
Comparing Inflation Trends Across European Union Countries (2015–2025)

*Data Analysis Project – Mauricio
Ramirez*



Goal

The objective of this project is to analyze and visualize the **evolution of inflation across European Union (EU) countries over time**, focusing on the Harmonised Index of Consumer Prices (HICP). This study will identify long-term and short-term trends in inflation, highlight major economic shifts, and uncover patterns that indicate stability or volatility among member states.

A special emphasis will be placed on the impact of the COVID-19 pandemic on inflation dynamics — examining how different economies were affected during 2020–2022, the nature and duration of inflationary pressures, and the trajectory of recovery. The study will compare inflation trends before, during, and after the pandemic to assess economic resilience.

The project will also:

- Compare inflation patterns between larger economies (e.g., Germany, France, Italy, Spain) and smaller economies.
- Identify which countries exhibit the most stable inflation (low variance and few spikes) versus the most volatile ones.

Through data visualization and statistical analysis, the project aims to draw insights about the broader economic health, integration, and challenges within the EU.

Data Overview

Data:

*Harmonised Index of Consumer
Prices (HICP) - monthly data (index)*

Source:

Eurostat

Date:

17/07/2025

Size:

5,270 kb

Fields:

- *Coicop (category)*
- *Geo (country)*
- *Obs_value (HICP value)*
- *Date*

eurostat 

What is inflation?

Inflation is a **broad increase in the prices** of goods and services that are bought for consumption purposes. Calculated inflation may not always be in line with perceived changes in prices.



How to measure inflation?



The *Harmonised Index of Consumer Prices* (HICP) gives **comparable measures of inflation** for the countries and country groups for which it is produced.

It is an economic indicator that measures the change over time of the prices of consumer goods and services acquired by households. In other words, it is a set of **consumer price indices** (CPIs) calculated according to a harmonised approach and a set of definitions as laid down in Regulations and Recommendations.

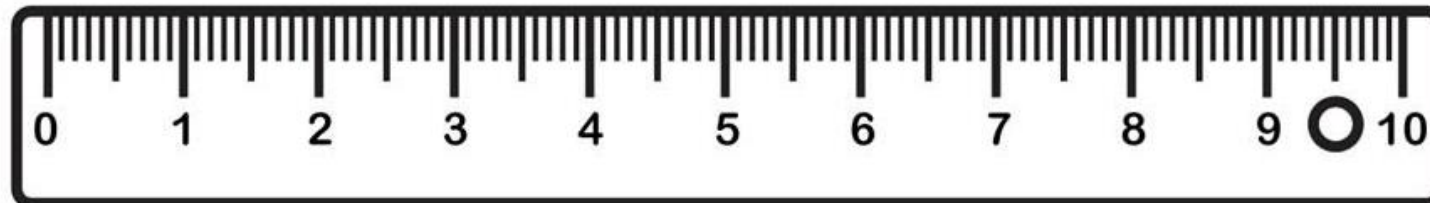
In addition, the HICP provides the official measure of consumer price inflation in the euro area for the purposes of monetary policy and the assessment of inflation convergence as required under the Maastricht criteria for accession to the euro.

Unit of measure

For this project, I will be using as the unit of measure the "**Index, 2015=100**", which means the data is expressed as a price index, where the value of a specific period (in this case, 2015) is set to 100. This allows for comparison of changes in the value of goods or services over time relative to the base year.

Essentially, it indicates how much the price of something has changed compared to its price in the year 2015.

If the index is above 100, it means prices have increased since 2015. If it's below 100, prices have decreased.



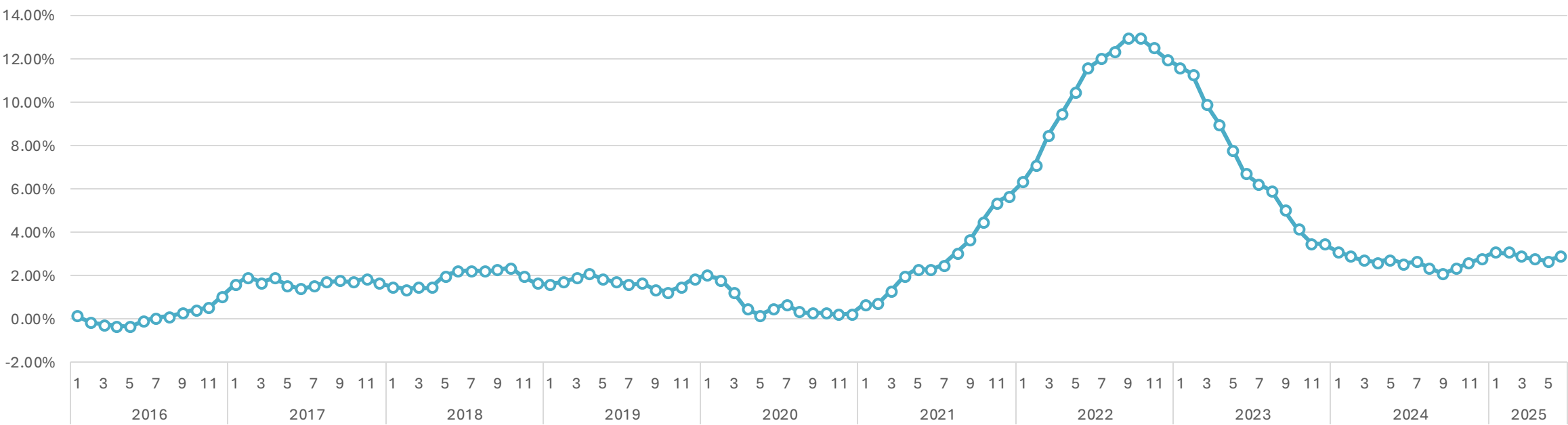
Primary HICP Categories

Eurostat classifies consumption into **12 primary groups**—these provide a solid foundation for comparative inflation analysis across broad segments:

- 1. *Food & non-alcoholic beverages***
- 2. *Alcoholic beverages & tobacco***
- 3. *Clothing & footwear***
- 4. *Housing; water; electricity; gas & other fuels***
- 5. *Furnishings, household equipment & routine maintenance***
- 6. *Health***
- 7. *Transport***
- 8. *Communications***
- 9. *Recreation & culture***
- 10. *Education***
- 11. *Restaurants & hotels***
- 12. *Miscellaneous goods & services***

