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European Business Cycle Indicators

Selling price expectations and headline inflation

3rd Quarter 2024

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European Commission
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European Business Cycle Indicators

3rd Quarter 2024

Special topic

Selling price expectations and headline inflation

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EUROPEAN ECONOMY Technical Paper 075

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OVERVIEW

Developments in survey indicators over the third quarter of 2024

- Continuing the flat trend of the first half of 2024, the EU and euro-area (EA) **Economic Sentiment Indicators** moved broadly sideways over the third quarter, below their long-term average of 100. The ESI edged up by 0.3 points to 96.7 for the EU, and by 0.2 points to 96.2 for the EA.

- After a period of broad stagnation between Autumn 2023 and mid-2024, the EU/EA **Employment Expectations Indicator** edged lower in the third quarter of 2024. In September, the indicator stood 0.4 (EU)/0.3 (EA) points below its June reading. However, a low point was reached in July, after which the indicator recovered in both areas.

- **Confidence** improved among consumers and was slightly up in construction over the third quarter of 2024. Confidence worsened somewhat in industry, while remaining stable in services and retail trade.

- **Economic sentiment improved in two of the largest six EU economies**, namely The Netherlands (+1.2) and Spain (+4.9). In France (-0.1), Italy (+0.3) and Poland (+0.5), the indicator remained broadly unchanged from June to September, while it decreased significantly in Germany (-2.8). The level of economic sentiment is significantly below long-term average in Germany and moderately below in France, while close to long-term average in Italy and the Netherlands. In Spain and Poland, sentiment remains above long-term average.

- The EU/EA **Economic Uncertainty Indicator** remained broadly stable over the third quarter. From a sectoral perspective, perceived uncertainty continued to decrease in industry. However, uncertainty increased between June and September in retail trade and construction. It remained broadly stable in services and among consumers.

- In July, **capacity utilisation** in industry continued its steady downward trend observed since spring 2022, decreasing by 0.8 (EU) / 1.2 (EA) percentage points compared to April, and stood at 77.9% and 77.7% respectively. Capacity utilisation in services increased marginally in both the EU (+0.2 pps) and EA (+0.3 pps) and stood at 90.4% in both the EU and the EA by the end of July.

- In July, the share of industry managers indicating **insufficient demand** as a factor limiting their production increased further in the EU. The share of managers indicating a **shortage of labour force** decreased further, but remained relatively high. The share of managers pointing to financial constraints as a limiting production factor remained comparatively low.

- **Consumers' quarterly quantitative perceptions of price developments** over the past 12 months eased for the fifth quarter in a row. Their **quantitative price expectations** for the next 12 months edged down as well. Despite the continued decline, beliefs about inflation remain very high.

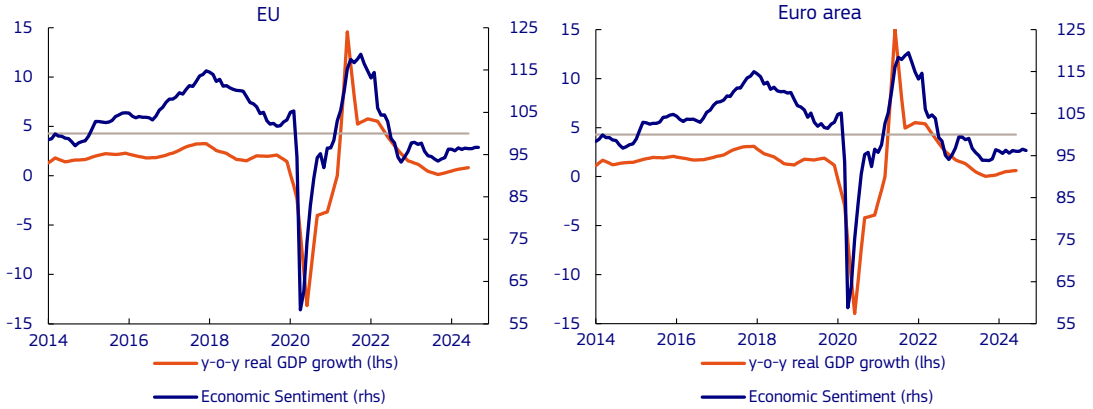
Special topic: Selling price expectations and headline inflation

This special topic investigates the extent to which selling price expectations (SPE) from the harmonised EU programme of business surveys contain leading information for forecasting short-term developments in the Harmonised Index of Consumer Prices (HICP). The analysis is based on a comprehensive econometric investigation into the relationship between selling price expectations and consumer price inflation over different time horizons, forecast models and inflation concepts, across sectors and on aggregate. The models exhibit fairly small forecast errors, despite the fact that they are solely based on SPE data. Starting from the estimated HICP inflation for the euro area in September 2024 (1.8%), forecasts for HICP inflation for the next six months (i.e. October 2024 to March 2025) point to a temporary increase in October 2024 to 2% or above. Thereafter the forecast shows a mild downward trajectory up to January 2025 and a stabilisation at levels below 2% at the end of the forecast horizon.

1. RECENT DEVELOPMENTS IN SURVEY INDICATORS IN EU AND EA

Continuing the flat trend in the first half of 2024, the EU and euro-area (EA) **Economic Sentiment Indicators (ESI)** moved broadly sideways over the third quarter, below their long-term average of 100. Between June and September, the ESI increased by 0.3 points to 96.7 for the EU and by 0.2 points to 96.2 for the EA (see Graph 1.1).

Graph 1.1: **Economic Sentiment Indicator**

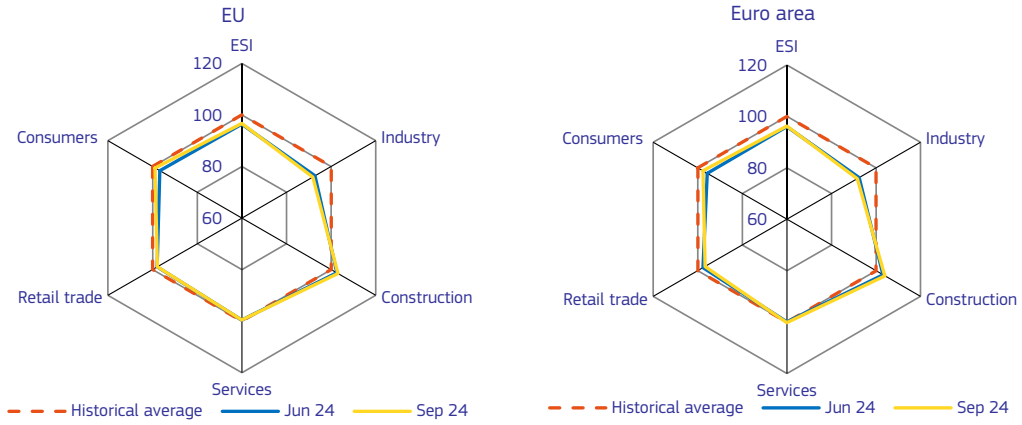


(1) The horizontal line (rhs) marks the long-term average of the survey indicators. Confidence indicators are expressed in balances of opinion and hard data in y-o-y changes. If necessary, monthly frequency is obtained by linear interpolation of quarterly data.

Source: European Commission.

From a sectoral perspective, EU confidence improved among consumers, and was slightly up in construction over the third quarter of 2024. Confidence worsened somewhat in industry, while remaining stable in services and retail trade (see Graph 1.2). Developments in the EA were broadly in line with those in the EU, with the exceptions that confidence in construction improved slightly more and worsened marginally in retail trade. In September, confidence remained above the long-term average in construction in both areas, while it remained low by historical standards in industry and below the average in retail trade. Consumer confidence continued to move closer to its average level, whereas services confidence was broadly in line with average readings.

Graph 1.2: **Radar Charts**



(1) A development away from the centre reflects an improvement of a given indicator. The ESI is computed with the following sector weights: industry 40%, services 30%, consumers 20%, construction 5%, retail trade 5%. Series are normalised to a mean of 100 and a standard deviation of 10. Historical averages are generally calculated from 2000q1. For more information on the radar charts see the Special Topic in the 2016q1 EBCI.

Source: European Commission.

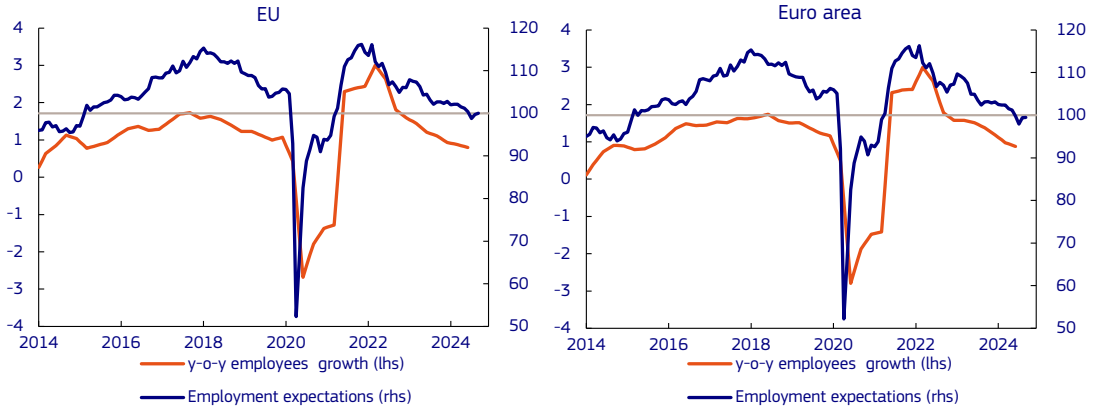
In the third quarter, economic sentiment improved in two of the largest six EU economies, namely The Netherlands (+1.2) and Spain (+4.9). In France (-0.1), Italy (+0.3) and Poland (+0.5), the indicator remained

broadly unchanged from June to September, while it decreased significantly in Germany (-2.8). The level of economic sentiment is significantly below the long-term average in Germany and moderately below in France, while it is close to its long-term average in Italy and the Netherlands. In Spain and Poland, sentiment remains above its long-term average.

