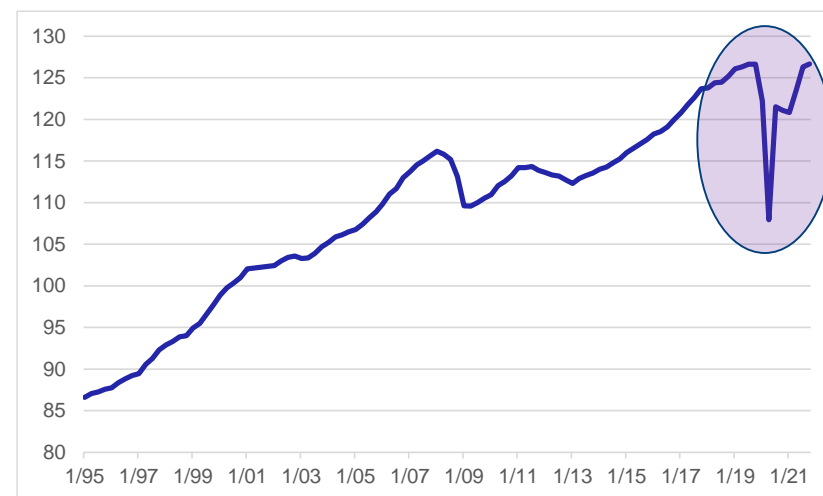
Note: Luxembourg is not included in either of the charts due to the many specificities of its economy, which result in exceptionally high GDP per capita. Ireland's high GDP is largely due to foreign investment, i.e. the relocation of the headquarters of several multinational BigTech and pharmaceutical firms to Ireland as a low-tax environment with a highly educated English-speaking population.

Source: Eurostat.

GDP per capita in EA:

- expresses wealth levels
- is very diverse
- in founding countries (EA-11) exceeds 35000 EUR
- in newcomers is only around 19000 EUR
- median = yellow line

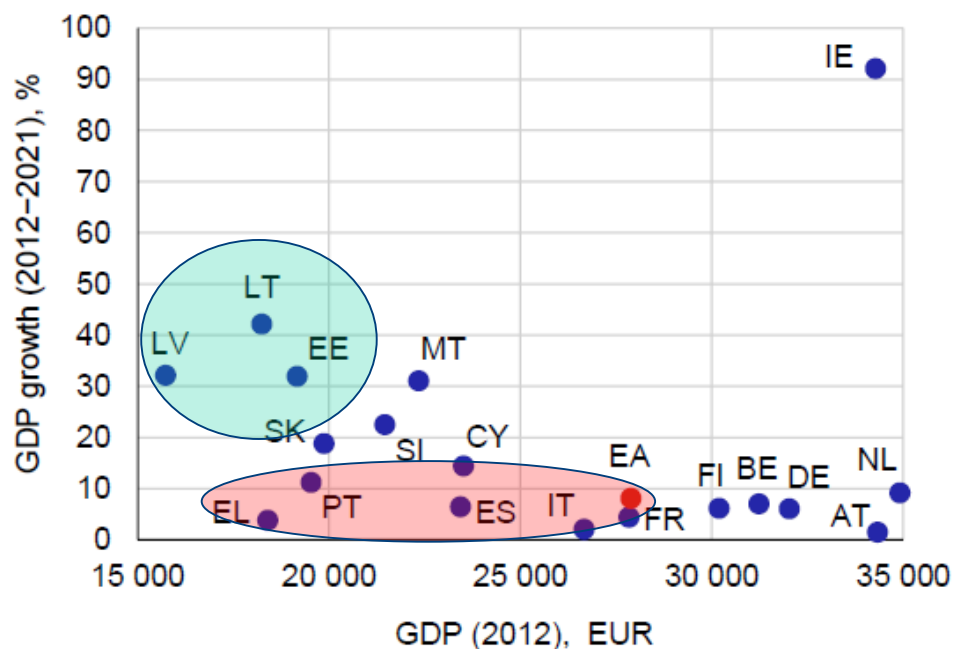
GDP of EA countries (level, 100= 2000)



Economic performance remains very mixed across euro area countries (due partly to the pandemic) with real convergence taking place especially in the Baltic States, i.e. in the newest EA countries.

II. Real convergence (GDP)

Beta-convergence of real GDP in euro area countries



Note: The chart depicts the relation between GDP growth per capita in each country and its initial level (beta-convergence). The x-axis shows GDP per capita in PPS and the y-axis shows real GDP growth.

Source: Eurostat.

Beta-convergence:

theory: less advanced countries should grow faster than wealthier ones

reality: this is occurring only partially in the euro area

newcomers (Latvia, Lithuania, Malta and Slovakia recorded the highest growth rates => convergence to the wealthier EA countries)

BUT

others (Italy, Greece and Spain) showed a decline in output => divergence from the wealthier EA countries

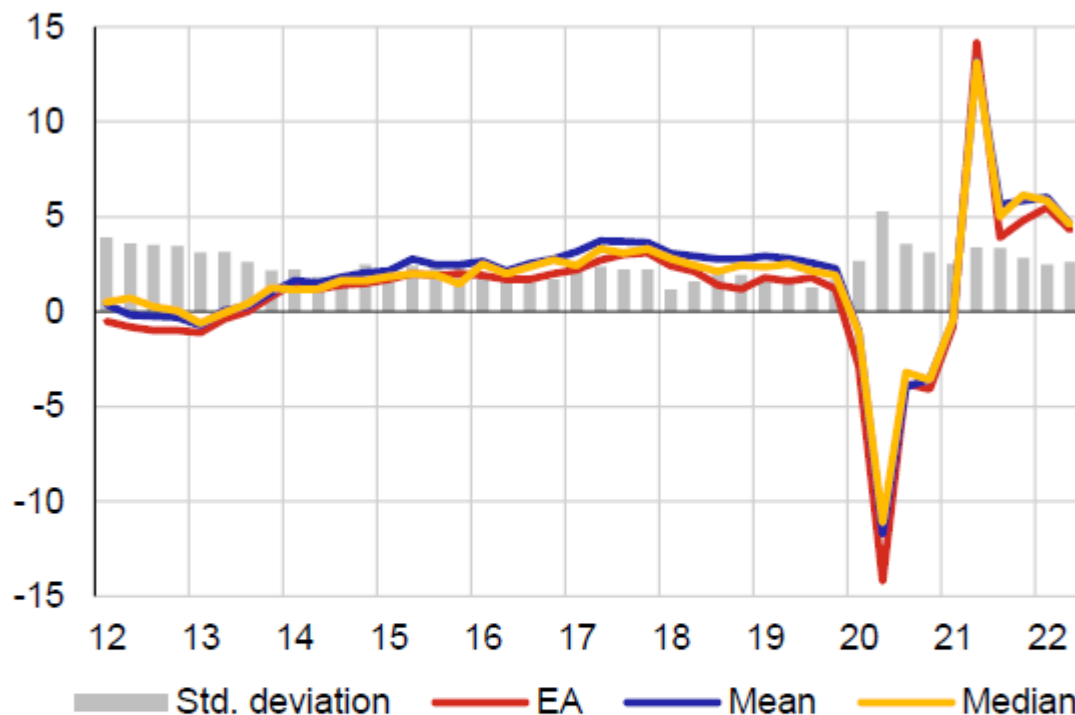
Economic performance remains very heterogeneous across euro area countries
with real convergence taking place in new member countries only.

Covid-19 triggered a deep economic downturn!

Beta and sigma convergence: Barro, R. J., Sala-i-Martin, X. (1992) "Convergence", Journal of Political Economy 100, pp. 223–251.

II. Real convergence (GDP)

Real GDP growth in euro area countries
(y-o-y, %)



Note: The quarterly mean series depicts the unweighted arithmetic mean of GDP growth in the given quarter across euro area countries. Data for Ireland were not included due to exceptionally high growth in 2015 owing to the relocation of the headquarters of several international corporations to Ireland. The source series are seasonally adjusted.