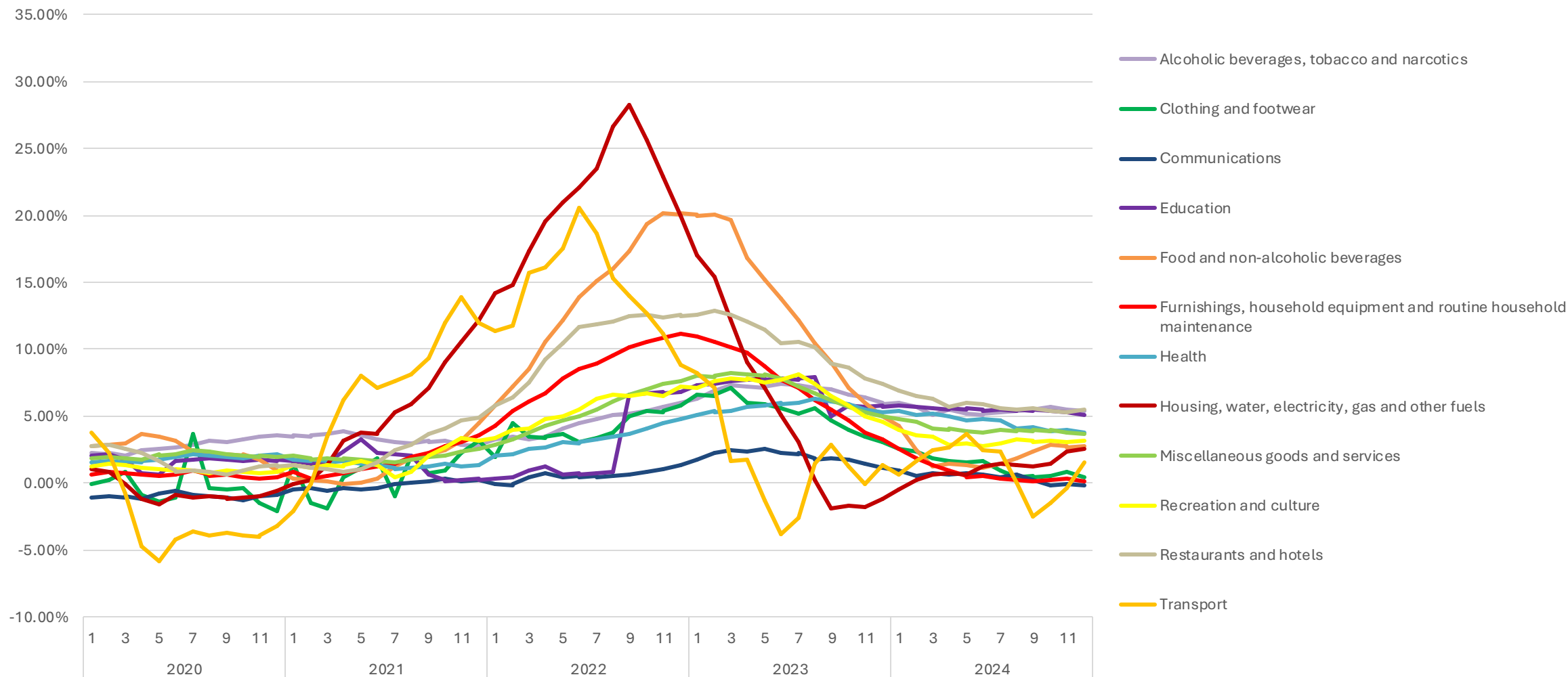
I will also include the category "**All-Items HICP**" to create insights about headline inflation.

EU Year-on-year Average Inflation (All-Items)



This first chart displays the average year-on-year **All-Items** inflation rate across European Union member countries. The highest point appears between September and October 2022, likely caused by the aftermath of the COVID-19 pandemic and the onset of the Russian invasion of Ukraine.

EU Year-on-year Average Inflation (by HICP category)

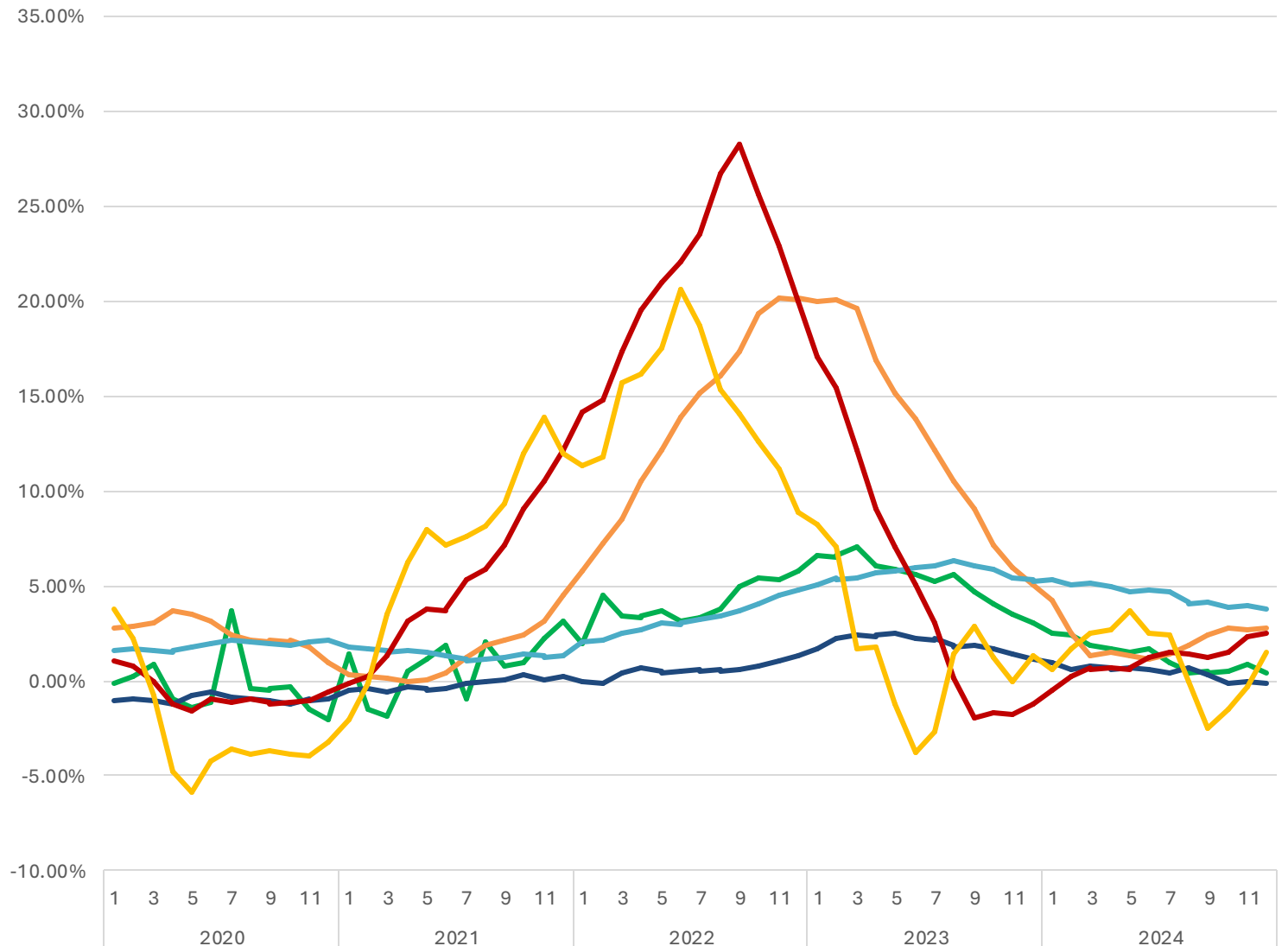


The three categories with the highest inflation rates during the 2022 spike were:

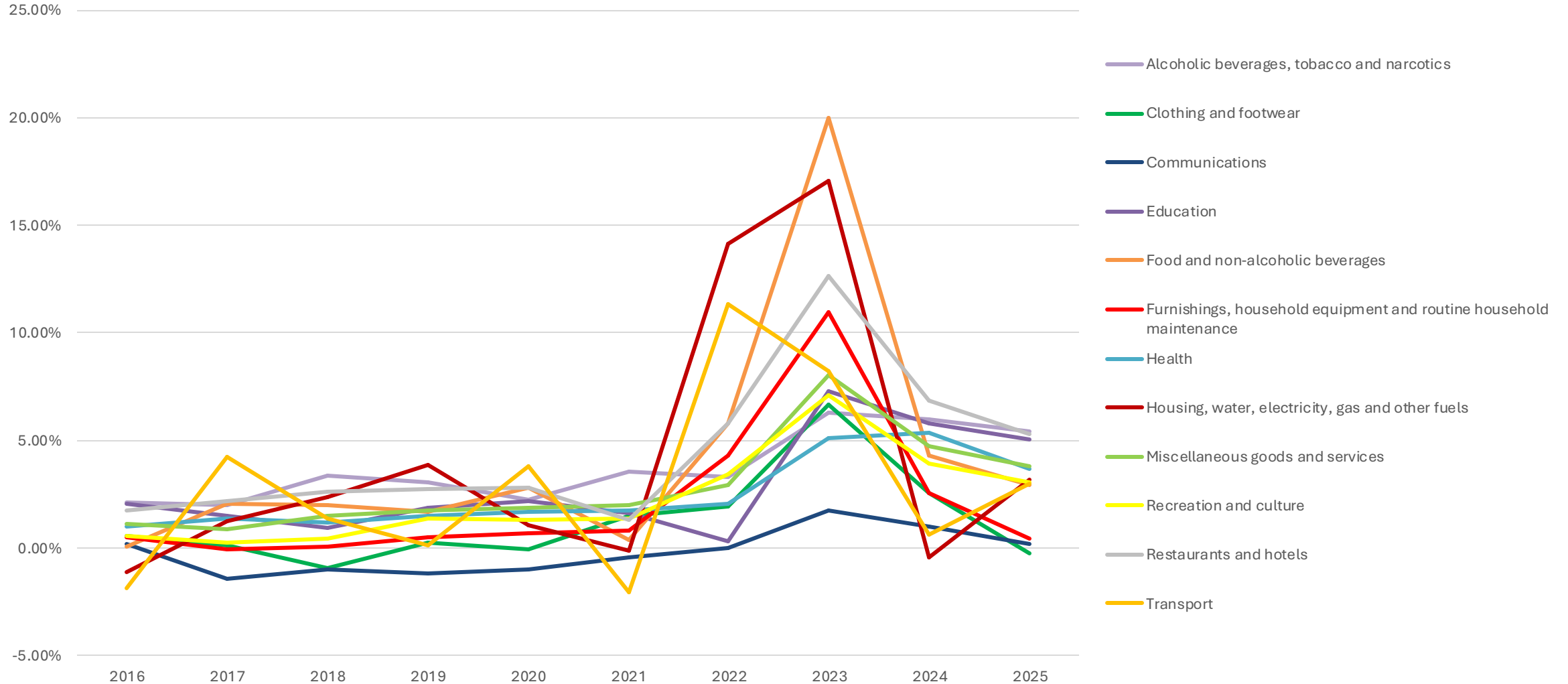
1. **Housing, water, electricity, gas and other fuels**
2. **Food and non-alcoholic beverages**
3. **Transport**

The three categories with the lowest and most stable inflation rates were:

1. **Communications**
2. **Health**
3. **Clothing and footwear**



EU Yearly Average Inflation – January (by HICP category)



	Year-on-Year Semester Inflation																		
	2016		2017		2018		2019		2020		2021		2022		2023		2024		2025
Country	Jan	Jul	Jan	Jul	Jan	Jul	Jan	Jul	Jan	Jul	Jan	Jul	Jan	Jul	Jan	Jul	Jan	Jul	Jan
Austria	1.39%	0.60%	2.06%	1.97%	1.91%	2.30%	1.69%	1.36%	2.17%	1.77%	1.06%	2.81%	4.48%	9.44%	11.57%	6.99%	4.32%	2.90%	3.42%
Belgium	1.84%	2.04%	3.07%	1.81%	1.75%	2.72%	1.80%	1.21%	1.40%	1.72%	0.61%	1.40%	8.50%	10.35%	7.41%	1.66%	1.47%	5.41%	4.36%
Bulgaria	-0.40%	-1.09%	0.37%	0.60%	1.31%	3.57%	2.32%	2.63%	3.39%	0.42%	-0.33%	2.24%	7.70%	14.88%	14.29%	7.84%	3.88%	2.79%	3.80%
Croatia	-0.17%	-1.08%	0.92%	1.23%	1.25%	2.23%	0.57%	0.89%	1.78%	-0.61%	-0.04%	2.73%	5.51%	12.65%	12.49%	8.03%	4.78%	3.35%	5.05%
Cyprus	-1.08%	-0.40%	0.69%	-0.06%	-1.48%	1.43%	2.14%	0.14%	0.70%	-2.04%	-0.82%	2.68%	5.00%	10.57%	6.77%	2.43%	2.12%	2.41%	2.91%
Czechia	0.50%	0.50%	2.30%	2.38%	2.05%	2.22%	2.01%	2.55%	3.76%	3.60%	2.17%	2.67%	8.77%	17.26%	19.06%	10.21%	2.67%	2.48%	2.93%
Denmark	0.40%	0.10%	0.70%	1.50%	0.60%	0.88%	1.19%	0.39%	0.79%	0.39%	0.39%	1.74%	4.85%	9.59%	8.43%	3.21%	0.94%	1.01%	1.44%
Estonia	0.07%	0.77%	2.79%	3.93%	3.61%	3.33%	2.75%	2.05%	1.63%	-1.27%	0.25%	4.90%	11.04%	23.17%	18.60%	6.23%	4.95%	3.49%	3.82%
Finland	0.03%	0.49%	0.89%	0.63%	0.85%	1.41%	1.20%	1.00%	1.21%	0.67%	1.00%	1.83%	4.14%	8.04%	7.87%	4.18%	1.12%	0.53%	1.73%
France	0.32%	0.39%	1.57%	0.78%	1.48%	2.60%	1.43%	1.26%	1.66%	0.86%	0.75%	1.54%	3.28%	6.78%	7.04%	5.07%	3.40%	2.70%	1.83%
Germany	0.41%	0.30%	1.73%	1.68%	1.50%	2.24%	1.67%	1.14%	1.64%	0.00%	1.62%	3.10%	5.15%	8.48%	9.17%	6.47%	3.10%	2.60%	2.77%
Greece	-0.12%	0.20%	1.52%	0.92%	0.21%	0.78%	0.54%	0.44%	1.08%	-2.10%	-2.39%	0.66%	5.49%	11.27%	7.30%	3.47%	3.21%	2.99%	3.14%
Hungary	0.97%	-0.28%	2.36%	2.21%	2.10%	3.42%	2.76%	3.33%	4.72%	3.88%	2.86%	4.67%	7.94%	14.68%	26.20%	17.49%	3.71%	4.10%	5.68%
Ireland	0.00%	0.10%	0.20%	-0.20%	0.30%	1.00%	0.81%	0.49%	1.10%	-0.59%	-0.10%	2.17%	5.05%	9.57%	7.54%	4.59%	2.72%	1.52%	1.71%
Italy	0.41%	-0.20%	1.02%	1.21%	1.21%	1.90%	0.89%	0.29%	0.39%	0.78%	0.69%	0.97%	5.07%	8.36%	10.67%	6.29%	0.92%	1.58%	1.66%
Latvia	-0.31%	0.14%	2.86%	2.58%	2.01%	2.67%	2.94%	2.97%	2.18%	0.09%	-0.45%	2.80%	7.46%	21.34%	21.35%	6.65%	1.11%	0.76%	3.06%
Lithuania	0.67%	0.04%	2.54%	4.14%	3.64%	2.26%	1.63%	2.52%	2.98%	0.93%	0.22%	4.32%	12.27%	20.87%	18.50%	7.17%	1.08%	1.10%	3.39%
Luxembourg	0.45%	-0.41%	2.51%	1.81%	1.30%	2.47%	1.65%	1.61%	2.54%	0.09%	1.05%	3.34%	4.63%	9.29%	5.77%	2.03%	2.97%	2.65%	2.40%
Malta	0.81%	0.94%	1.44%	1.24%	1.18%	2.14%	0.95%	1.83%	1.38%	0.72%	0.25%	0.31%	4.05%	6.83%	6.79%	5.60%	3.69%	2.35%	1.83%
Netherlands	0.21%	-0.56%	1.64%	1.49%	1.49%	1.92%	1.99%	2.61%	1.67%	1.64%	1.58%	1.42%	7.60%	11.62%	8.39%	5.30%	3.10%	3.47%	3.01%
Poland	-0.30%	-0.60%	1.41%	1.40%	1.59%	1.38%	0.59%	2.53%	3.79%	3.71%	3.65%	4.67%	8.66%	14.19%	15.86%	10.28%	4.52%	4.03%	4.32%
Portugal	0.70%	0.72%	1.29%	1.01%	1.10%	2.23%	0.57%	-0.67%	0.83%	-0.08%	0.19%	1.11%	3.40%	9.43%	8.65%	4.32%	2.53%	2.67%	2.70%
Romania	-1.50%	-0.33%	0.33%	0.88%	3.40%	4.35%	3.23%	4.13%	3.88%	2.51%	2.00%	3.79%	7.24%	13.02%	13.44%	8.93%	7.34%	5.80%	5.28%
Slovakia	-0.63%	-0.86%	0.79%	1.47%	2.57%	2.64%	2.21%	3.00%	3.21%	1.78%	0.71%	2.91%	7.68%	12.82%	15.06%	10.35%	4.42%	3.01%	4.25%
Slovenia	-0.77%	-0.10%	1.55%	1.17%	1.72%	2.11%	1.20%	2.04%	2.31%	-0.31%	-0.90%	1.95%	6.03%	11.70%	9.95%	5.73%	3.38%	1.38%	2.32%
Spain	-0.42%	-0.65%	2.94%	1.74%	0.72%	2.31%	1.03%	0.65%	1.13%	-0.72%	0.44%	2.86%	6.15%	10.70%	5.86%	2.12%	3.51%	2.90%	2.89%
Sweden	1.27%	1.14%	1.54%	2.29%	1.58%	2.15%	1.97%	1.54%	1.52%	0.68%	1.87%	1.85%	3.91%	8.33%	9.59%	6.34%	3.42%	1.72%	2.01%