Contrary to the steady ESI, the **HCOB Flash Eurozone Composite PMI Output Index** weakened over the quarter, declining by 1.3 points compared to its June reading. The fall in the PMI happened between August and September, when it fell to 49.6 points, below the critical 50-points threshold, separating positive and negative growth. Contrary to the ESI, PMI does not include consumer, construction, and retail trade data, and is based on a different set of questions. ([1])

After a period of broad stagnation between Autumn 2023 and mid-2024, the EU/EA **Employment Expectations Indicator (EEI)** edged lower in the third quarter of 2024 (see Graph 1.3). In September, the indicator stood 0.4 (EU)/0.3 (EA) points below its June reading. However, a low point was reached in July, after which the indicator recovered in both areas. In September the Indicator stood at its long-term average in the EU and only slightly below it in the euro area. At the sector level, employment expectations improved in construction, while they deteriorated in industry. Employment expectations in services and retail trade were broadly stable.

Graph 1.3: **Employment expectations indicator**



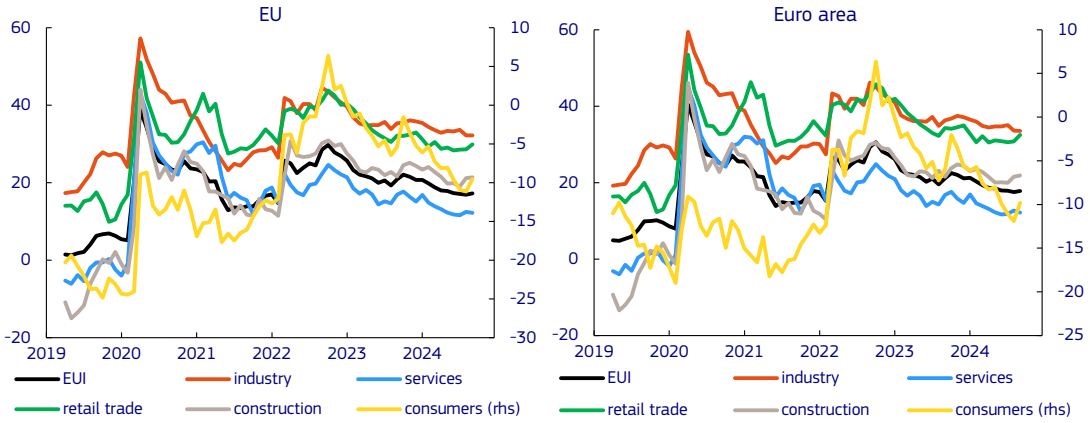
Source: European Commission.

The EU/EA **Economic Uncertainty Indicator (EUI) ([2])** remained broadly stable over the third quarter, with its September reading -0.1 (EU) / -0.2 (EA) points below its June recording. From a sectoral perspective, perceived uncertainty continued to decrease in industry in the third quarter. However, uncertainty increased between June and September in retail and construction. Moreover, there was a significant uptick in uncertainty between August and September among consumers, offsetting the improvements recorded in the first two months of the quarter. Uncertainty remained broadly stable in services (see Graph 1.4).

([1]) Contradictory signals from the EA ESI and the eurozone PMI can also occur due to differences in their geographic coverage. For a systematic comparison of the two indicators, see the special topic in the 2017-Q2 EBCI..

([2]) See the special topic of the 2021-Q3 EBCI for background, and section 3.6 of the BCS User Guide for methodological details.

Graph 1.4: **Uncertainty**



Source: European Commission.

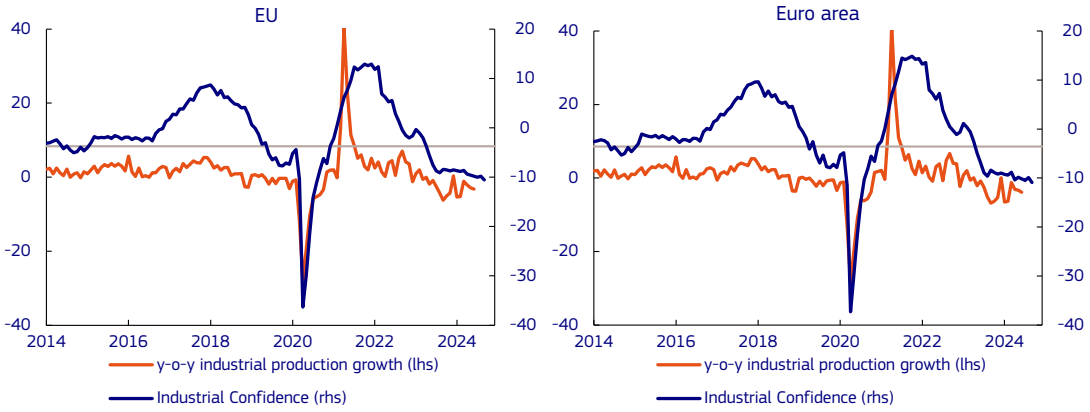
Sector developments

Industry confidence continued its descent from the second quarter by dropping 0.8 points (EU) and 0.7 points (EA) in the third quarter, falling further below its long-term average (see Graph 1.5).

Zooming in on the components of industrial confidence, managers' assessment of their **order books** deteriorated significantly over the quarter. Managers' **production expectations** improved, but not enough to offset the deterioration in order books. Managers' assessment of **stocks of finished products** remained broadly stable.

Of the components not included in the confidence indicator, managers' appraisals of **changes in production over the past 3 months** remained broadly stable, while their assessments of the **current export order books** deteriorated significantly.

Graph 1.5: **Industry Confidence indicator**



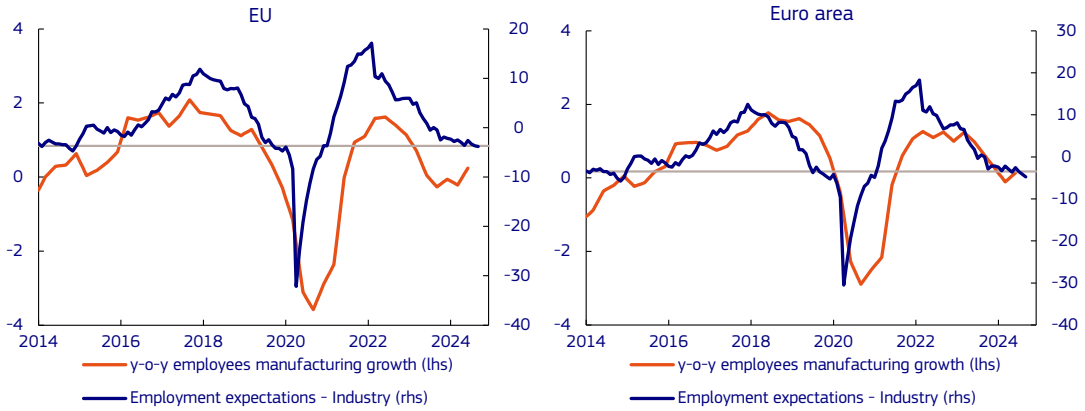
Source: European Commission.

Industry managers' **employment expectations** (see Graph 1.6) deteriorated over the third quarter (-1.2 in the EU and -2.3 in the EA). Manager's **selling price expectations** increased marginally in the EU, while remaining broadly stable in the euro area over the quarter (+0.6 in the EU, +0.1 in the EA), staying 1.1 (EU) and 1.6 (EA) points below their respective historical means.

Industry confidence decreased mainly in one of the six largest EU economies, namely Germany (-5.8), while it remained broadly stable in France (+0.3), Italy (-0.7) and the Netherlands (-0.3), and increased in Spain (+5.1)

and Poland (+1.6) Except for Spain, where confidence is above the historical average, industry confidence is weak by historical standards, particularly in Germany.

Graph 1.6: **Employment expectations in Industry**

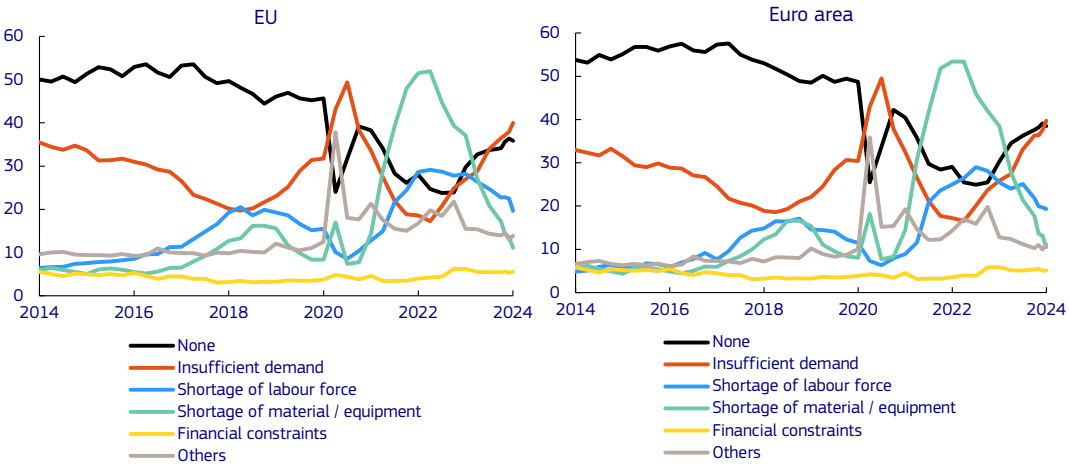


Source: European Commission.

According to the quarterly manufacturing survey (carried out in July), **capacity utilisation** continued its steady downward trend observed since spring 2022, decreasing by another 0.8 (EU) / 1.2 (EA) percentage points compared to April. At 77.9% (EU) / 77.7% (EA), the indicator is below its long-term average of 80.6% (EU) / 80.7% (EA).

