Gauging (dis)inflationary pressures: comparing tools and current findings

The views expressed in this presentation are the ones of the presenter and do not necessarily reflect those of the ECB.
Monitoring inflation: available tools
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HICP inflation: recent developments in headline inflation and its sub-components

Inflation momentum for HICP and sub-components
(annual percentage change; annualised 3m-o-3m percentage change)

Sources: Eurostat and ECB calculations.
Note: Seasonally-adjusted data. NEIG: Non-Energy Industrial Goods. HICPX: HICP excluding food and energy.
Latest observation: January 2023 (flash).
Energy price changes spill over to other inflation components

Headline inflation
(annual percentage changes and percentage point contributions)

NEIG and services inflation
(annual percentage changes and percentage point contributions)

Sources: Eurostat and ECB staff calculations.
Latest observations: January 2023 (flash).

Note: Energy sensitive component based on items with a share of energy in direct costs above the average energy share across all NEIG/services items. Latest observation: December 2022.
A consistent signal of inflationary risks across many measures

**Indicators of underlying inflation**

**Permanent Exclusion Measures**
- HICPX
- HICPXX

**Temporary Exclusion Measures**
- Trimmed Mean (10%; 30%)

**Frequency Exclusion Measures**
- **PCCI**: uses a dynamic factor model to capture the persistent and common component of inflation rates across euro area countries and sub-items.
- **Supercore**: picks out those items that are deemed sensitive to slack

**Indicators of underlying inflation (annual percentage changes)**

Sources: Eurostat and ECB staff calculations. Latest observation: January 2023 (flash) for HICPX, December 2022 for the rest.
Drivers of inflation in the euro area

**Inflation Drivers Heatmap**

| Source: Eurostat, World Bank, SDW, Haver Analytics and ECB staff calculations. Notes: Red can be associated with the risk of high inflation, blue with the risk of low inflation, grey with no data. The colours have been assigned based on where each indicator lies in comparison to past readings starting 2018 (the historical distributions were split into 11 areas with equal empirical probabilities). Most of the variables are expressed in annual growth rates. The exceptions are PMIs, unemployment rate, the Global Supply Chain Pressure Index (GSCPI) from the NY Fed, negotiated wages, the wage tracker, Global economic conditions, EC Limits to production (insufficient demand), capacity of utilisation and labour shortages, where no transformation is applied. |
Despite the recent increase in inflation, longer-term expectations remain around 2%

**SPF inflation expectations profile**
(annual percentage changes)

**Aggregate probability distribution for SPF longer term inflation expectations**
(Probabilities)

Sources: Survey of Professional Forecasters (SPF), Eurostat
Latest observation: 2027.
Consumer inflation expectations are higher than professionals’ but slope downward

ECB consumer expectations survey
(annual percentage changes)

Distribution of consumer inflation expectations 3-year ahead
(percent of responses)

Source: ECB CES.
Note: Solid/dashed lines represent the median/mean.
Latest observations: December 2022.
How has the toolkit changed?
A more granular approach to modelling energy inflation

Energy commodity prices
(oil price in USD/barrel, gas and electricity price in EUR/MWh)

Energy inflation decomposition
(annual percentage changes; percentage point contributions)

Source: Refinitiv and ECB staff calculations.
Notes: Technical assumptions for energy commodity prices are based on futures prices averaged over the ten working days preceding the cut-off date. The cut-off date for assumptions of the December 2022 BMPE was 23 November 2022, latest futures refer to 24 January 2023.

Sources: Eurostat and ECB calculations.
Latest observations: December 2022
The nature of shocks and the sources of inflation persistence matter.

HICPX inflation — decomposition into supply and demand-driven contributions
(annual percentage changes and percentage point contributions)

Sources: Eurostat and ECB calculations.
Notes: Seasonally adjusted data. Decomposition based on Shapiro, A.H. (2022). HICPX inflation is the sum of demand-driven, supply-driven and ambiguous components, calculated as the trailing sum of the last 12 monthly contributions. The recent increase in the “ambiguous” component is due to the series “combined passenger transport” and can be linked to the end of the 9 euro ticket in Germany. While price data are available for December 2022, the latest observation is for November 2022 as the turnover series used as a proxy for activity are published with some delay. Latest observation: November 2022.