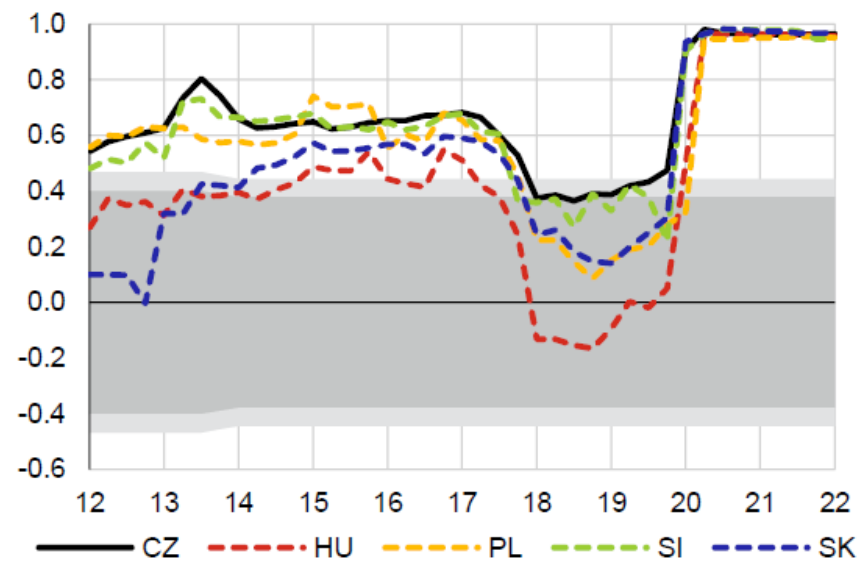
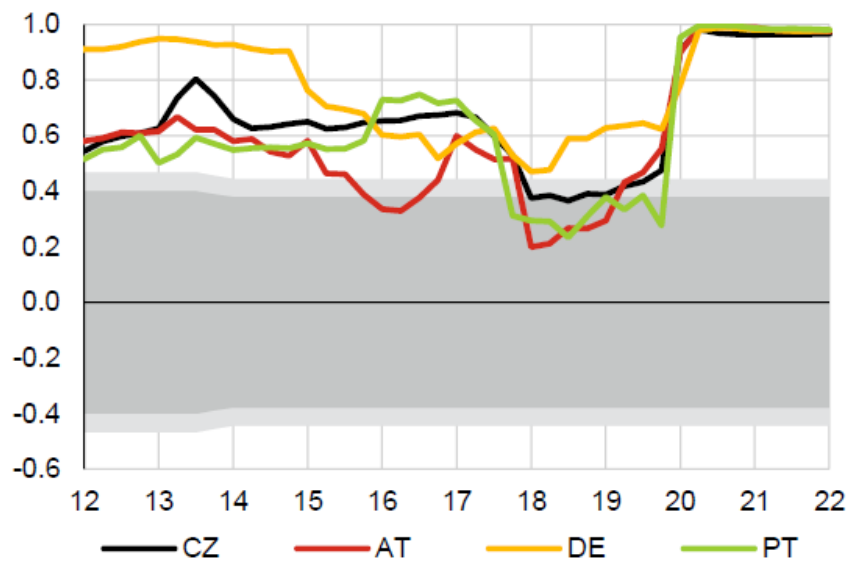
Source: Eurostat, CNB calculations.

GDP growth in EA:

- Renewed economic growth in 2021 helped to improve the public finance situation slightly.
- However, the growth remains subdued due to Russia's invasion of Ukraine, the related energy crisis and persisting problems in global production chains.

II. Real convergence (GDP)

Five-year rolling correlations of GDP growth between individual countries and the euro area



Note: The time data indicate the end of the rolling window of 5 years. The calculation is based on the quarter-on-quarter differences in the logarithms of the seasonally adjusted data. The statistical significance of the correlation coefficients is indicated in the chart: values statistically significant at the 5% level lie in the white area of the chart, and values statistically significant at the 10% level lie in the white or light grey parts of the chart. Values in the dark grey part of the chart are not statistically significant at the 10% level.

Source: Eurostat, CNB calculations.

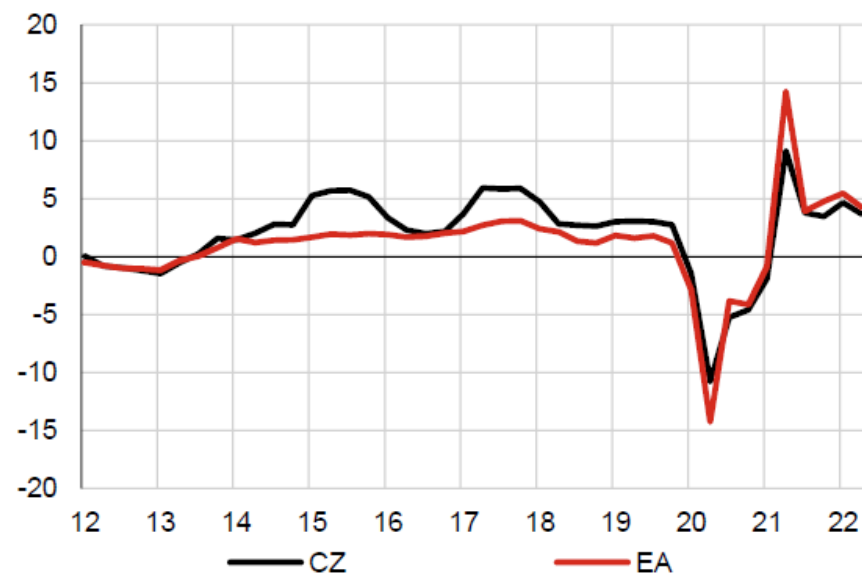
The correlation is again positive and very high.

II. Real convergence (GDP): CZ and EA

The growth of the Czech economy has been lagging slightly behind that of the euro area over the last two years.

Real GDP

(y-o-y, %)

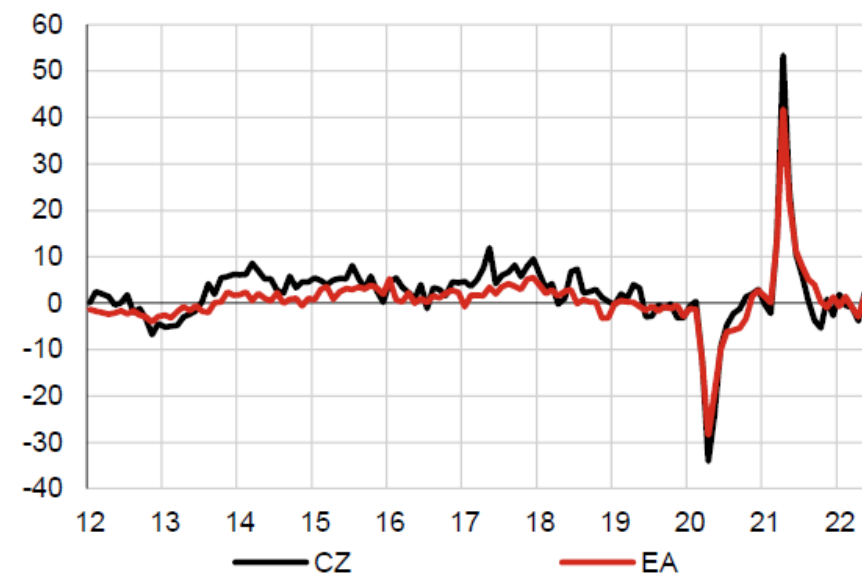


Source: Eurostat.

Industrial production growth, which has long been above the euro area average, is now relatively low.

Industrial production index

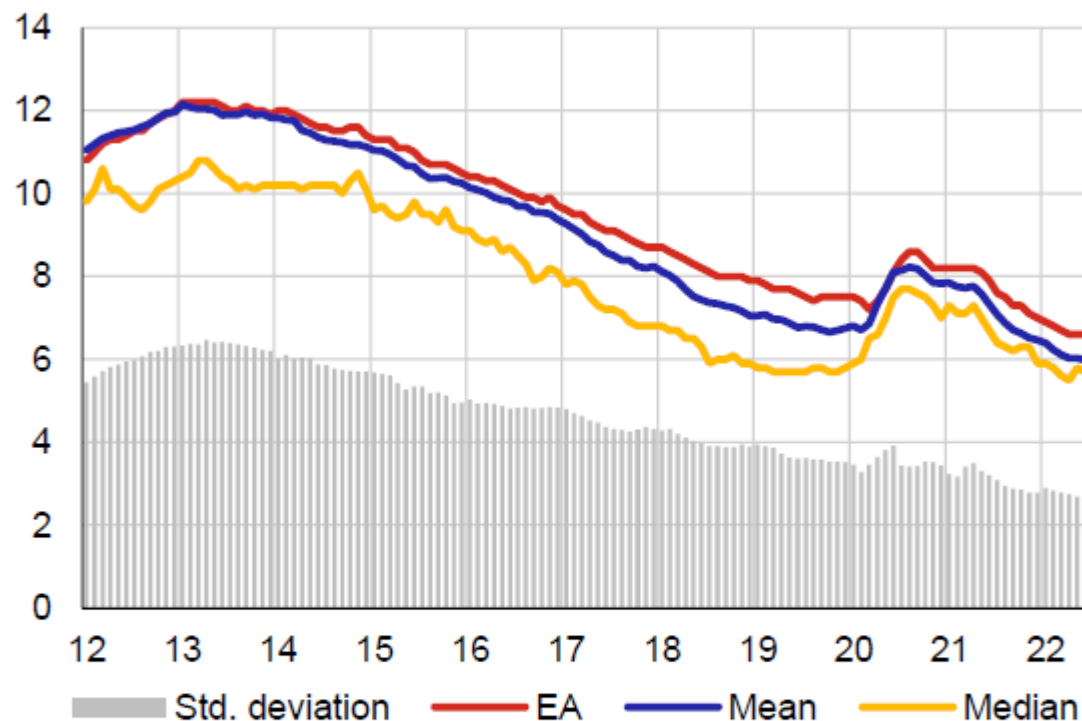
(y-o-y, %)



Source: Eurostat.