The share of industry managers indicating insufficient demand as a **factor limiting their production** increased further in July in the EU (see Graph 1.7). This was the nineth consecutive quarter with faltering demand in the EU (+2.0 percentage points (pps.) compared to April, to 40.0%) and likewise in the EA (+2.1 pps. to 39.7%). Meanwhile, the percentage of managers pointing to shortages of material and/or equipment as a factor limiting production decreased further from the record-high level of early 2022 (-2.5 percentage points compared to April to 11.1%). The share of managers indicating a shortage of labour force as a limiting factor decreased further (-2.9 percentage points to 19.6%), while remaining relatively high. The share of managers pointing to financial constraints as a limiting production factor remained comparatively low (5.6%) and was broadly stable (+0.3 points) compared to April.

Graph 1.7: **Industry – Factors limiting production (in %)**

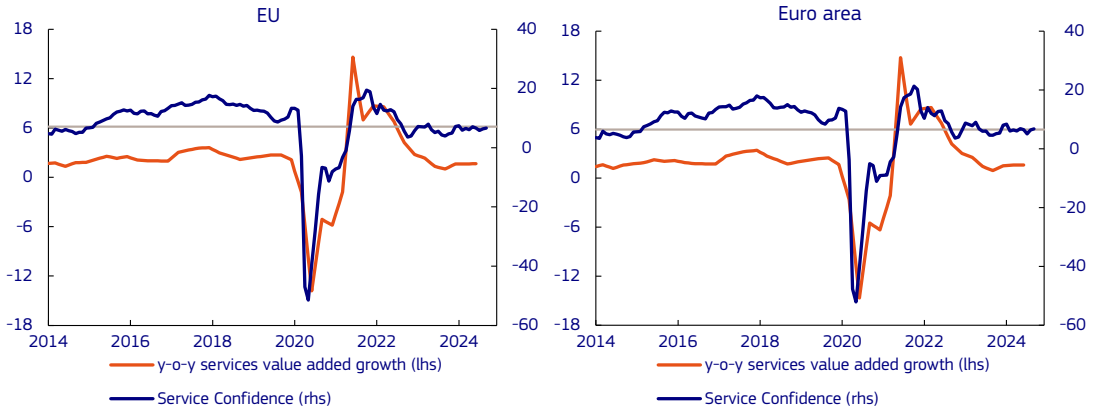


Source: European Commission.

Services confidence continued to move sideways and was virtually unchanged over the third quarter (±0.0 pps. in the EU / +0.2 in the EA). The indicator remains roughly in line with its long-term average in both regions (see Graph 1.8).

For the components of services confidence, the stable trend over the quarter reflects managers' broadly stable assessment of the **past business situation**, while their assessments of **past demand** deteriorated, but these were offset by their more positive **demand expectations**.

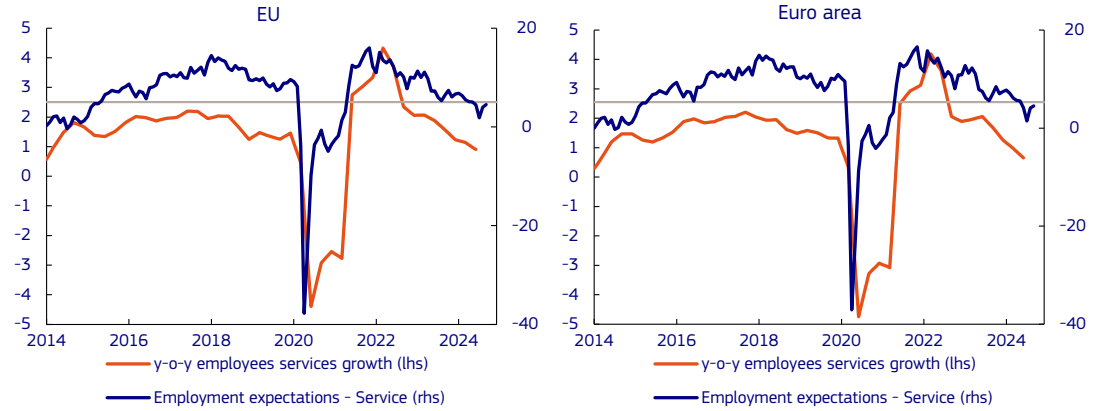
Graph 1.8: **Services Confidence indicator**



Source: European Commission.

Compared to their June level, **employment expectations in services** were broadly unchanged in both the EU (+0.1) and the EA (+0.3), standing slightly below their long-term average (see Graph 1.9). However, this relative stability does not account for a dip in employment expectations that took place in July. While remaining at historically high levels, managers' **selling price expectations** decreased further over the quarter, by 1.6 points in the EU and by 1.7 points in the EA.

Graph 1.9: **Employment expectations in services**



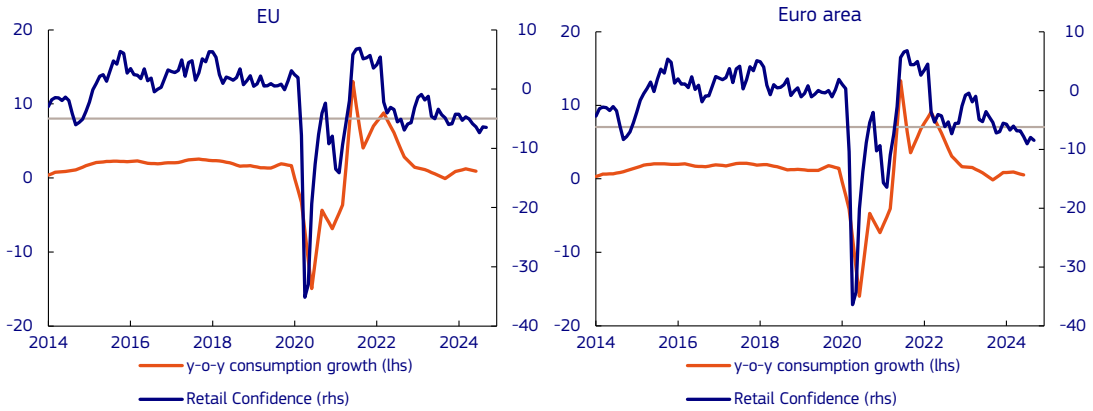
Source: European Commission.

Among the six largest EU economies, services confidence increased only in Italy (+2.6). The other five Member States recorded a deterioration in services confidence: France (-3.0), Germany (-0.7), the Netherlands (-1.1) Poland (-1.3) and Spain (-2.3). Confidence levels remained above their respective long-term averages in Italy and Spain, at the average in the Netherlands, and registered below in Germany, France and Poland.

In July compared to April, **capacity utilisation in services** increased marginally in both the EU (+0.2 pps) and EA (+0.3 pps). At 90.4% in both the EU and the EA, capacity utilisation edged further above its long-term average of around 89¼ %.

Following a weak downward trend that started in early 2023, **retail trade confidence** remained broadly stable in the EU (-0.1) over the third quarter, while it slightly weakened further in the EA (-0.7). The two confidence indicators stood 1.5 and 2.3 points below their respective long-term average (see Graph 1.10).

Graph 1.10:**Retail Trade Confidence indicator**



Source: European Commission.

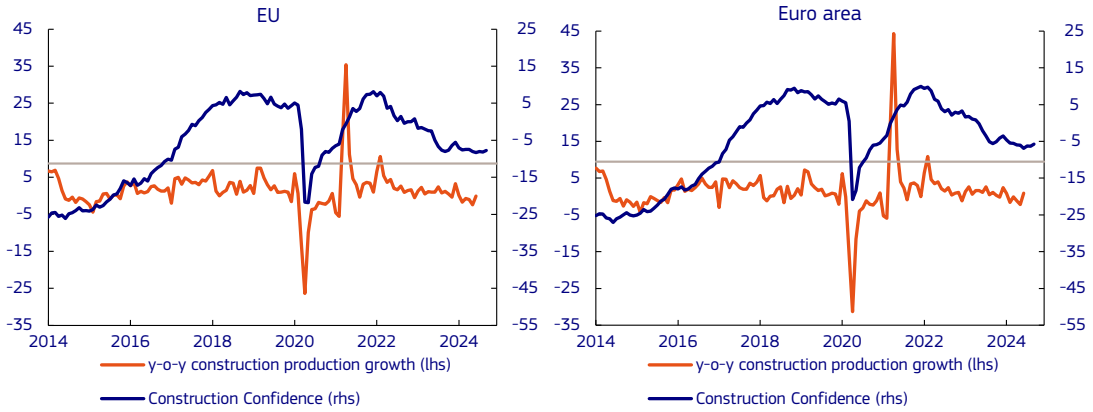
In both areas, retailers' assessments of the **past business situation** and the **volume of stocks** worsened. However, their assessment of the future business situation improved, neutralising the negative assessments of the past and present in the EU and partially offsetting them in the EA.

At the level of the six largest EU economies, retailers' confidence fell in German (-3.5) and improved in four countries, namely Italy (+0.8), the Netherlands (+1.8), Poland (-1.1) and Spain (+1.0). Retail confidence was broadly stable in France (-0.3) over the third quarter.

Construction confidence recovered slightly over the third quarter of 2024 (EU: +0.6, EA: +1.1 compared to June). The two indicators remained comfortably above their respective long-term averages (see Graph 1.11).

In both the EU and the EA, builders continued to provide a more negative assessment of **order books**, but this was more than compensated by their upbeat **employment expectations**, which increased by 2.8 points in both the EU and the EA.

Graph 1.11:**Construction Confidence indicator**



Source: European Commission.