Economy Ranking in the EU

When discussing the ranking of economies, it's important to clarify whether we're looking at **total GDP (nominal)**, which represents the overall size of the economy, or **GDP per capita (nominal or PPP)**, which gives an idea of the average economic output per person and is often used to gauge living standards.



GDP

Gross domestic product (GDP) is a monetary measure of the total market value of all the final goods and services produced and rendered in a specific time period by a country or countries.

To understand how inflation trends impact each EU member country, it's helpful to first consider their economic rankings.

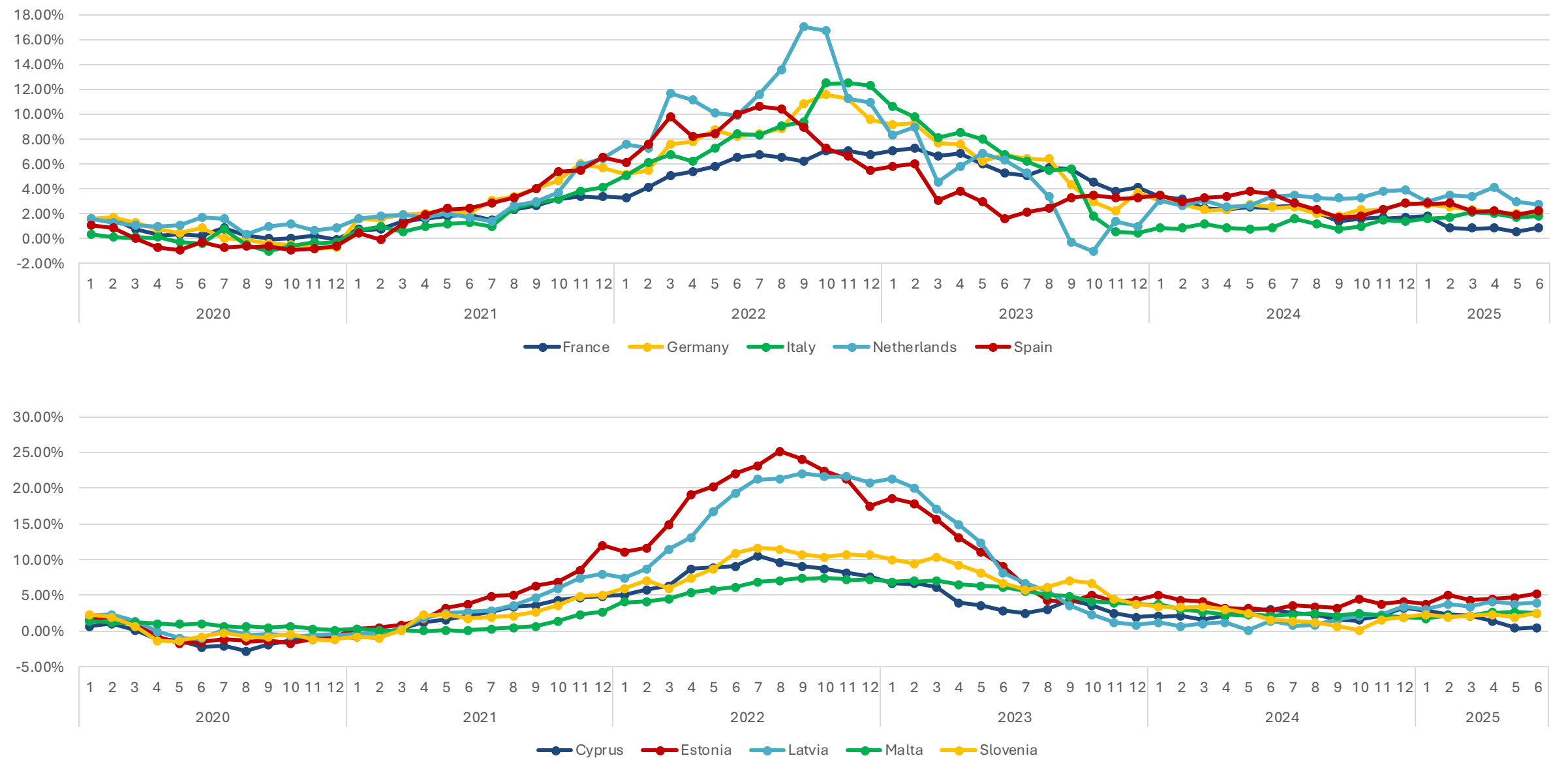


Ranking by Total GDP (nominal) in the EU