II. Real convergence (unemployment)

Unemployment in euro area countries
(%)



Note: The monthly mean series depicts the unweighted arithmetic mean of unemployment in the given month across euro area countries. The source series are seasonally adjusted.

Source: Eurostat, CNB calculations.

Unemployment in EA:

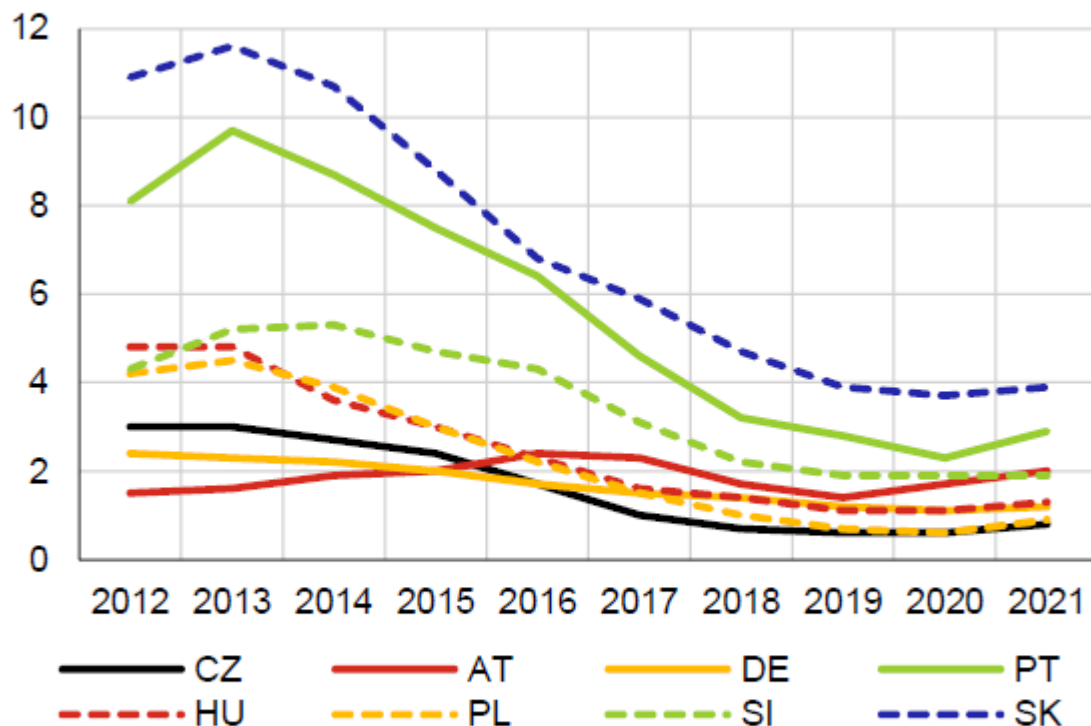
- The labour market has recovered over the past year following its cooling during the pandemic. **The unemployment rate mostly fell to pre-pandemic levels**, but its evolution is mixed across euro area countries.

AND/BUT

- high unemployment, especially among people aged 16-24, remains a key macroeconomic and social problem in some countries (in particular Greece, Italy and Spain)

II. Real convergence (unemployment)

Long-term unemployment rate
(%)



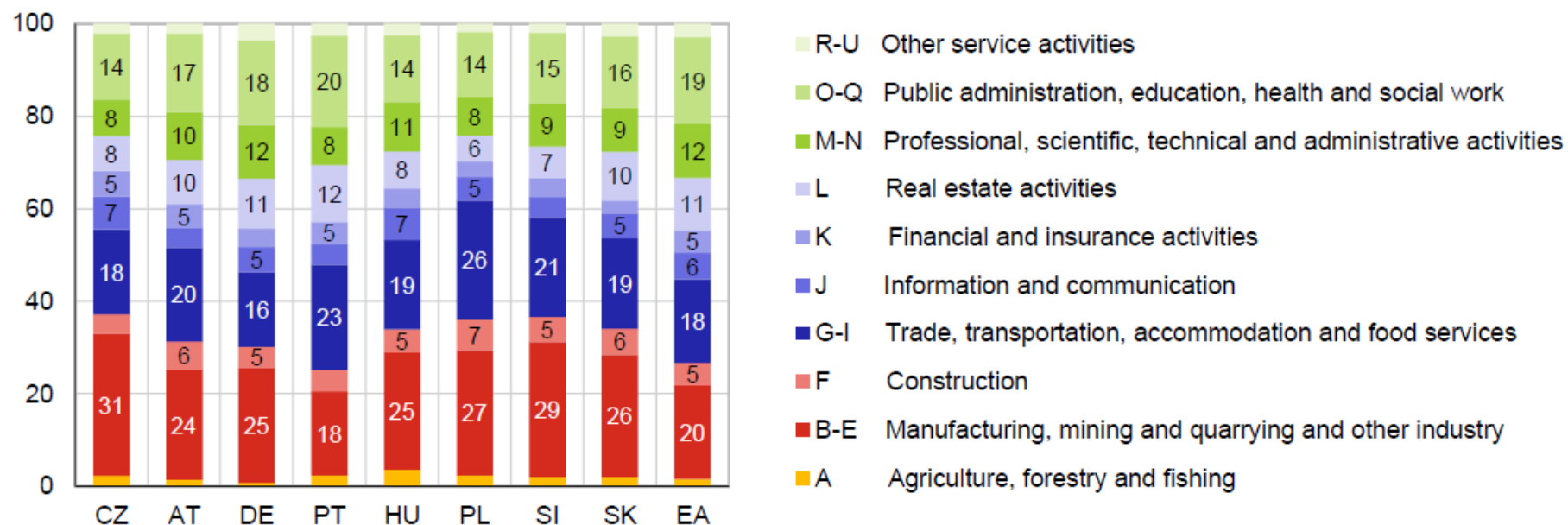
Note: Shares of persons unemployed for 12 months or more in the labour force (under ILO methodology).

Source: Eurostat.

Long term unemployment in EA:

- The steady decline in the long-term unemployment rate in the Czech Republic came to a halt in the pandemic year 2020.
- The rate edged up last year but **was still the lowest among the countries under review (CZ).**

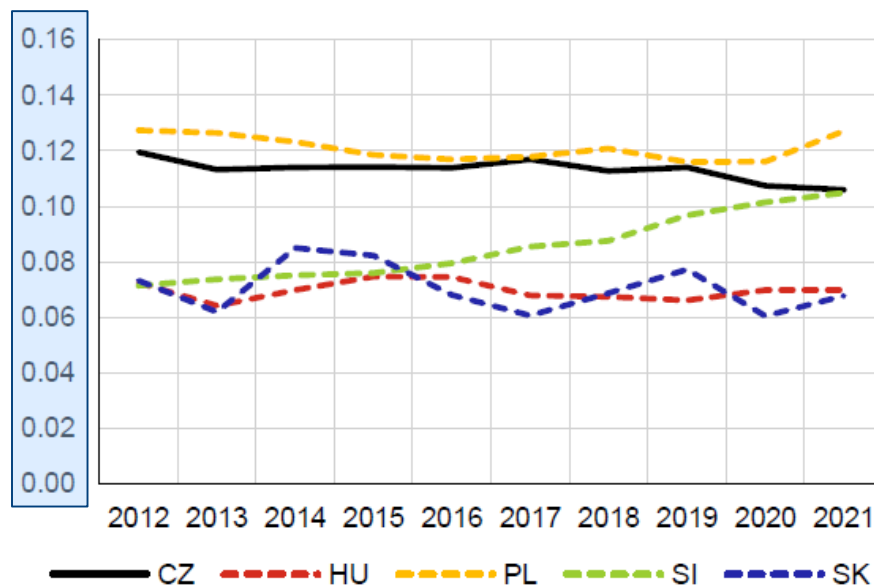
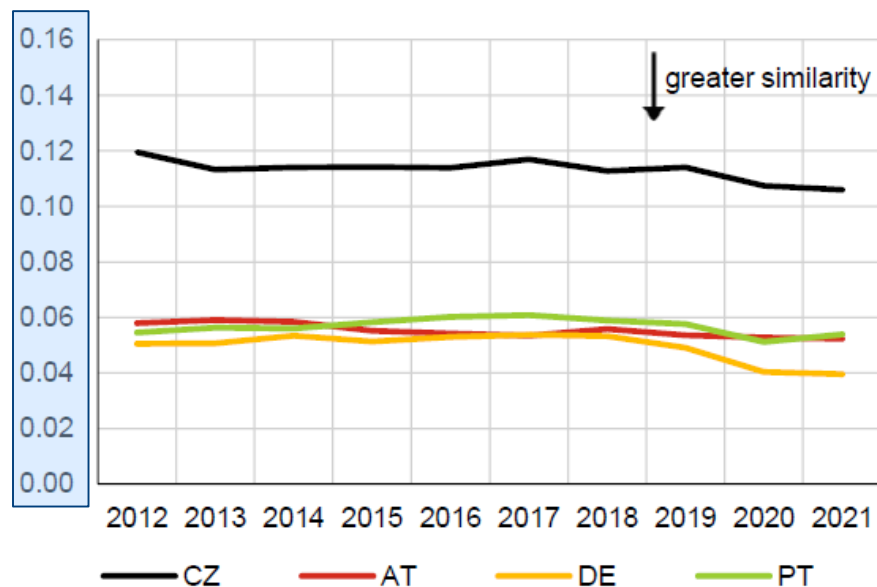
Shares of economic sectors in GDP
(2021, %)



Source: Eurostat, CNB calculations.