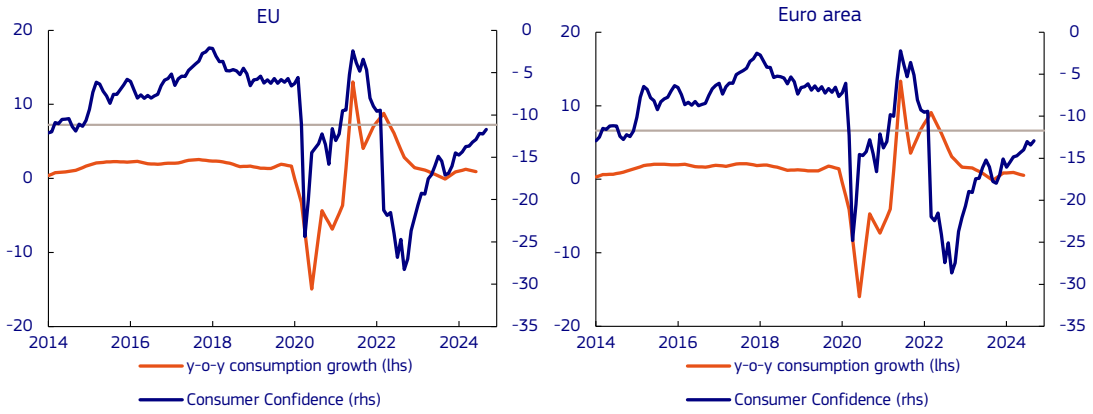
Remaining broadly stable, **insufficient demand** was the most prevalent **factor limiting building activity**, cited by 30.9% (EU) / 31.4% (EA) of construction managers in September. It was followed by **shortage of labour,** which has worsened since June (+1.2 (EU) / +2.2 (EA) pps.) and remained a wide-spread concern (EU: 26.4%, EA: 24.2%). The share of builders identifying **material and/or equipment** as factors limiting production remained broadly stable (+0.3 (EU) and ±0.0 (EA) pps. from June to September) at 6.4% in the EU and 3.7% in the EA. The percentage of managers reporting **financial constraints** as limiting factors increased slightly in the EU to 8.4%, but remained almost unchanged in the EA at 7.3%.

Among the largest EU economies, construction confidence recovered strongly in Spain (+8.2) ([3]) after a sharp fall in the previous quarter. Construction confidence also improved in Germany (+1.8) the Netherlands (+3.3), while it worsened in France (-2.2), Italy (-2.1) and Poland (-0.4).

Consumer confidence improved further between June and September 2024, increasing by 1.2 points in the EU and by 1.1 points in the EA. At -11.7 (EU) and -12.9 (EA) points, consumer confidence only falls slightly short of its long-term average (see Graph 1.12).

All components of the consumer confidence indicator improved over the third quarter. The strongest contribution to rising confidence came from consumers' improved expectations of their **country's general economic situation**. This was followed by a pick-up in households' assessment of their **past** and **future financial situation**. Finally, somewhat less pronounced, consumers expressed higher **intentions to make major purchases**.

Graph 1.12:**Consumer Confidence indicator**



Source: European Commission.

Consumer confidence improved in four of the six largest EU economies, most so in the Netherlands (+4.4) and, to a lesser extent, in France (+2.9), Italy (+1.6) and Spain (+1.8). In Germany (-1.1) and Poland (-2.5), the indicator slipped.

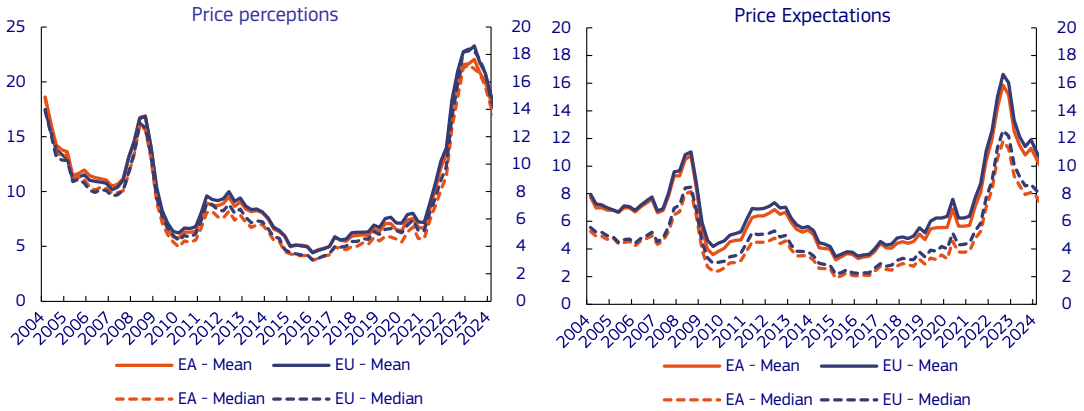
In the EU and the EA, **consumers' quarterly quantitative perceptions of price developments** (change over the past 12 months, in %) eased for the fifth quarter in a row, both in terms of their arithmetic mean and their median (which is less sensitive to the presence of extreme values). Despite the long-standing decline, price perceptions remained exceptionally high (see Graph 1.13). ([4]) **Quantitative price expectations** (change over the next 12 months, in %), edged down as well. The results at total level were mirrored across all income, education and age groups, as well as among both men and women.

The detailed results among the different socio-economic breakdowns can be downloaded from the European Commission's website.

([3]) The Spanish construction confidence indicator has a comparatively high month-to-month volatility.

([4]) For more information on the quantitative inflation perceptions and expectations, see the special topic in the EBCI 2019Q1.

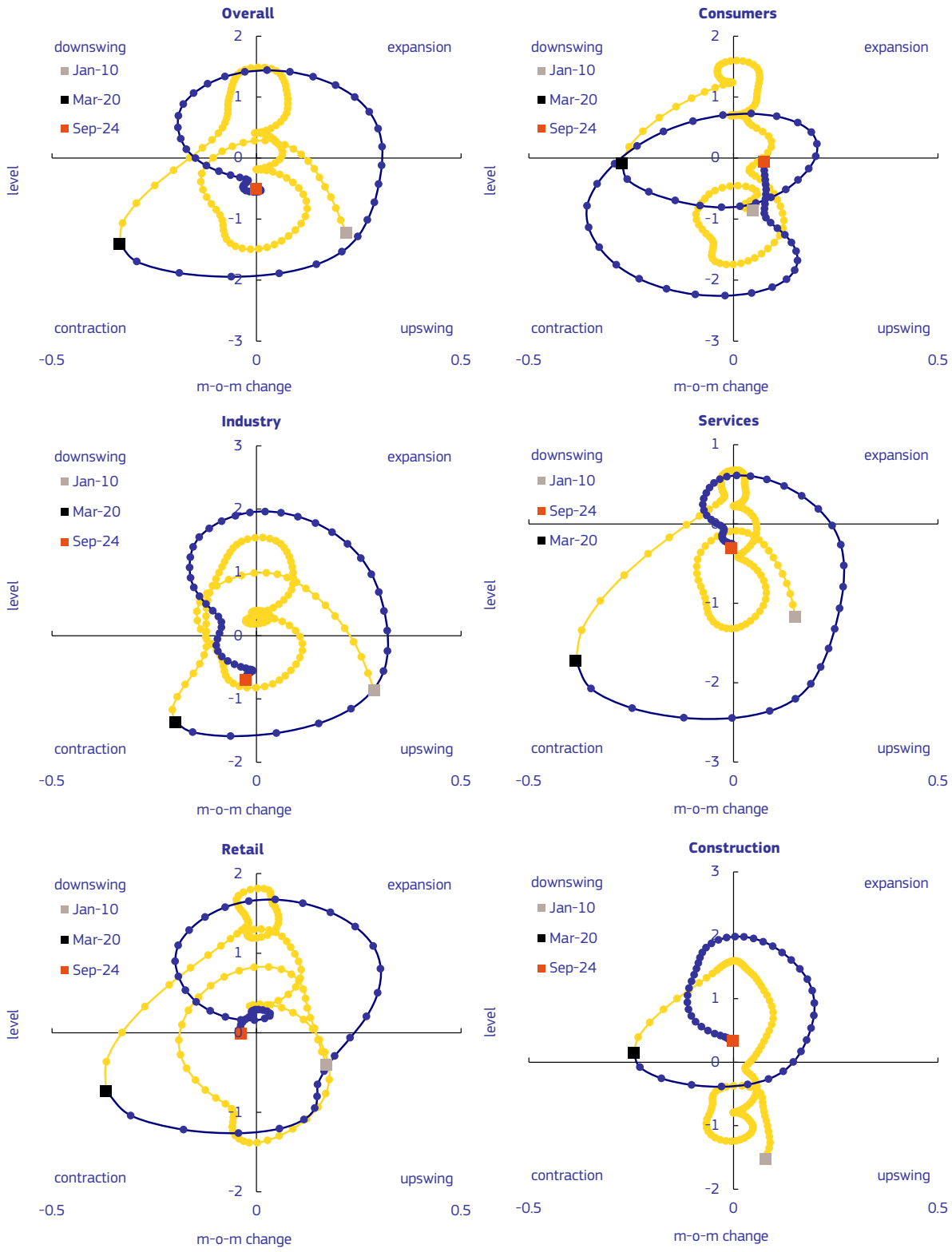
Graph 1.13:**Euro area and EU quantitative consumer price perceptions and expectations**



Source: European Commission.