HICPX inflation — decomposition into wage-intensive and non-wage-intensive items
(annual percentage changes and percentage point contributions)

Sources: Eurostat and ECB staff calculations.
Note: HICPX wage sensitive items are a composite measure based on items with a share of wages in direct costs above 40%.
Latest observation: December 2022.
Enhanced sensitivity analysis for energy prices

**Synthetic energy commodity index**

(USD/barrel)

- Dec 22 BMPE
- Latest futures
- Dec 22 BMPE - 25th percentile
- Dec 22 BMPE - 75th percentile
- Dec 22 BMPE - constant

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**HICP inflation projections conditional on alternative synthetic energy index paths**

(y-o-y % change)

Sources: ECB calculations.

Note: The results are reported as averages of the standard elasticities from the Eurosystem macroeconomic projection models, the ECB-BASE model and the NAWM II model.

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Source: Refinitiv and ECB staff calculations.

Notes: Technical assumptions for energy commodity prices are based on futures prices averaged over the ten working days preceding the cut-off date. The cut-off date for assumptions of the December 2022 BMPE was 23 November 2022, latest futures refer to 24 January 2023.
Scenarios help decision makers when uncertainty is driven by uncertain future states of the world.

### Impact on real GDP growth
*(deviations from the December 2022 baseline projections, in percentage points)*

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<th>Downside scenario</th>
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<td>2023</td>
<td>2024</td>
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<tr>
<td>Real GDP</td>
<td>0.5</td>
<td>1.9</td>
</tr>
<tr>
<td>HICP</td>
<td>6.3</td>
<td>3.4</td>
</tr>
<tr>
<td>HICP excluding energy and food</td>
<td>4.2</td>
<td>2.8</td>
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Source: Eurosystem staff projections and ECB calculations. December 2022 Eurosystem staff projections article, Box 3.

### Impact on HICP inflation
*(deviations from the December 2022 baseline projections, in percentage points)*

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What do the tools suggest on sources of inflation going forward?
An updated model of pass-through of pipeline pressures

**PPI developments**
(annual percentage changes)

- Energy
- Consumer durables
- Consumer non-durables
- Capital goods
- Intermediate goods


**IPPI for Food and NEIG**
(annual percentage changes)

- IPPI for food (PPI to Dec22)
- IPPI for NEIG (PPI to Dec22)

Source: ECB estimates. Notes: Shaded area shows the 95% confidence interval for the IPI. Computed based on G.Koester, I.Rubene, E. Gonçalves and J. Nordeman (2021), Economic Bulletin Issue 5, Box 7. Latest observation: 2023Q3 for the December NIPE and the IPPI. IPPI is based on the latest actual PPI data until November 2022; Food and NEIG HICP for 2022Q4 refer to the December outcome.
A wage tracker based on granular information helps to monitor 2\textsuperscript{nd} round effects

**Rubric**

**Sources:**
- Eurostat, ECB, national sources. See note RHS chart for ECB wage tracker. The difference between the ECB wage tracker and negotiated wage growth series in 2022 is mostly due to different series of negotiated wage growth for France, with the ECB euro-area tracker using wage growth in sectoral negotiations in France (see: https://webstat.banque-france.fr/en/#/node/5385335). For data on Indeed wage trackers see: https://github.com/hiring-lab/indeed-wage-tracker.
- Latest observation: November 2022 for negotiated wages (excluding NL), 22Q4 for the wage trackers.

**Notes:**
- EA aggregate based on ES, IT, GR, AT, DE, NL and FR.

**Sources:**
- Calculated based on micro data on wage agreements provided by Bundesbank, Banco de España, the Dutch employer association (AWVN), Oesterreichische Nationalbank, Bank of Greece, Banca d’Italia and Banque de France. Data for FR based on an updated version of: Gautier, E. (2022): “Negotiated wage rises for 2022: the results so far”. Notes: EA aggregate based on ES, IT, GR, AT, DE, NL and FR.
Fiscal energy measures reduce inflation but increase it once removed

**Euro area budget support in response to high energy prices and inflation**

- December 2022 Eurosystem staff projections
- September 2022 ECB staff projections

**Impact of discretionary fiscal measures on inflation outlook**
(percentage points)

- Total impact of discretionary fiscal policy measures

Sources: ECB calculations and staff macroeconomic projections

Source: ECB calculations based on structured questionnaire of Working Group of Forecasting
Notes: The bars show the impact of all discretionary fiscal measures included in the December 2022 BMPE baseline.
Thank you!