- The Czech Republic has long had a higher share of industry in GDP than the EA.

Structural similarity vis-à-vis the euro area
(Landesmann index)



Note: The Landesmann index takes values in the range [0;1]. The closer the index is to zero, the more similar is the structure of the economies under comparison. Given the methodological changes in the GDP calculation and the revisions of the historical GDP data, the results published in previous issues of this publication may differ slightly from this year's figures.

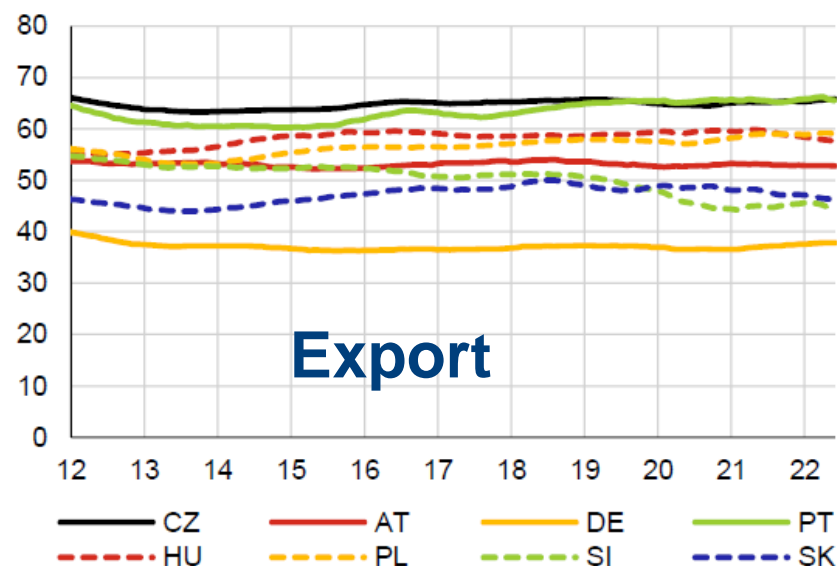
Source: Eurostat, CNB calculations.

- The different sector structure of value added is also reflected in higher values of the **Landesmann index**, indicating a lower degree of similarity of the Czech economy with the euro area economy.
- High degree of similarity between CZ and EA.

II. Structural similarity of the economies (openness)

The share of exports to the euro area in total exports has long been high in the Czech Republic, exceeding the shares observed in most countries under comparison.

Shares of exports to the euro area in total exports (%)

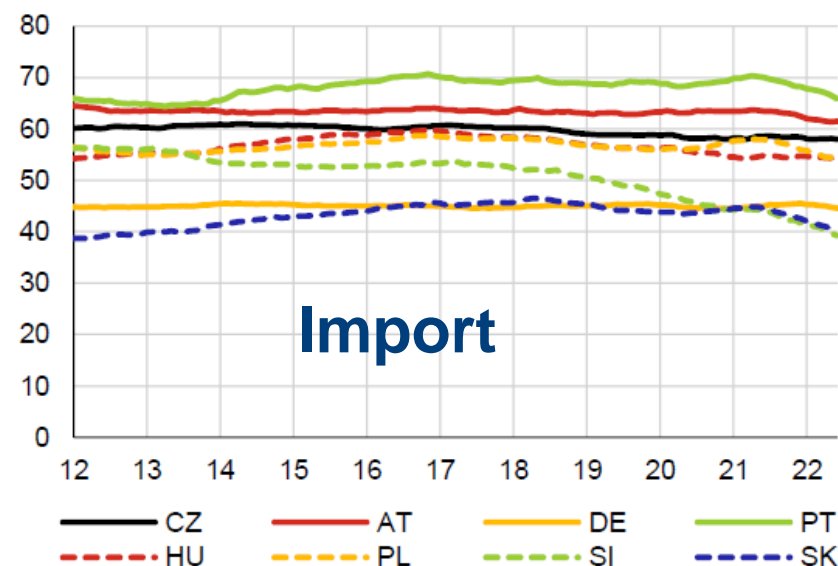


Note: Annual moving total of the monthly data.

Source: Eurostat, CNB calculations.

The share of imports from the euro area in total imports to the Czech Republic is slightly lower than in the case of exports, but even so it exceeds the share of imports from the euro area to the other EU Member States of Central and Eastern Europe under review.

Shares of imports to the euro area in total imports (%)



Note: Annual moving total of the monthly data.

Source: Eurostat, CNB calculations.

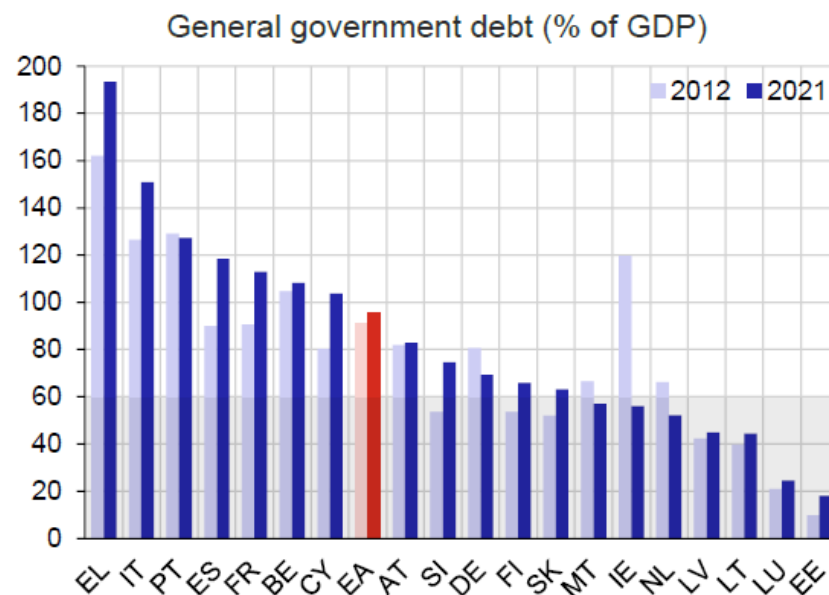
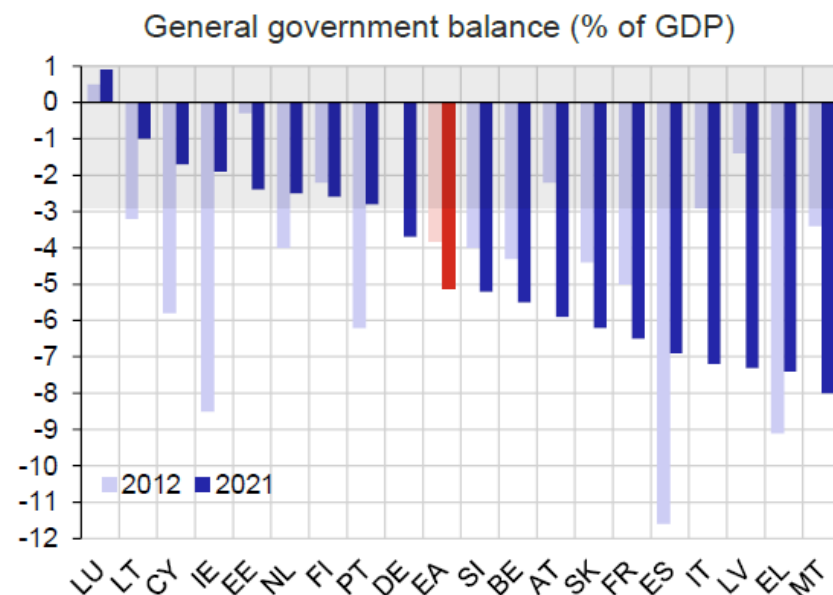
- High openness of CZ (and other small open economies in the region).

III. Fiscal Position

III. Fiscal positions

- Almost all euro area countries recorded public finance deficits in 2021. However, the deficits decreased in most countries compared to 2020, when they were at record highs due to the pandemic (economic decline and government supports). Government debt relative to GDP was still the highest in the southern euro area periphery.
- You can compare the current situation with 10 years ago (2012 x 2021)

Fiscal situation of euro area countries



Note: Countries in the grey area are compliant with the Stability and Growth Pact (SGP) criterion. The SGP sets limits on government deficits (3% of GDP) and debt (60% of GDP). The starting point (2012) captures the negative fiscal effects of the financial crisis (such as rescue programmes in banking sectors financed from state budgets).