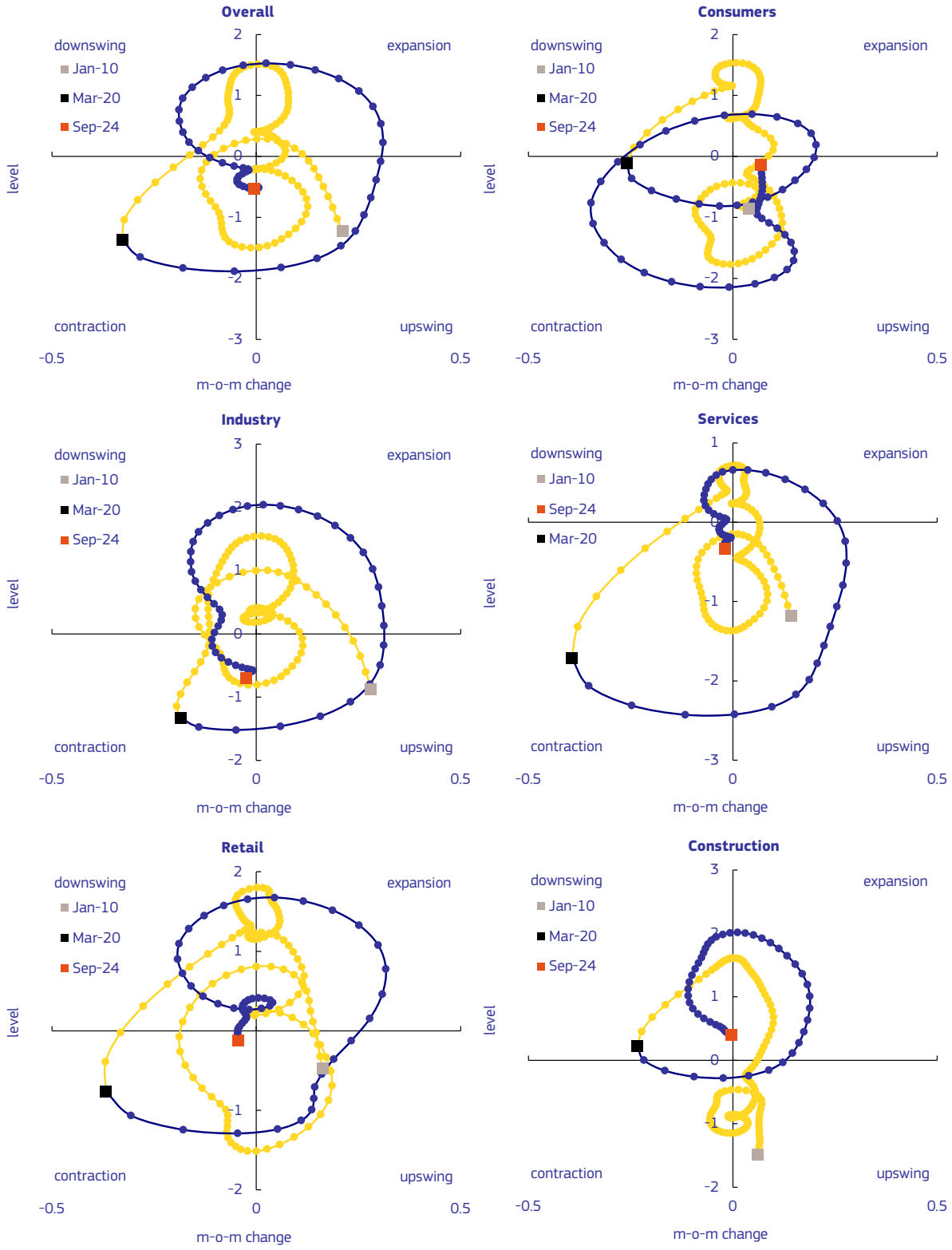
Stable economic sentiment in 2024-Q3, as captured by the ESI, also shows in the **climate tracers** for the EU and EA (see Annex for details). Both stagnated at the border between the contraction and the upswing quadrants (see Graphs 1.14 and 1.15). Developments in the sectoral EU/EA confidence indicators broadly reflect the sectoral climate tracers: both industry and services tracers remain close to the border between the contraction area and the upswing quadrant, although industry is taking small steps deeper into the contraction quadrant. The consumer tracer remained in the upswing area moving towards the expansion quadrant. The construction tracer stayed in the downswing area but moved closer to the expansion quadrant in both the EU and the EA. During the third quarter of 2024, the EA retail trade tracer crossed over from the downswing quadrant to the contraction area, while remaining at the border for the EU.

Graph 1.14:**Economic climate tracers across sectors – EU**



Source: European Commission.

Graph 1.15:**Economic climate tracers across sectors – Euro area**



Source: European Commission.

2. RECENT DEVELOPMENTS IN SURVEY INDICATORS IN SELECTED MEMBER STATES

Germany

The **German** ESI worsened by 2.8 points in September compared to June. At 89.3 points, the indicator moved further below its long-term average of 100 (see Graph 2.1). After a short spell in the upswing quarter, the German climate tracer moved back into the contraction area, pointing towards deeper contraction (see Graph 2.2).

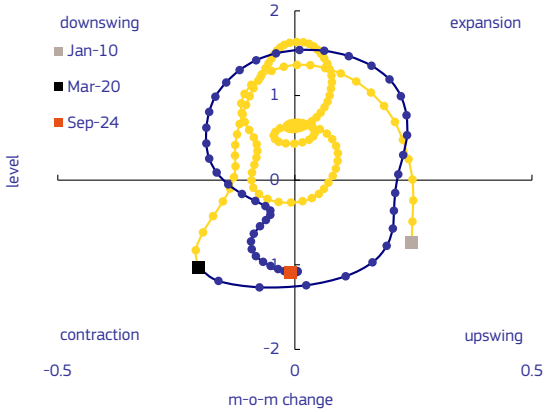
In line with the ESI, the Employment Expectations Indicator (EEI) declined significantly over the third quarter (-4.2 points compared to June, to 92.7), standing far below its long-term average. The decline was due to much more gloomy employment plans among industry managers, but employment plans deteriorated also in services and retail. This deterioration in employment plans was only partially offset by improved plans in construction.

Graph 2.1: **Economic Sentiment indicator for Germany**

Source: European Commission.

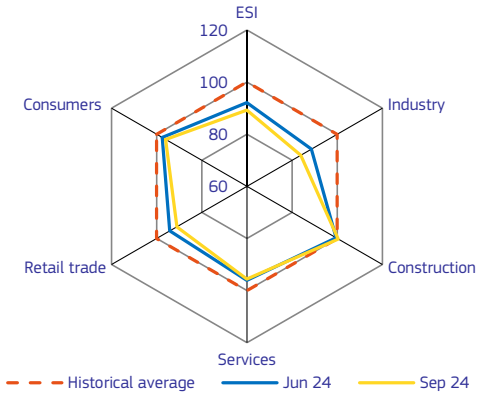
As shown in the radar chart (see Graph 2.3), confidence deteriorated in all sectors, except construction. The decline in confidence was particularly strong in industry and retail. The fall was less pronounced among consumers and services. The level of confidence remains below the historical average in all surveyed sectors, except construction, which moved above its average during the third quarter of 2024.

Graph 2.2: **Climate Tracer for Germany**



Source: European Commission.

Graph 2.3: **Radar chart for Germany**



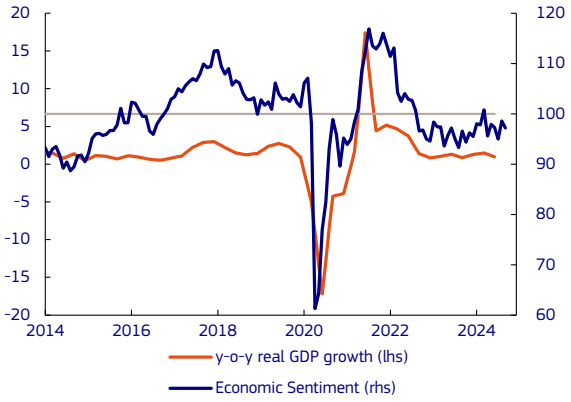
Source: European Commission.

France

The **French** ESI remained broadly stable (-0.1 points) in September compared to June. At 97.2 points in September, the indicator continued to move broadly sideways, somewhat below its long-term average of 100 (see Graph 2.4). In line with the ESI, the French climate tracer moved very little and remained in the contraction area, but close to the neutral intersection between the four possible states of the business cycle (see Graph 2.5).

The Employment Expectations Indicator (EEI) remained unchanged (±0.0 points compared to June) as improved employment plans among managers in retail trade, were counterbalanced by worsening employment expectations among managers in industry and, to a lesser extent, services and construction.

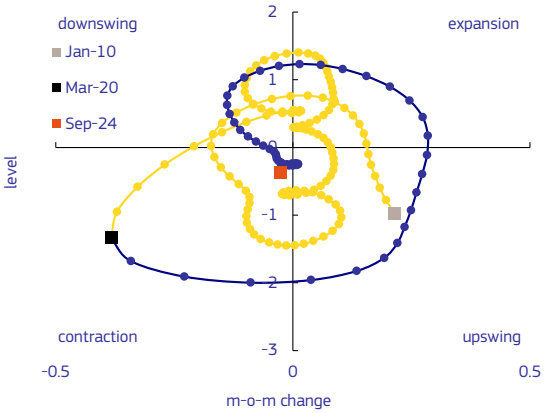
Graph 2.4: **Economic Sentiment indicator for France**



Source: European Commission.

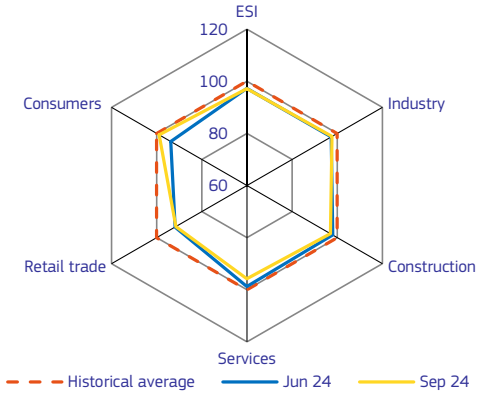
As shown in the radar chart (see Graph 2.6), confidence dropped in services and construction, while it picked up markedly among French consumers. Confidence in industry and retail was broadly stable over the third quarter. The level of confidence is below the historical averages in all surveyed sectors.

Graph 2.5: **Climate Tracer for France**



Source: European Commission.

Graph 2.6: **Radar chart for France**



Source: European Commission.

Italy

Oscillating around its long-term average of 100 since December 2023, the **Italian** ESI was broadly stable compared to June. The indicator stood just above its average at 100.2 points (see Graph 2.7). In line with these observations, the Italian climate tracer remained close to the neutral intersection between the four possible states of the business cycle (see Graph 2.8).