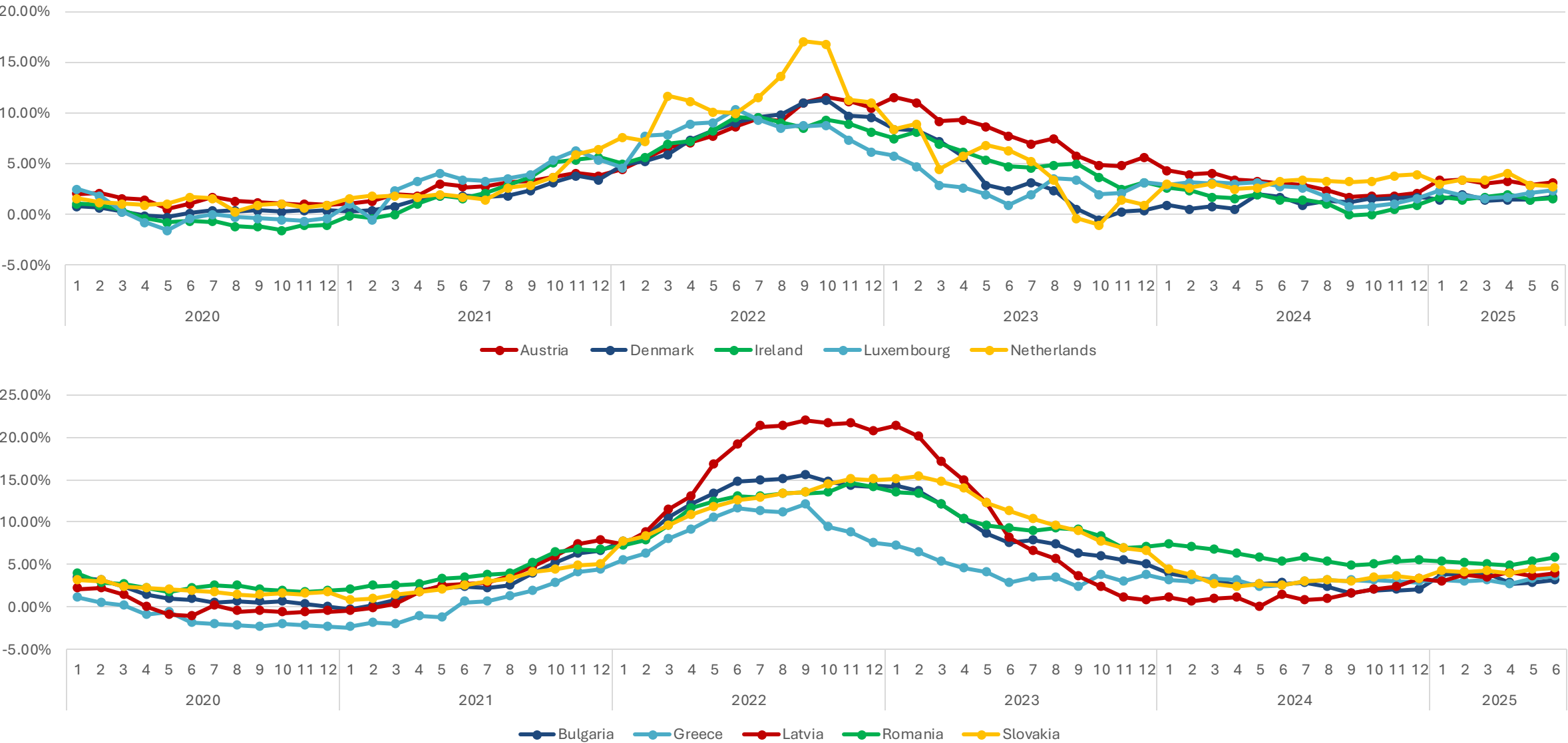
Germany	1.	Luxembourg
France	2.	Ireland
Italy	3.	Denmark
Spain	4.	Netherlands
Netherlands	5.	Austria
Poland	6.	Sweden
Belgium	7.	Belgium
Sweden	8.	Germany
Ireland	9.	Malta
Austria	10.	Finland
Denmark	11.	France
Finland	12.	Cyprus
Czechia	13.	Italy
Romania	14.	Slovenia
Portugal	15.	Spain
Greece	16.	Czechia
Hungary	17.	Lithuania
Lithuania	18.	Poland
Slovakia	19.	Croatia
Croatia	20.	Portugal
Luxembourg	21.	Estonia
Bulgaria	22.	Hungary
Slovenia	23.	Romania
Latvia	24.	Slovakia
Estonia	25.	Latvia
Cyprus	26.	Greece
Malta	27.	Bulgaria

Ranking by GDP per Capita (nominal) in the EU

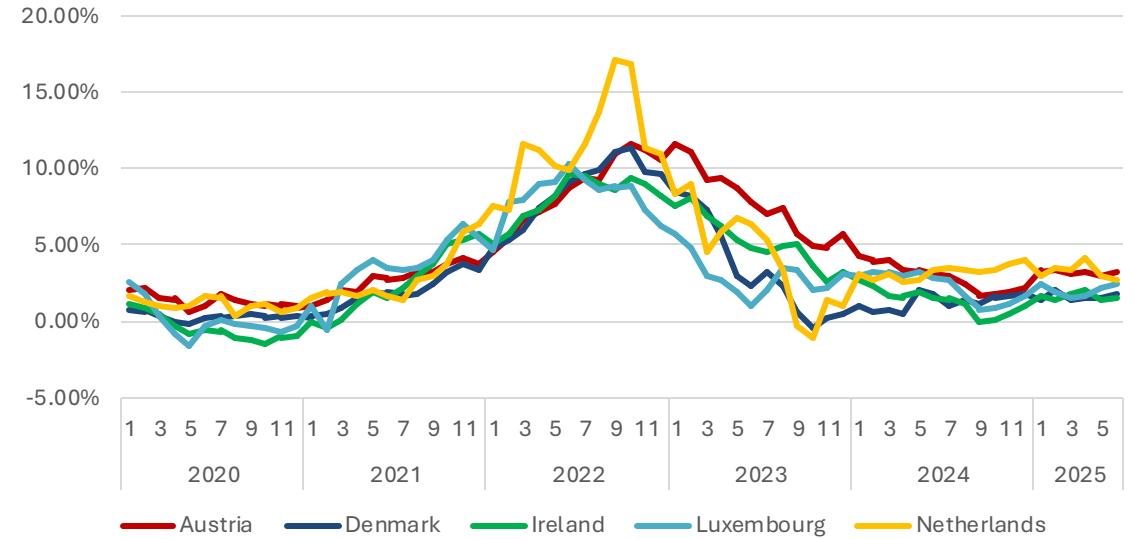
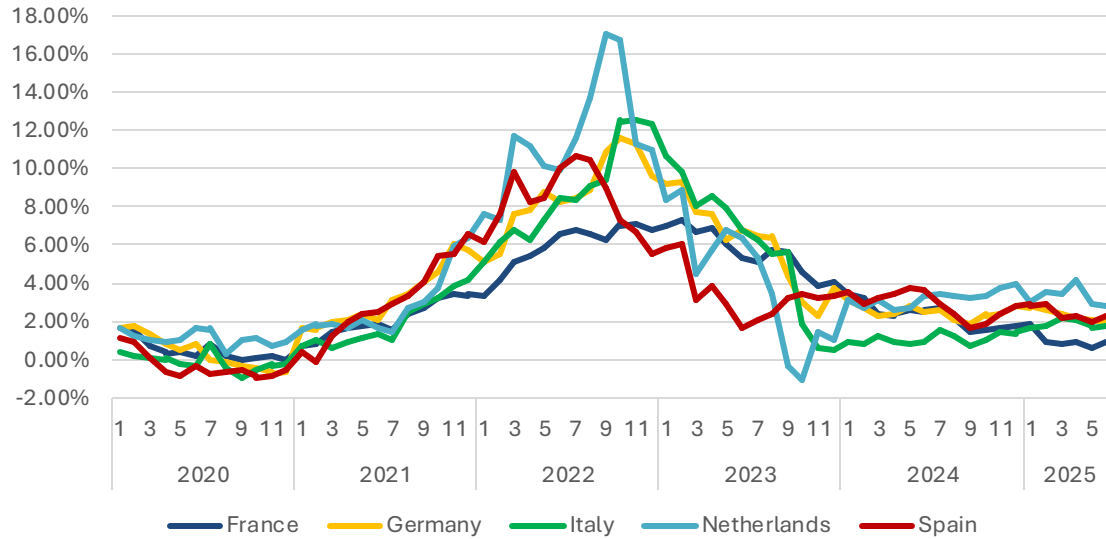
Top 5 highest & lowest economies (nominal GDP) YoY Average Inflation (All-Items)