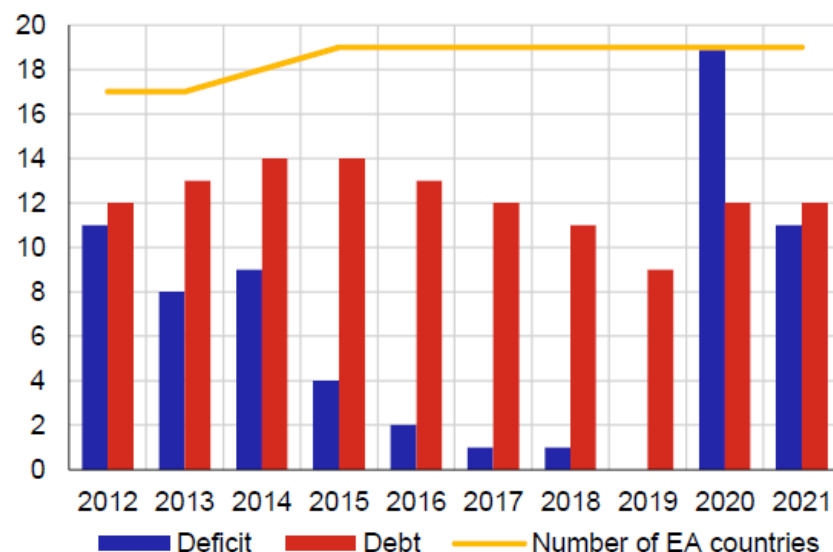
Source: Eurostat.

III. Fiscal positions

- Low fiscal discipline is a long-standing problem in many euro area countries that has been exacerbated by the pandemic.
- Only five EA countries were compliant with both the debt and deficit criteria in 2021, although this is an improvement on 2020, when none of the countries met the criteria.

Non-compliance with the fiscal criteria

(number of countries non-compliant with the Stability and Growth Pact)

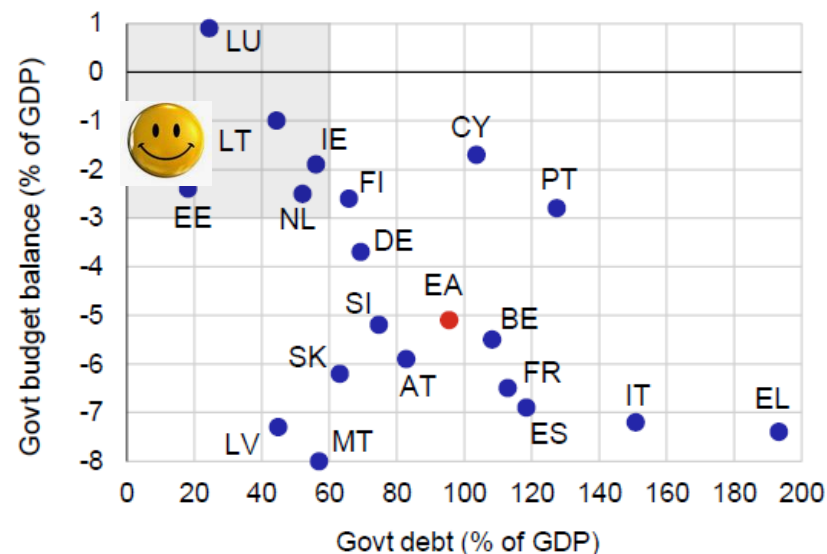


Note: Number of countries non-compliant with the deficit and debt criteria.

Source: Eurostat, European Commission, CNB calculations.

Fiscal positions of euro area countries

(2021)



Note: Countries compliant with the Stability and Growth Pact lie in the grey area.

Source: Eurostat.

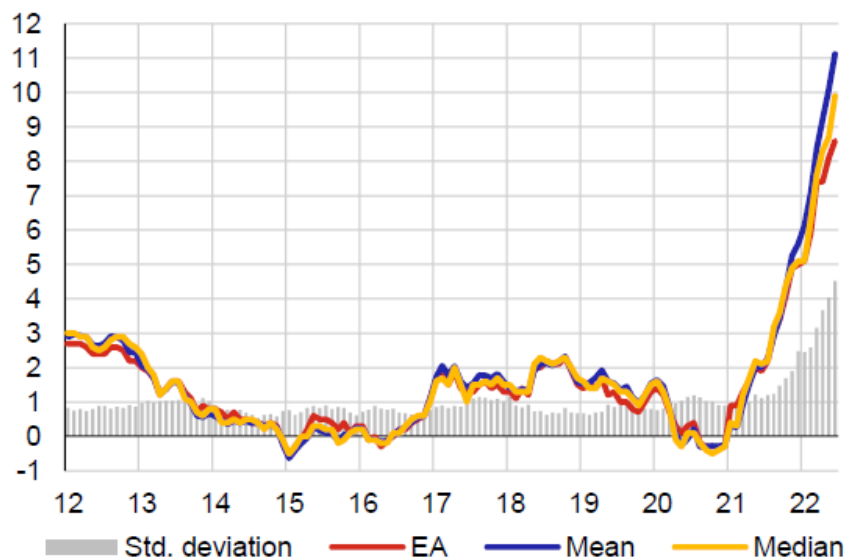
IV. Inflation, bond yields

IV. Inflation

- Headline inflation in the EA rose sharply during 2021 (albeit very unevenly across countries), and the war in Ukraine supported its further significant acceleration this year as well. Energy prices in particular and subsequently also food prices played a significant role.
- Core inflation is also unusually high in the euro area countries. From its long-term level of around 1%, it rose well above the ECB's 2% target in 2021 and 2022...

Inflation in euro area countries

(y-o-y, %)

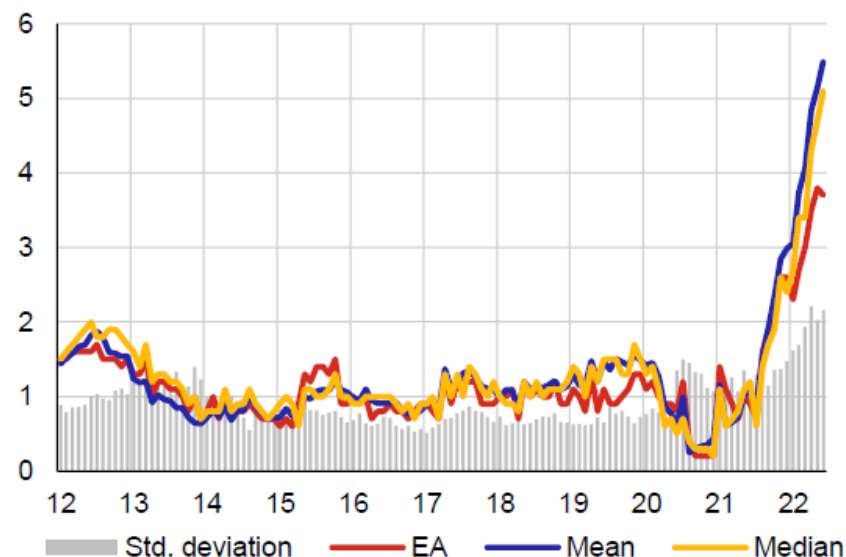


Note: The mean series depicts the unweighted arithmetic mean of inflation in the given year across euro area countries.

Source: Eurostat, CNB calculations.