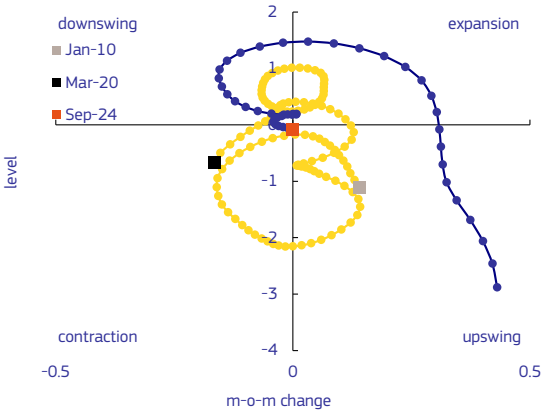
Despite confidence being flat, the Italian EEI increased by 1.5 points over the quarter to 105.7, ascending further above its long-term average of 100. The increase in the EEI reflects improved employment plans in services and retail trade, and, to a lesser extent, in industry. The increase was moderated by a deterioration in employment plans in construction.

Graph 2.7: **Economic Sentiment Indicator for Italy**

Source: European Commission.

As shown in the Italian radar chart (see Graph 2.9), confidence dropped in construction, while it improved in services and among consumers. Confidence in industry and retail remained broadly stable. The levels of the indicators remained high by historical standards in construction, retail trade and services, while falling short of their long-term averages in industry and among consumers.

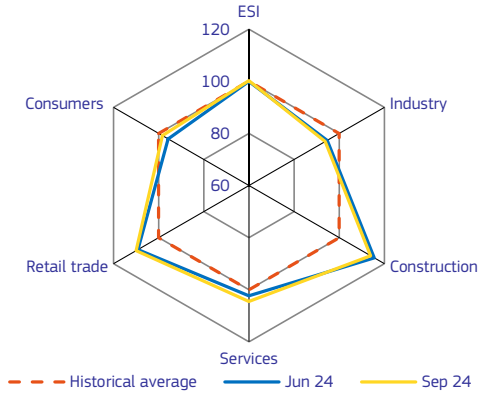
Graph 2.8: **Climate Tracer for Italy**



(1) Due to a missing value for April 2020, the climate tracer for Italy is interrupted between March and May 2020.

Source: European Commission.

Graph 2.9: **Radar chart for Italy**



Source: European Commission.

Spain

The **Spanish** ESI saw a sharp increase (+4.9 points) between June and September. At 107.3, the indicator stood well above its long-term average of 100 (see Graph 2.10). Accordingly, the Spanish climate tracer remained in the expansion quadrant (see Graph 2.11).

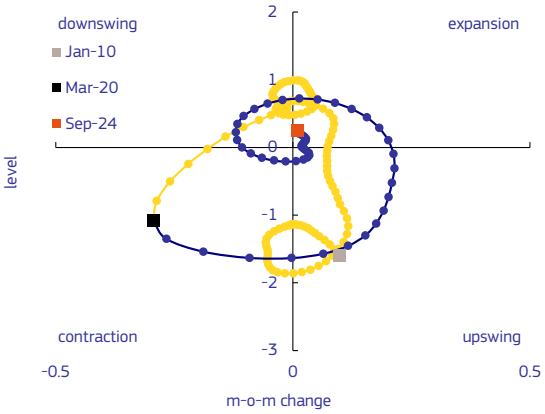
The Spanish EEI, however, dipped (-1.5) slightly further in September compared to June, but remained at a level (105.4 points) above its long-term average. Worsening expectations in services and, to a lesser extent, industry and retail trade were partially offset by a rebound in employment expectations in construction.

As shown in the radar chart (see Graph 2.12), confidence improved among consumers and in all business sectors, except services. Industry and construction recorded the strongest improvements, followed by increasing confidence among consumers and retailers. The drop in confidence in services was moderate over the third quarter. Thus, confidence still exceeds long-term averages in all surveyed business sectors, and among consumers.

Graph 2.10:**Economic Sentiment Indicator for Spain**

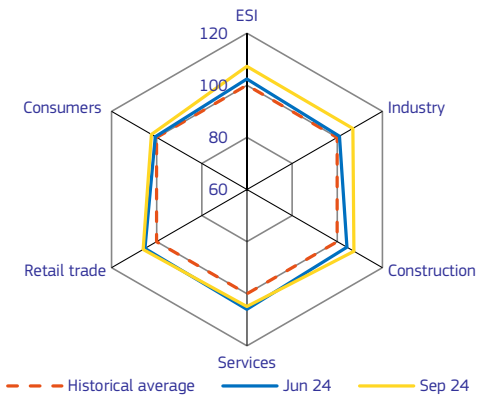
Source: European Commission.

Graph 2.11:**Climate Tracer for Spain**



Source: European Commission.

Graph 2.12:**Radar chart for Spain**



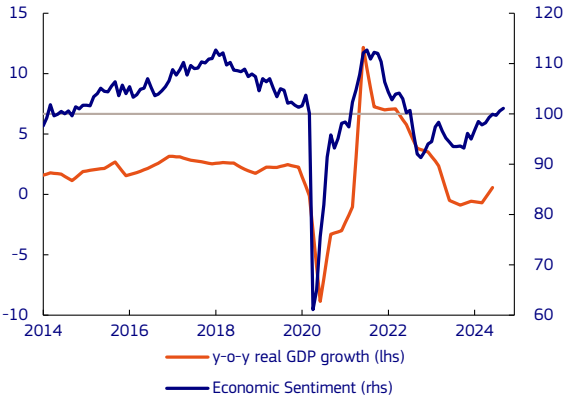
Source: European Commission.

The Netherlands

The ESI for the **Netherlands** improved by 1.2 points between June and September, continuing the upward trend that started at the beginning of 2024. At 101.1 points, the confidence indicator moved above its long-term average (see Graph 2.13). The Dutch climate tracer remained in the upswing quadrant, moving towards the expansion area (see Graph 2.14).

In line with improving economic sentiment, the EEI for the Netherlands increased during the third quarter (+1.9). At 103.1 points, the indicator stood above its long-term average with a margin. Employment plans strengthened significantly in services and construction, while they were broadly stable in industry and retail trade.

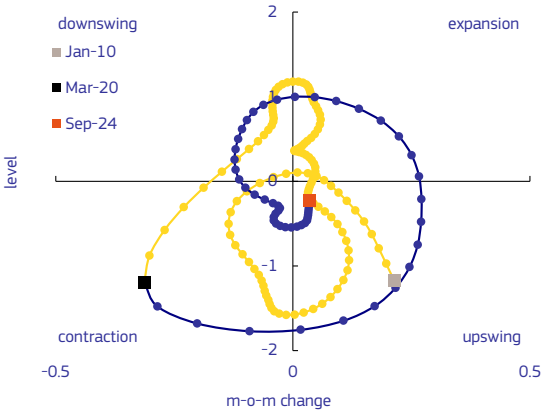
Graph 2.13:**Economic Sentiment Indicator for the Netherlands**



Source: European Commission.

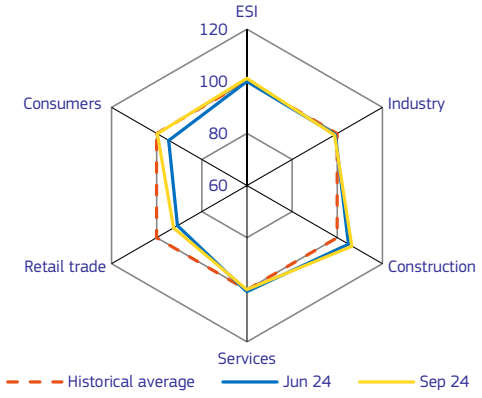
As shown in the radar chart (see Graph 2.15), confidence increased in retail trade, construction and among consumers, while it declined slightly in services. Confidence among managers in industry remained broadly stable. Compared to historical averages, confidence remained elevated in construction, while remaining below long-term average particularly in retail trade.

Graph 2.14:**Climate Tracer for the Netherlands**



Source: European Commission.

Graph 2.15:**Radar chart for the Netherlands**



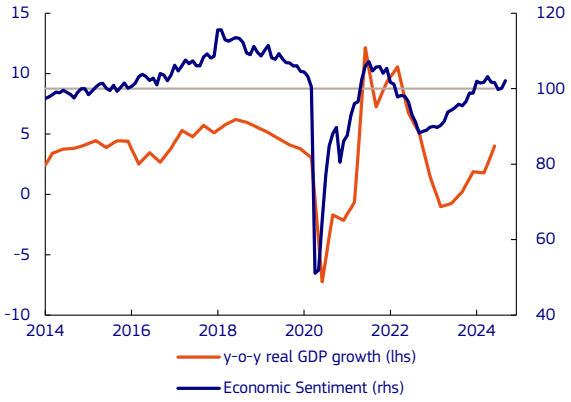
Source: European Commission.

Poland

Compared to June, the ESI for **Poland** remained broadly stable (+0.5). Since January 2024, the indicator is seemingly moving sideways, hovering just above the long-term average of 100. In September the indicator stood at 102.1. (see Graph 2.16). The Polish climate tracer stayed close to the neutral intersection between the four possible states of the business cycle (see Graph 2.17).

The Polish EEI improved, ending the third quarter of 2024 at 100.6 points, 2.0 points above its June level and a notch above its long-term average of 100. Employment plans improved in industry and, slightly less so, in services. Managers' employment plans in construction were broadly stable over the third quarter, while retail trade was the only sector to record a slight worsening.