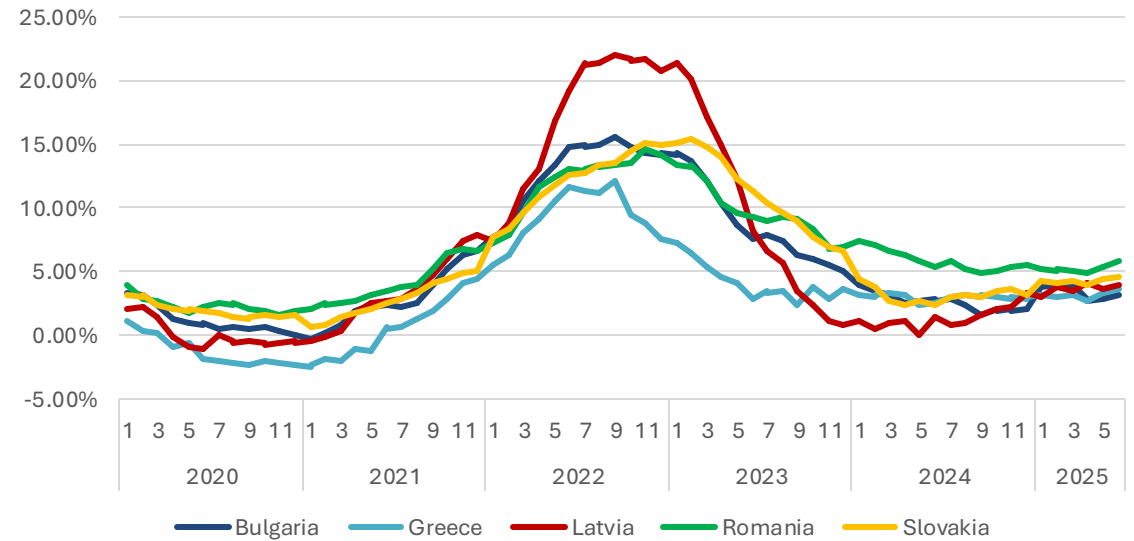
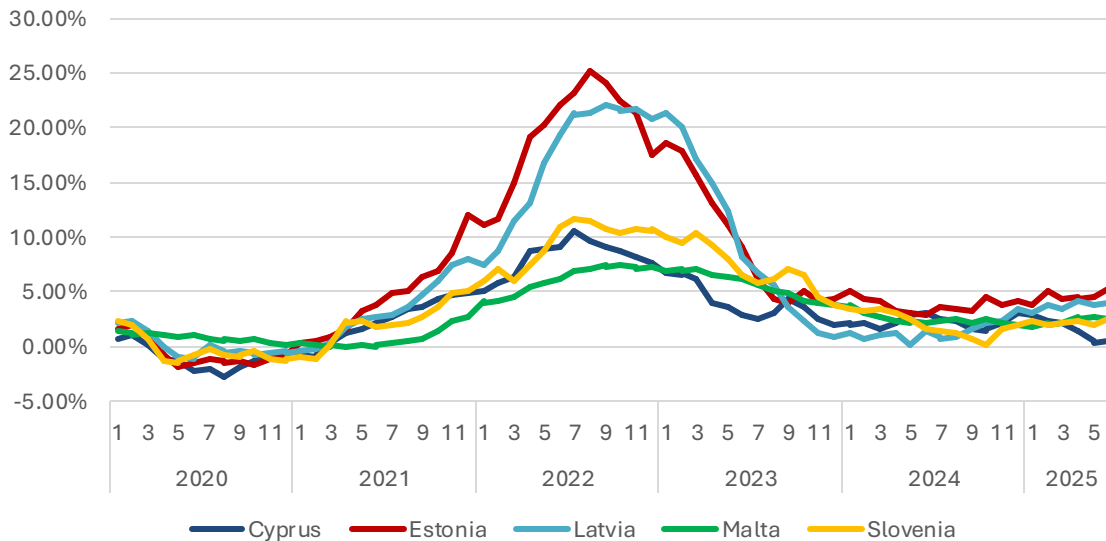
Top 5 highest & lowest economies (GDP per capita) YoY Average Inflation (All-Items)



Highest Economies (nominal GDP – GDP per capita)



Lowest Economies (nominal GDP – GDP per capita)



ECB Inflation Target vs Actual

The **European Central Bank (ECB)** is responsible for maintaining price stability across the euro area. Its primary objective is to keep inflation at **2% over the medium term**, ensuring economic stability and preserving the purchasing power of the euro.

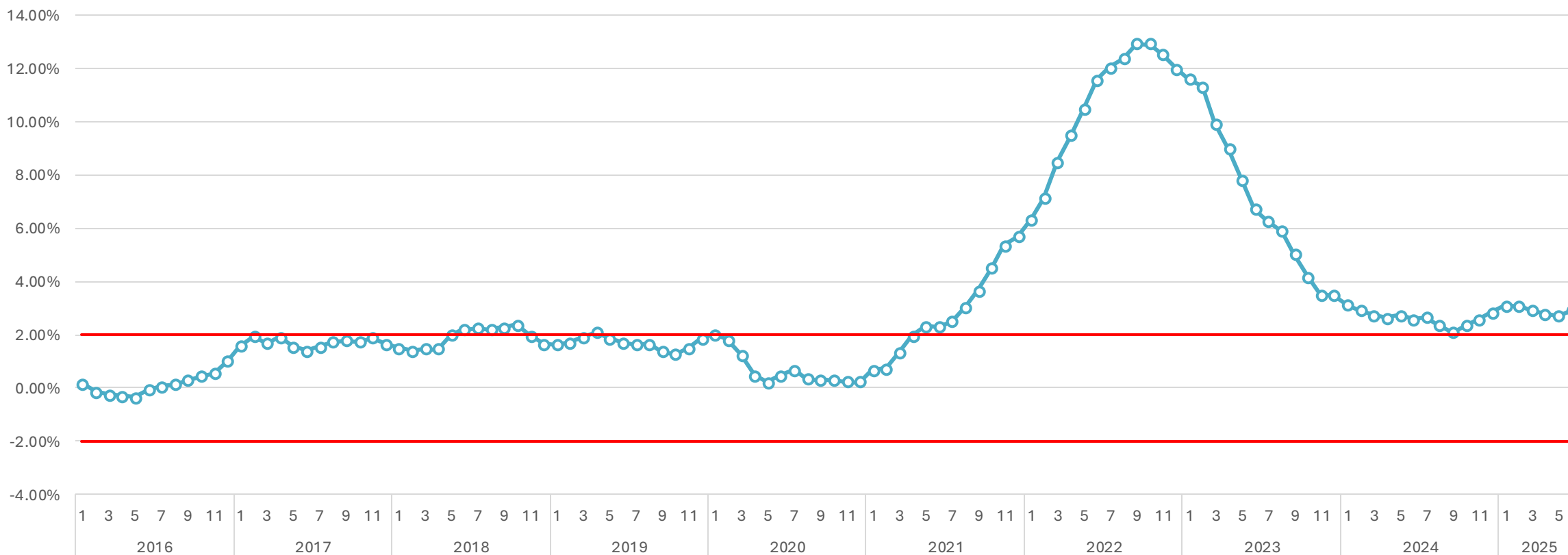
Why do they aim for 2% inflation?