Inflation excluding energy, food, alcohol and tobacco prices

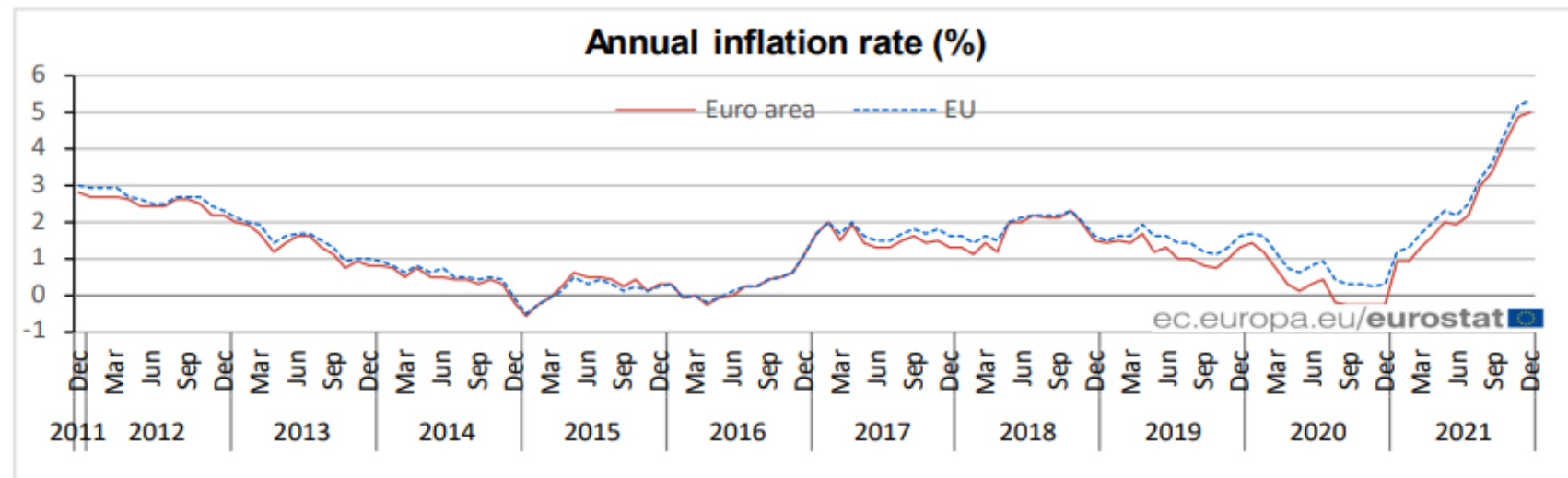
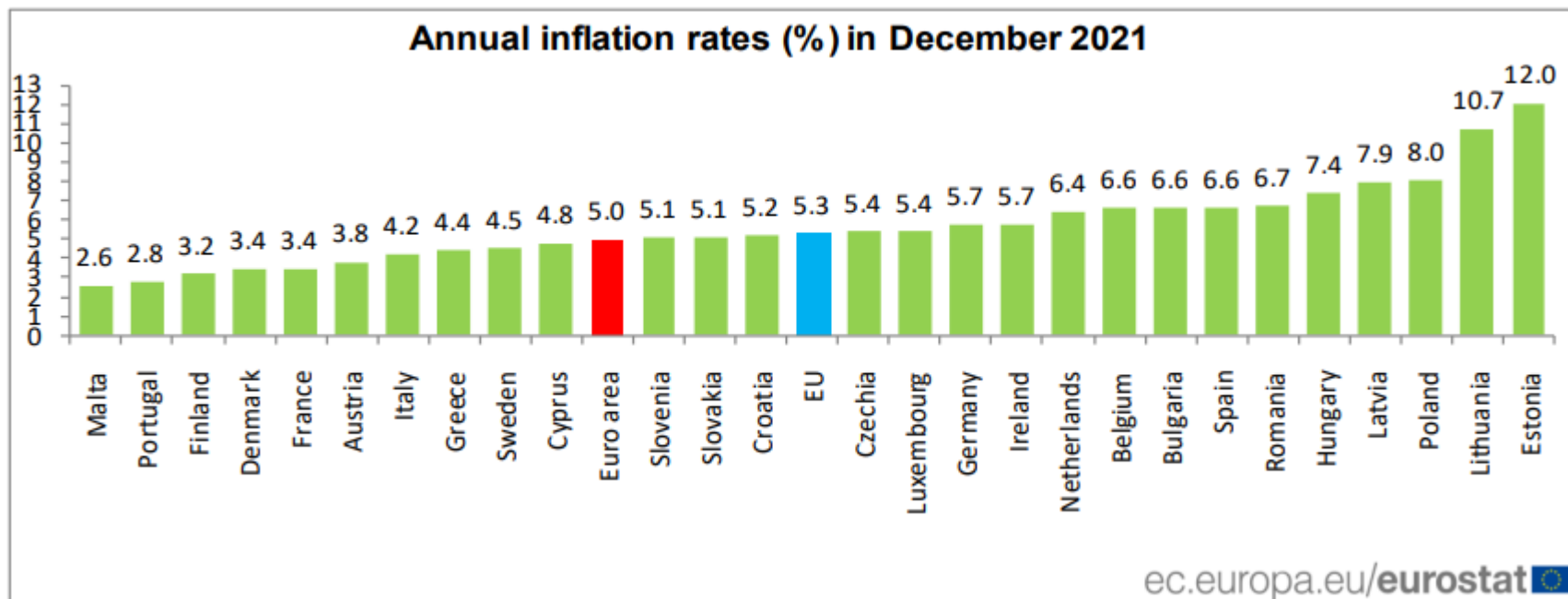
(y-o-y, %)



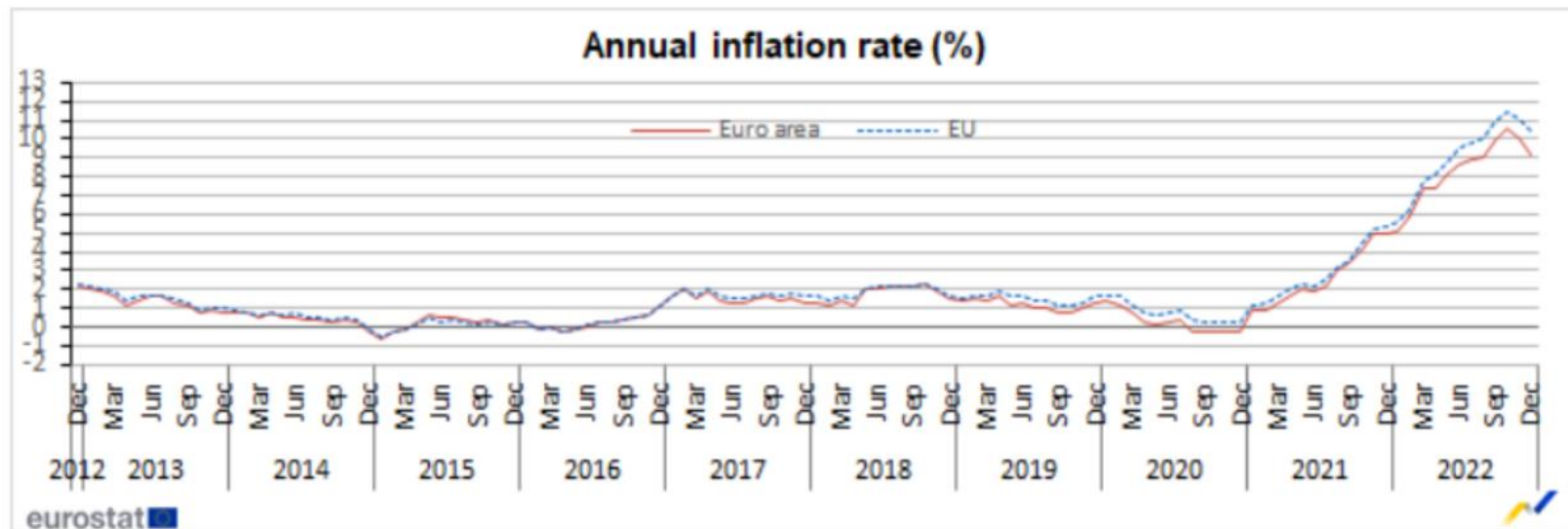
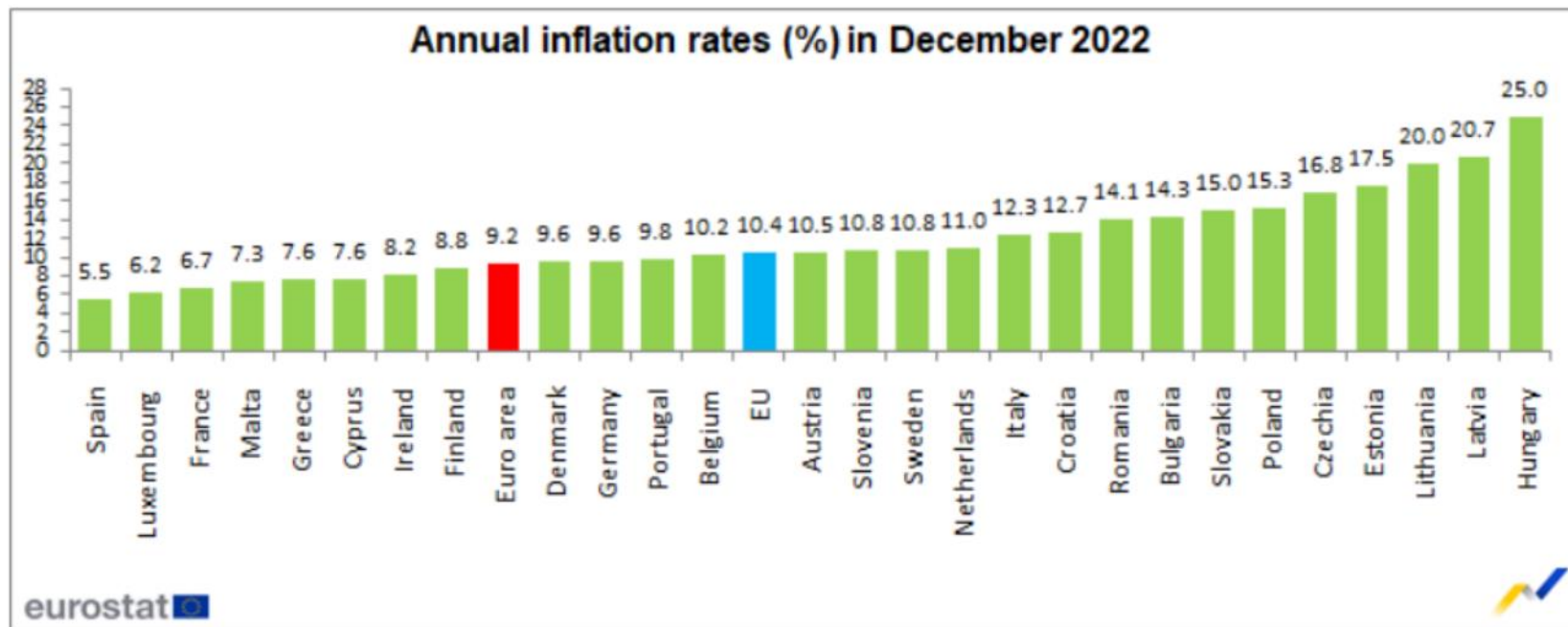
Note: The mean series depicts the unweighted arithmetic mean of inflation in the given year across euro area countries.