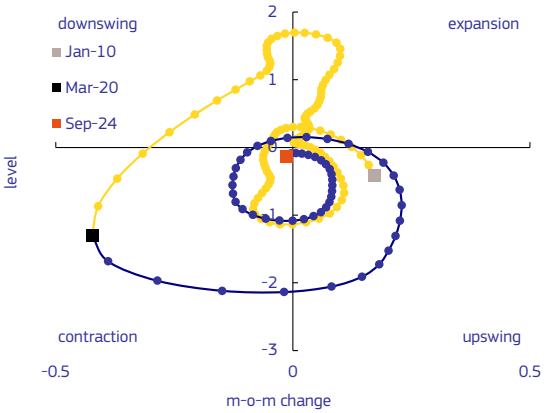
Graph 2.16:**Economic Sentiment Indicator for Poland**



Source: European Commission.

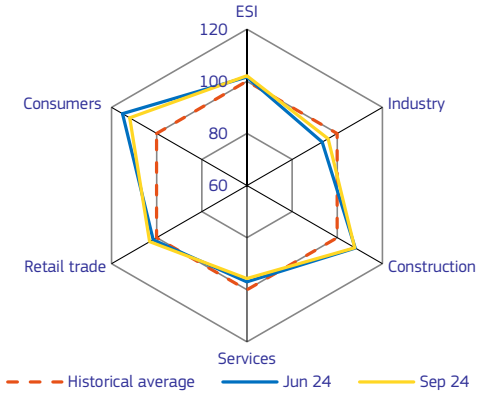
As shown in the radar chart (see Graph 2.18), confidence improved in industry and retail trade, while it deteriorated in services and among consumers. Confidence in the construction sector remained broadly stable. Confidence exceeded historical averages among consumers and in construction and retail trade, while remining below in industry and services.

Graph 2.17:**Climate Tracer for Poland**



Source: European Commission.

Graph 2.18:**Radar chart for Poland**



Source: European Commission.

3. SPECIAL TOPIC: SELLING PRICE EXPECTATIONS AND HEADLINE INFLATION

Firms play a key role in shaping price dynamics, but could their assessments of their firm's selling prices in the near future provide insights into inflation trends? The harmonised questionnaires for all business surveys (i.e., manufacturing, services, retail trade and construction) include the following question for business managers: "How do you expect your selling prices to change over the next 3 months? They will: (1) increase, (2) remain unchanged, (3) decrease." This special topic investigates the extent to which managers' replies to this question provide leading information for forecasting short term developments in the Harmonised Index of Consumer Prices (HICP). The analysis is based on a comprehensive econometric investigation into the relationship between selling price expectations (SPE) and consumer price inflation over different time horizons, forecast models and inflation concepts, across sectors and on aggregate.([5]) Solely based on selling price expectations data, forecasts for euro-area HICP inflation for the next six months (i.e. October 2024 to March 2025) point to a temporary increase in October 2024 to 2% or above (following the 1.8% estimated in September 2024). Thereafter the forecast shows a mild downward trajectory up to January 2025 and a stabilisation at levels below 2% at the end of the forecast horizon.

Recent studies show that business surveys from the EU harmonised programme offer valuable leading information that can enhance the accuracy of inflation forecasts. Using recent advances in computational statistics, Huber, Onorante and Pfarrhofer (2024) show that including a wide range of firms' and consumers' appraisals about future economic developments in their regressions improves inflation forecasts and the assessment of tail risks to inflation. The European Central Bank (ECB 2024) focuses on the information content of selling price expectations in the services sector, showing their usefulness in predicting turning points in services HICP inflation and improving three-month-ahead inflation forecasts, particularly during the recent inflation surge. In general, for the purposes of predicting inflation, the BCS selling price expectations appear valuable for two main reasons:

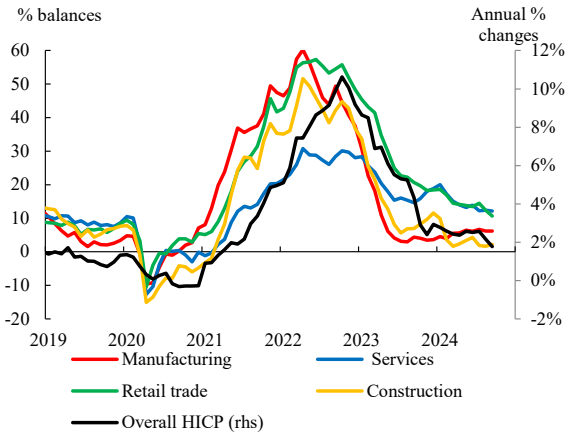
- they provide forward-looking Information: unlike historical price data, which reflect past economic conditions, selling price expectations offer insights into the future pricing behaviour of firms.

- they offer sectoral Insights: The available sectoral disaggregations of the survey data allow for a better understanding of inflation dynamics across different parts of the economy. Naturally, only a subset of goods produced, and services provided by firms, that are covered by the business surveys (i.e. NACE-2 divisions of manufacturing C, services H-S, building F and retail G) directly enter the consumer price basket. Conversely, there are goods and services in the HICP consumer basket that are not covered by the business surveys of the BCS programme (e.g. most energy-related goods, but also services such as hospital services and education). Moreover, some of the goods and services in the HICP basket may not be produced/provided by domestic businesses, as they may be imported from abroad. While the match between SPE and HICP is not perfect, it appears sufficiently close to justify exploring the SPE dataset with the goal of shedding light on consumer price pressures.

([5]) This Special Topic presents the main results from an analysis presented at the 37th CIRET Conference in Vienna in September 2024.

A visual inspection of the evolution of monthly HICP inflation and selling price expectations reveals a significant correlation([6]) (see Graph 3.1). However, the correlation appears to have weakened as major shocks (COVID-19 pandemic, supply-side bottlenecks, energy and food commodity price shocks) increased inflation volatility and pushed it to historical highs. As the shocks wore off and inflation started moderating in late 2022, outsized base effects began distorting the profile of annual inflation, again increasing volatility unrelated to current price developments. For this reason, the European Commission (2024)([7]) examined the predictive power of the surveys against momentum of price changes, measured as the 3-month-on-3-month percentage change of the HICP series rather than annual HICP inflation. The analysis highlighted that the correlation changed over time and that SPEs in some subsectors display a higher correlation with the measure of price momentum than others. For example, within industry, SPEs from the main industrial grouping (MIG) producing "consumer goods" are more correlated with price momentumn for non-energy industrial goods and processed food than the other MIGs (investment and intermediate goods). More recently, as base effects are fading, the variations in HICP inflation are once again well correlated with SPEs. Moreover, the analysis found that the correlation increased as SPE information was lagged by a few months in some subsectors such as services, while in other cases – such as retail trade - coincident correlations are stronger.

Graph 3.1: **Selling price expectations and overall HICP inflation**



Source: European Commission.

Econometric analysis

The econometric analysis aims to determine the optimal combination of inflation predictors from the rich set of SPE indicators. The analysis relies on more than 20 years of monthly data on managers' selling price expectations, from January 2004 to September 2024, across 69 economic activities (2-digit NACE divisions) for 19 euro-area countries.([8]), ([9]) Given the complexity of the selling price expectations-inflation relationship, a simple or weighted average of sectoral SPEs is not an optimal indicator to now-/forecast the HICP. The analysis thus takes a granular look at the full dataset of selling price expectations, exploiting the detailed SPE information by sub-sectors. Also, the models test the use of alternative metrics for the dependent variable – i.e. consumer price inflation - namely:

- Annual rates of inflation - annual rate of change of the HICP series (neither seasonally nor calendar adjusted)
- Momentum in price change: 3m-o-3m change in the seasonally and calendar-adjusted HICP series.

([6]) See also evidence shown in European Business Cycle Indicators - First Quarter 2023.

([7]) European Business Cycle Indicators - First Quarter 2024.

([8]) Ireland is not included in the analysis because the survey for Ireland was discontinued in February 2023. Since July 2024, a new institute is conducting the surveys. However, these data will only be included once enough data points are available to check the consistency with previous data.

([9]) The focus of the analysis on the euro area is justified by the fact that Eurostat releases advance flash monthly inflation estimates for the euro area at the end of each month. The EU aggregate is updated with a lag of 2-3 weeks after the euro-area flash. Moreover, euro-area inflation is under the control of one single monetary policy. The inflation rate for the EU remains a heterogenous aggregate where intra-EU exchange rate movements play a role in price formation. Finally, "official" seasonally adjusted HICP series, which are used in the 3-month-on-3-month percentage change (momentum) calculations, are published by the ECB only for the euro-area aggregate.

- The two above metrics are expressed both as aggregate indices and in terms of the HICP's 4 major components (food, industrial goods, energy, and services), that are later aggregated up to the headline HICP using standard weights.

Several alternative models are formulated, each with a distinct combination of predictors, and their out-of-sample performance in forecasting inflation is compared. Following the literature on forecasting with large sets of predictors([10]), two approaches are adopted to formulating these models in a simple regression context: a first approach selects specific variables from the set of predictors, while the second one estimates factors, which are specific combinations of predictors (as extracted by the Scaled Principal Component Analysis (SPCA) and Partial Least Squares (PLS) models), using basic factor analysis.([11]) All models are estimated using elastic net regression([12]), which allows mitigating the impact of high correlation among predictors and implicitly selecting the most relevant ones. In essence, the selected models comprise linear regression models with regularized coefficients, optimized for out-of-sample performance([13]). Recognising the observed problem of instability of the postulated relationships, the model performance is evaluated using rolling window cross-validation([14]), with windows of different lengths within the period January 2010 – September 2024,([15]) and lagging the SPE data by as much as 12 months. In addition, three distinct information sets are explored to forecast inflation at period t + h, namely h months ahead: SPE data from the latest month (information set 1), from the four latest months (information set 2), and from all twelve past months (information set 3).

([10]) Z. Wang, Z. Zhu and C Yu, 'Variable Selection in Macroeconomic Forecasting with Many Predictors', Econometrics and Statistics, 2023, https://doi.org/10.1016/j.ecosta.2023.01.003, J. H. Stock, M W. Watson, Forecasting with Many Predictors, Editor(s): G. Elliott, C.W.J. Granger, A. Timmermann, Handbook of Economic Forecasting, Elsevier, https://doi.org/10.1016/S1574-0706(05)01010-4.