An inflation rate of 2% ensures price stability and supports the ECB's goals by preventing deflation risks and maintaining effective monetary policy. It allows for smoother economic adjustments, prevents excessive unemployment, and addresses potential biases in price measurement.



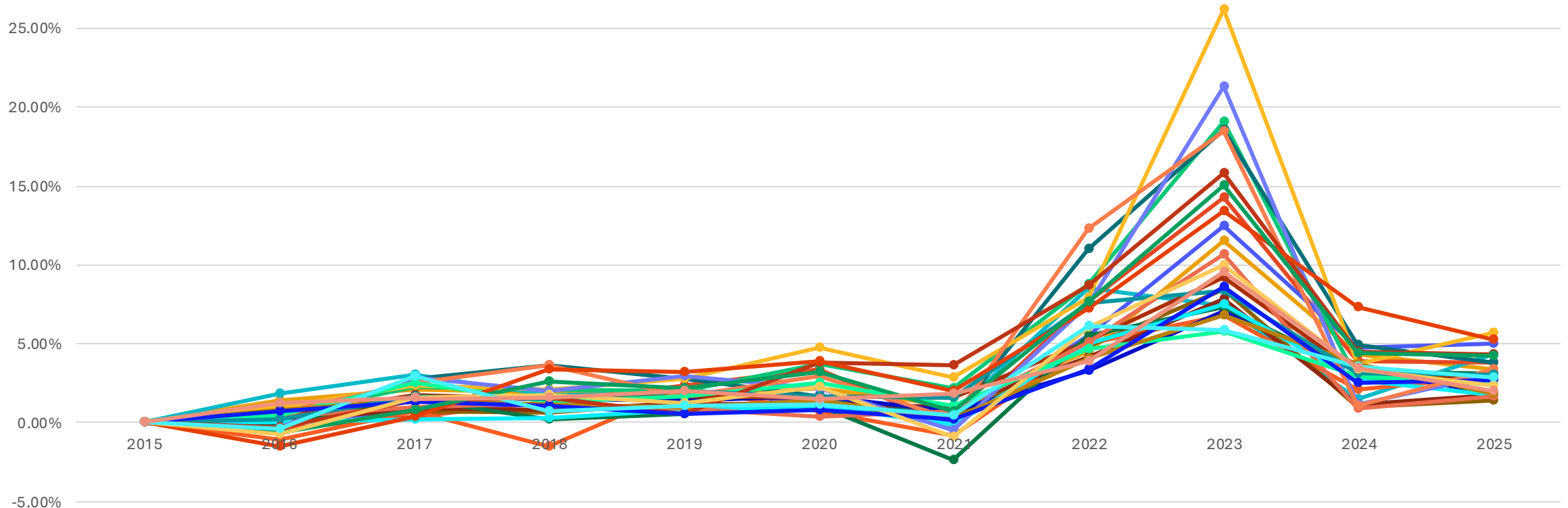
EU Year-on-year Average Inflation (All-Items)

The red lines indicate the $\pm 2\%$ inflation range targeted by the ECB. While short-term deviations from this range are acceptable, prolonged or significant departures can signal economic imbalances.



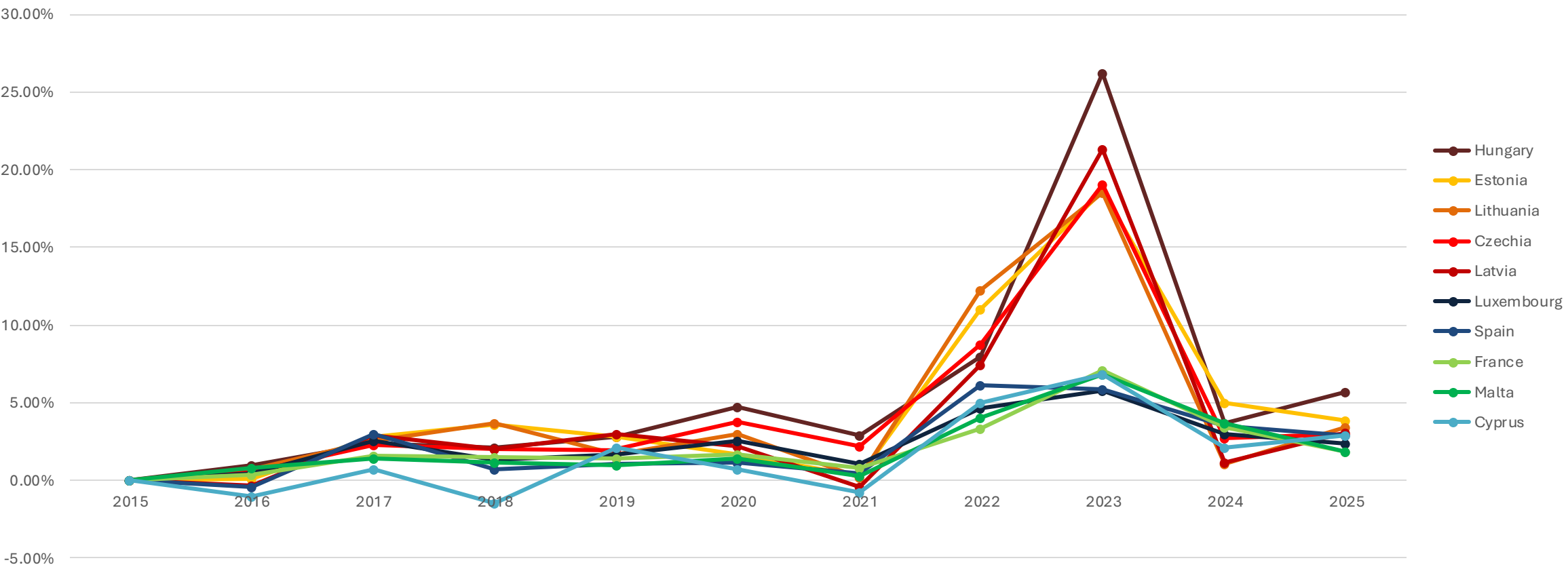
EU Annual Inflation Rate (January)

This chart shows the annual January inflation rates across all EU countries for the 'All-Items' category. A noticeable spike can be seen in the years following the COVID-19 pandemic across all countries.