Source: Eurostat, CNB calculations.

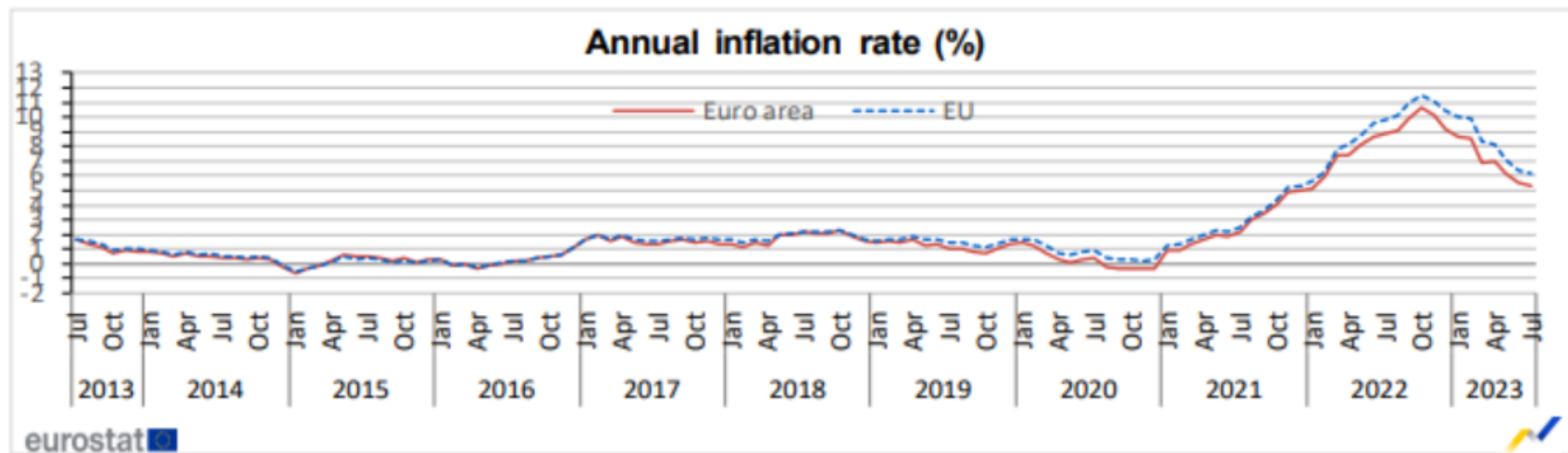
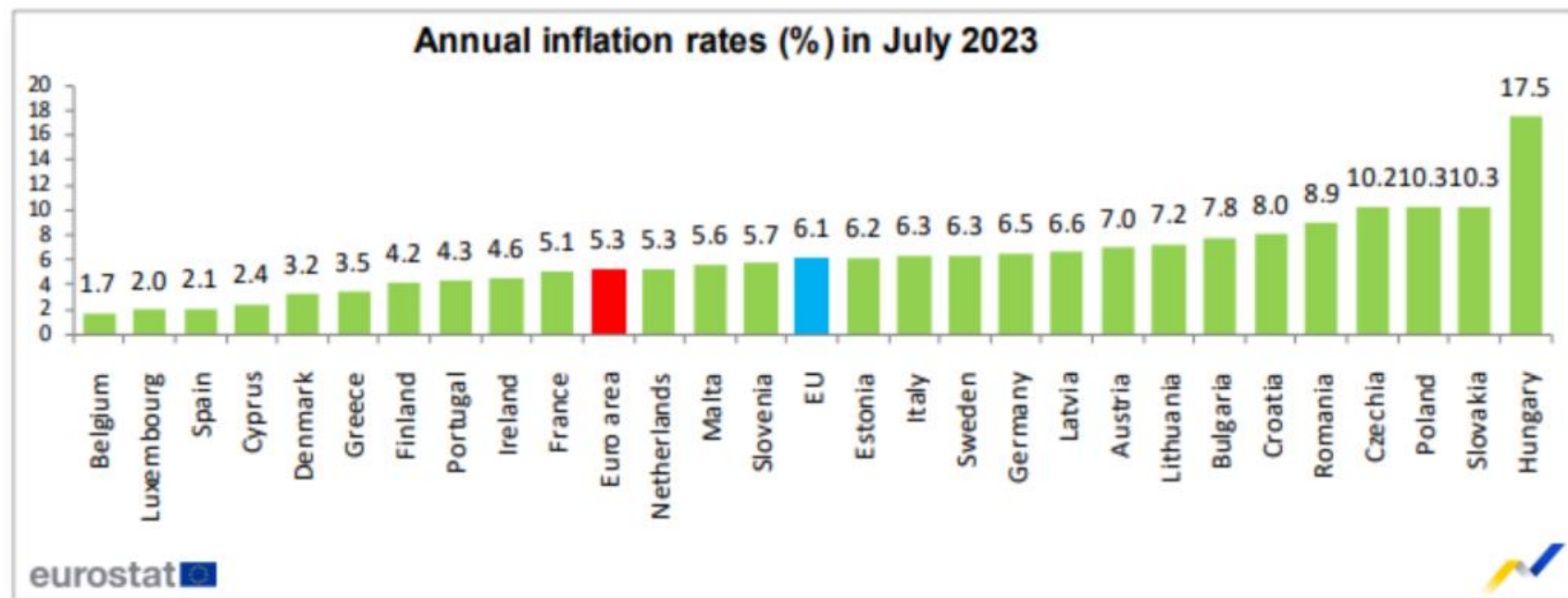
IV. Inflation – current development (2021)



IV. Inflation – current development (2022)



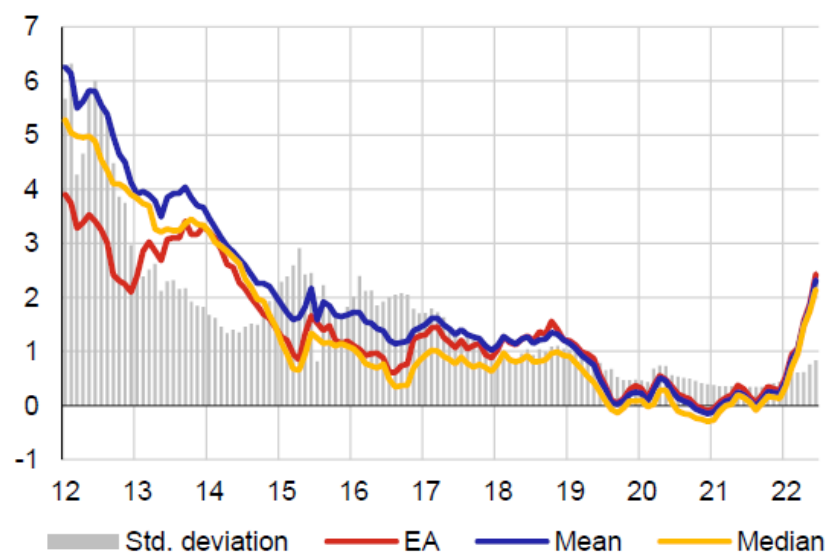
IV. Inflation – current development (2023)



IV. Bond yields

- Long-term government bond yields in the euro area turned positive last year and have started rising sharply this year after the ECB announced the end of its asset purchase programmes.
- Rates on client loans were still at historical lows in late 2021 and early 2022 but recorded a slight increase in 2022 Q2. However, the dispersion of these rates is not increasing so far, indicating that monetary policy transmission is similar across the euro area.

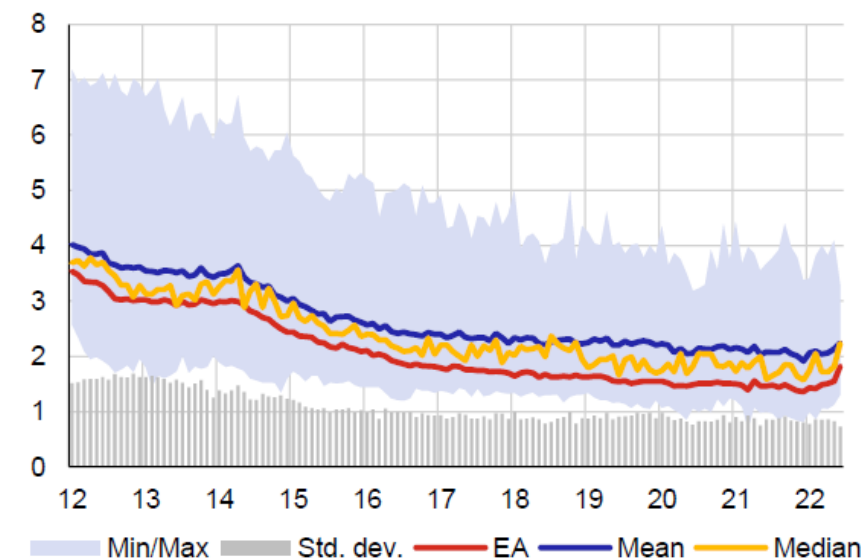
Long-term government bond yields in euro area countries (%)



Note: Bond yields for the convergence criteria. The bond maturity is about ten years. Estonia is not included because the time series is not available. The monthly EA series is a weighted average of ten-year euro area government bonds.

Source: Eurostat, ECB (FM database), CNB calculations.

Funding costs of non-financial corporations (%)



Note: The composite indicator comprises a weighted average of short-term and long-term loans to non-financial corporations. The time series are monthly.

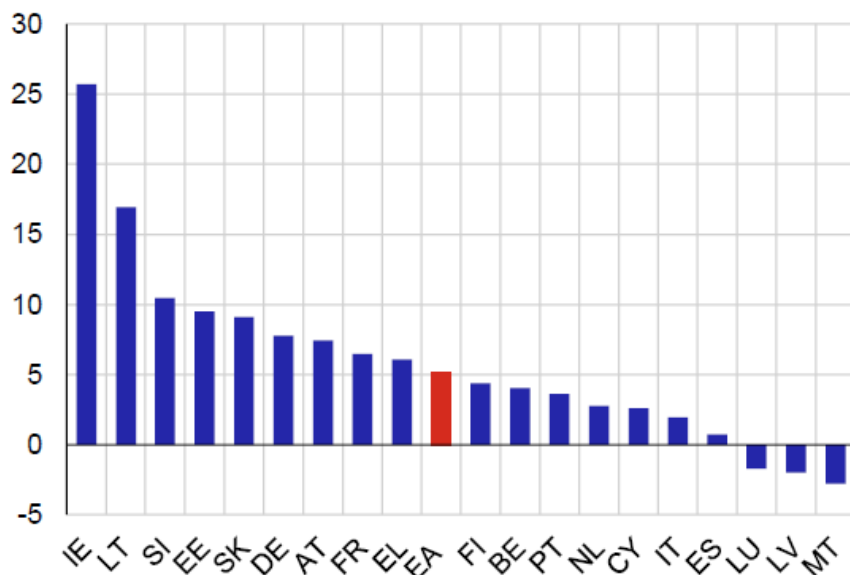
Source: ECB (MIR database), CNB calculations.

V. Funding costs and bank loans

V. Funding costs and bank loans

- Bank loans to non-financial corporations increased (albeit at a mixed pace) in most EA countries. Increased uncertainty led to a tightening of credit conditions in 2022 Q2.
- Despite the persisting high economic and geopolitical uncertainty, growth in loans to households has also remained strong (albeit differentiated) so far. The higher growth rates are due mainly to growth in mortgage loans.

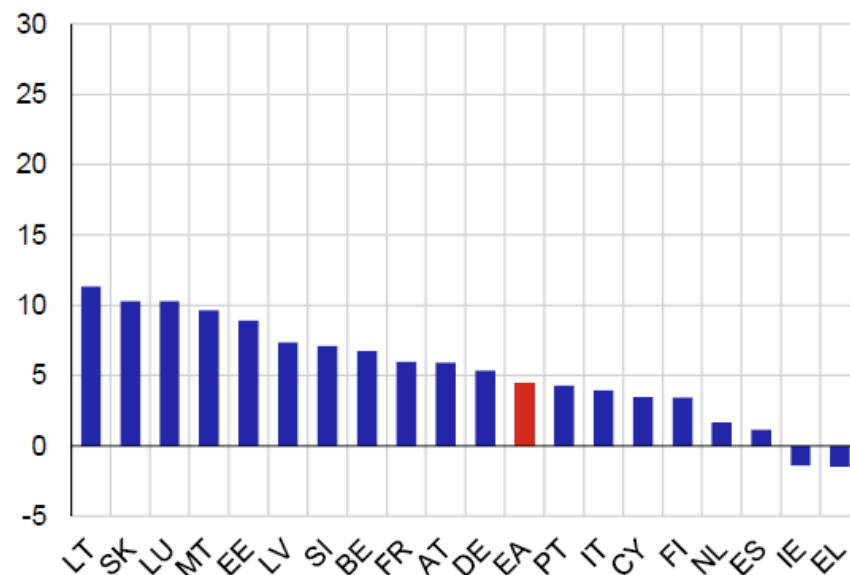
Growth in bank loans to domestic non-financial corporations
(2022 H1, y-o-y, %)



Note: Average annual growth in loans provided by monetary financial institutions in the first six months of 2022.

Source: ECB (BSI database), CNB calculations.

Growth in bank loans to households
(2022 H1, y-o-y, %)



Note: Average annual growth in loans provided by monetary financial institutions in the first six months of 2022.

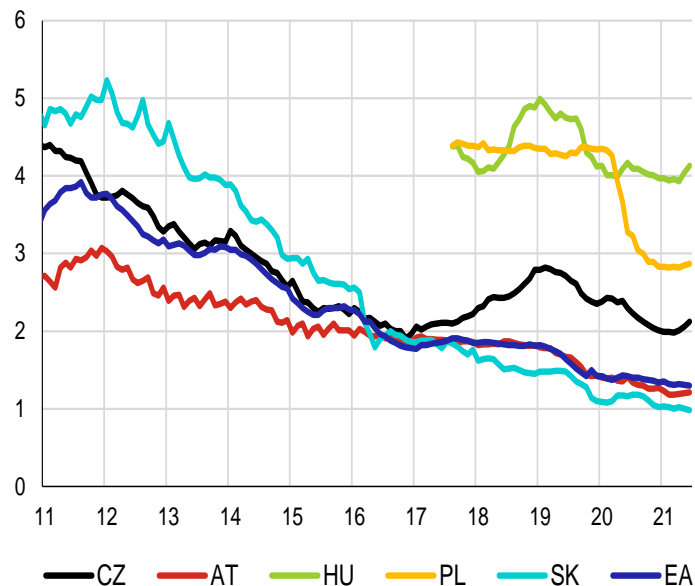
Source: ECB (BSI database), CNB calculations.

VI. Property markets

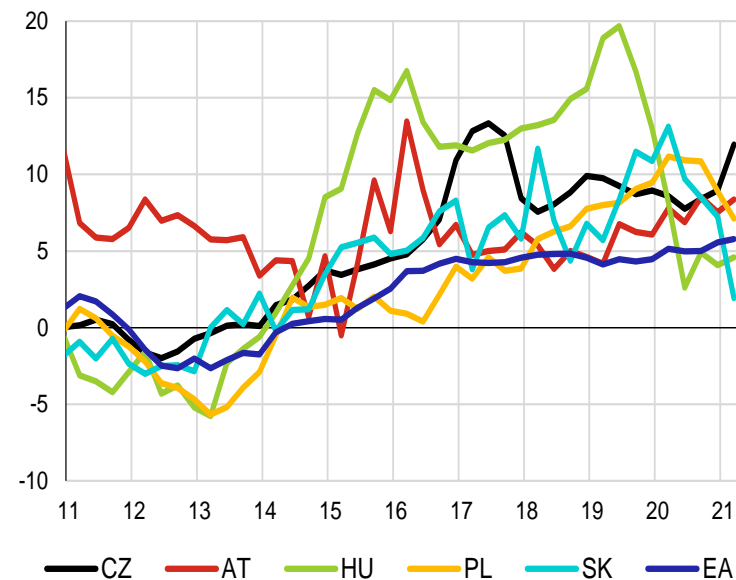
VI. Property markets

- The property market is very closely linked to the mortgage market, as a large proportion of property is mortgage-financed. The availability of mortgages has increased greatly in recent years, due to the fall in interest rates, which boosted interest in mortgage loans and activity on the property market. The ECB's very accommodative monetary policy persists in the euro area, which continues to indicate low interest rates on new loans for house purchase. Slovakia and Austria have the lowest mortgage rates.
- The growth in property prices has accelerated in all the countries under review in the last five years. However, the pace differs, not only in the selected countries, but in other euro area countries too. Euro area membership does not play a major role in this respect.

Interest rates on new mortgages (%)



Property price growth (y-o-y in %)



- **Analyses of the Czech Republic's Current Economic Alignment with the Euro Area.**
- **Assessment of the Fulfilment of the Maastricht Convergence Criteria and the Degree of Economic Alignment of the Czech Republic with the Euro Area.**
- **Komárek, L. (2017): The monetary and fiscal policy response space in OECD countries. Global Economic Outlook, Czech National Bank, March 2017.**
- **Useful data source: <https://tradingeconomics.com/>**

What is Purchasing Power Parity?



A theoretical exchange rate that allows you to buy the same amount of goods and services in every country.



Example: If you want to live inexpensively, and you can move to any country in the world, compare prices of a McDonald's Big Mac.



Government agencies use it to compare the output of countries that use different exchange rates.



Thank you for your attention!



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