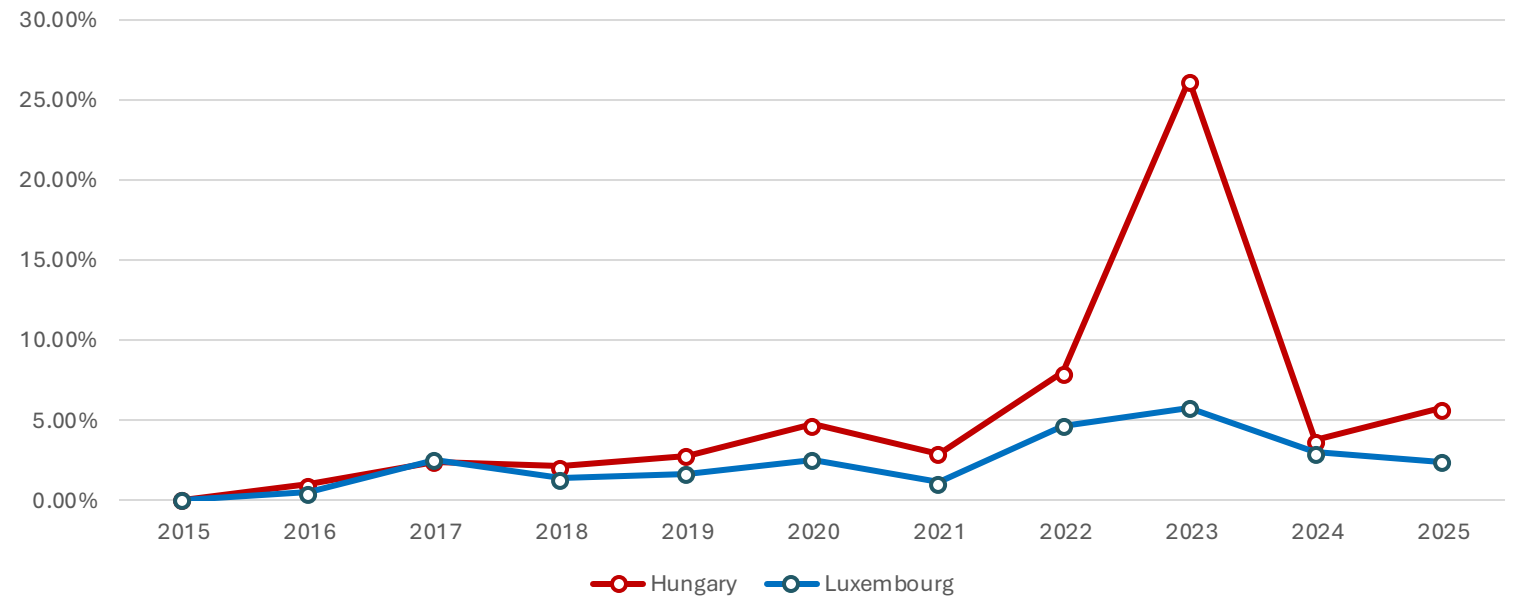
Top & Bottom 5 Performing Countries in 2023 (January)

This chart shows the significant difference in inflation between the highest and lowest performing countries, with the highest rate being approximately five times greater than the lowest.



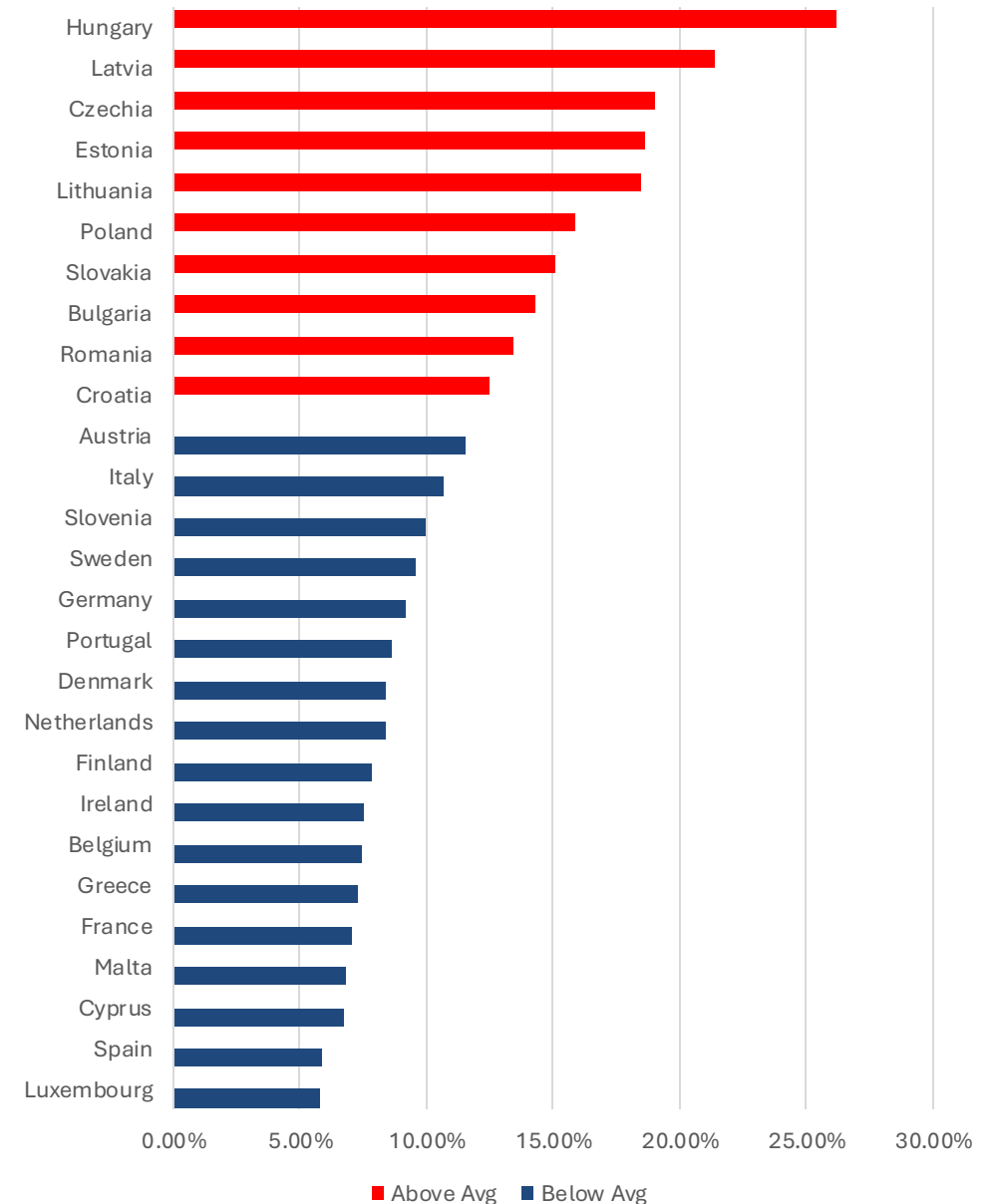
Top & Bottom Countries by Inflation in 2023

In January 2023, Hungary recorded an overall inflation increase of 26.20% compared to the previous year, while Luxembourg's increase was only 5.77%.



Annual Inflation (January) 2023

This chart shows the annual inflation rate for all EU countries in January 2023, compared to the same month in the previous year.



References

HICP Overview

https://ec.europa.eu/eurostat/cache/metadata/en/prc_hicp_esms.htm

GDP

https://en.wikipedia.org/wiki/Gross_domestic_product

https://ec.europa.eu/eurostat/statistics-explained/index.php?title=GDP_per_capita,_consumption_per_capita_and_price_level_indices

https://ec.europa.eu/eurostat/statistics-explained/index.php?title=National_accounts_and_GDP

https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOWORLD

<https://data.worldbank.org/indicator/NY.GDP.PCAP.CD>

<https://data.worldbank.org/indicator/NY.GDP.MKTP.CD>