([11]) For a tutorial on factor analysis using scaled PCA, see D. Huang, F. Jiang , K. Li, G. Tong, G. Zhou, 'Scaled PCA: A New Approach to Dimension Reduction', Management Science, 2021, https://doi.org/10.1287/mnsc.2021.4020. For an alternative factor analysis using partial least squares methodology see P. Geladi and B, Kowalski, 'Partial Least Squares: A tutorial', Analytica Chimica Acta, 1986, https://doi.org/10.1016/0003-2670(86)80028-9. For a relevant application of PLS in nowcasting quarterly GDP by the European Commission, see: European Business Cycle Indicators, 2018, European Economy, Technical Paper 025, European Commission, http://ec.europa.eu/info/business-economy-euro/indicators-statistics/economic-databases/business-and-consumer-surveys_en

([12]) H. Zou, T. Hastie, 'Regularization and variable selection via the elastic net' Journal of the Royal Statistical Society. Series B (Statistical Methodology), 67 (2) (2005), pp. 301-320

([13]) The model specification takes the form: y(t+h) = c0 + c1*f1(SPE(t,t-1,..)) + …+ ck*fk(SPE(t,t-1,..)) + ε(t+h), where, y(t+h) represents the target variable at time t+h, SPE(t,t-1,..) denotes the information set comprising SPE indicators up to time t, f1(.),..fk(.) represents appropriate transformations of this information, which may include current values, past lags, squared terms, and extracted factors (i.e. principal components), c0, c1, …, ck are the regularized coefficients, and ε(t+h) is the error term at time t+h.

([14]) The process is built in the econometric software Eviews 13 used for the current analysis.

([15]) The analysis examines four distinct periods, each with a unique turning point in the inflation trajectory, and each with a different starting observation and a common (latest available) end observation: (a) the recent disinflationary period (2023m7-2024m9), spanning 15 months; (b) the period starting shortly before the inflation peak (2022m7-2024m9), covering 27 months; (c) the period starting shortly before the recent inflation increase (2020m7-2024m9), encompassing 51 months; and (d) a longer period that includes the less volatile pre-crisis era (2017m1-2024m9), covering 93 months.

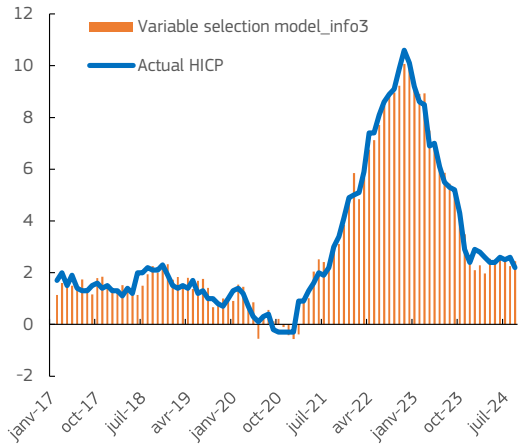
Results

This section summarises the main findings([16]) of the analysis.

What is the performance of alternative SPE-based models in forecasting HICP inflation?

In terms of forecast accuracy, as measured by the root mean square forecast error relative to the standard deviation of the target variable (annual inflation rates),([17]) the variable selection models generally outperform specific linear combinations of SPE indicators, which form distinct factors. Moreover, among the variable selection models, information set 3 (see Graph 3.2), which incorporates all monthly lags over the past year, yields the most accurate forecasts, suggesting that expectations formed over the last twelve months contain valuable information for future inflation.

Graph 3.2: **One-month ahead forecast with the minimum RMSE models versus actual HICP inflation (year-on-year % changes)**

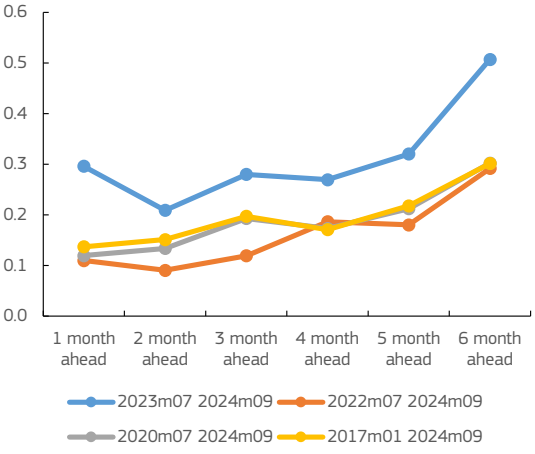


Sources: European Commission and authors' calculations.

At what forecast horizons do SPE data exhibit the greatest predictive power?

Over the full observation period of 93 months, relative forecast accuracy appears to evolve in line with the forecast horizon, with one-month-ahead forecasts being the most accurate and six-month-ahead forecasts the least accurate (see Graph 3.3). Forecast accuracy remains broadly unchanged up to the four-month-ahead forecast and then worsens slightly for the five-month-ahead forecast and markedly for the six-month-ahead forecast. Moreover, looking at more recent periods, the two-month-ahead forecasts gain accuracy and outperform the one-month-ahead forecasts. The period covering the recent disinflationary period (2023m7-2024m9) exhibits higher relative forecast errors, partly due to the lower variance of the target variable (a denominator effect).

Graph 3.3: **Minimum Relative RMSE across horizons for different test periods**



Source: Authors' calculations.

Which economic sectors contribute most to forecasting inflation, and at which lags?

In all sectors of the economy, SPE appear to have forecast ability. The best models select SPE indicators from all sectors. However, the indicators from the services sector are selected with lags spread out over a longer period of time (lags up to 12 months), while from the industry sector the indicators are selected with shorter lags (up to 6 months). For some sub-sectors, managers SPE are selected at very long lags that correspond to expectations of 12 to 16 months ahead. Across the key industrial subsectors, SPE in "other manufacturing", "beverages" and "textiles" were identified to contribute with lags up to six months. Among services, SPE in "office administration/support", "advertising", "warehousing", and "accommodation" were detected to contribute with lags throughout the 15 months. In retail, managers' assessments in "all retail except motor

([16]) For a complete overview of the results see analysis presented at the 37th CIRET Conference in Vienna in September 2024.

([17]) These results were confirmed also by the correlation coefficient analysis between the HICP realisation and forecast.

vehicles" were selected with generally short lags. In building, expectations in "specialised construction activities" contributed with medium-term lags (5 to 9 months).

Is information in SPE data more relevant to forecast inflation momentum or annual inflation?

A comparison of relative root mean square error (RMSE) reveals that SPE data yield more accurate forecasts for annual inflation than for momentum inflation, consistently across all horizons and model versions. This is also confirmed by examining the correlation of forecasts and realisations, which serves as an alternative forecast performance metric.

Are there differences in the forecasting ability of SPE data across the various components of HICP inflation?

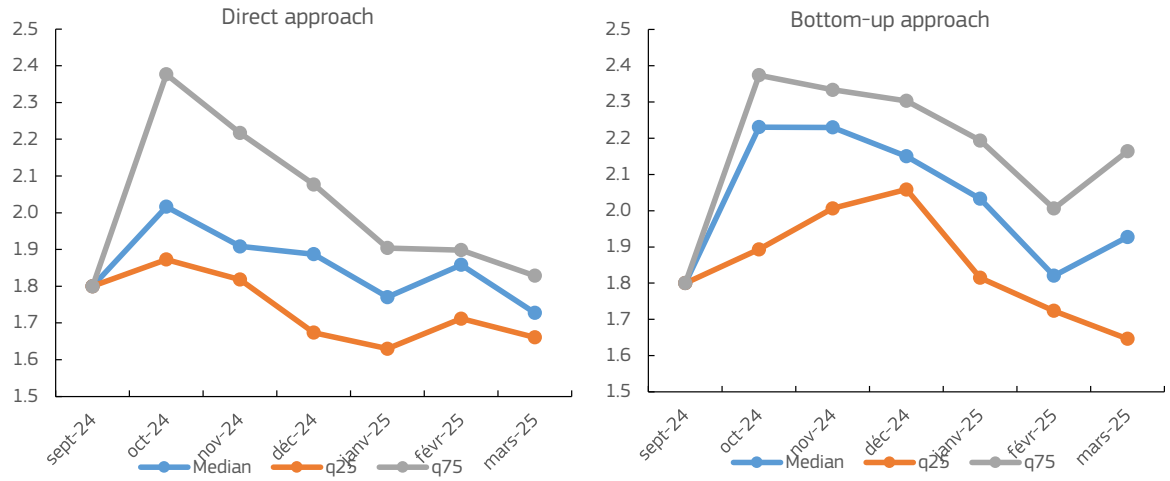
Comparing the relative RMSEs of models forecasting the headline inflation measure directly and bottom-up forecasts based on forecasts for the four inflation components, the bottom-up approach seems broadly as accurate as the direct in general, although the latter displays slightly higher accuracy throughout the most recent period. This is despite some HICP components (such as "food" and "energy") being forecast less accurately than headline inflation. This suggests that the bottom-up inflation forecast is benefitting from some offsetting between individual component forecast errors ("forecast pooling" effect).

What are the forecasts for headline inflation for the next six months?

Starting from the estimated HICP inflation for the euro area in September 2024 (1.8%) and relying solely on SPE data, direct forecasts for HICP inflation for the next six months (i.e. October 2024 to March 2025), point to a temporary increase in October 2024 towards 2%. Thereafter the forecast shows a mild downward trajectory up to January 2025 and a stabilisation at levels below 2% in February and March 2025 (see Graph 3.4).

The bottom-up forecasts calculated by the weighted average of the individual HICP components of "services", "food", "non-energy industrial goods" and "energy" point to a higher increase than the direct forecasts, with the median forecast remaining above 2% until January 2025. After that, HICP inflation is set to remain slightly below the 2% ECB target in February and March 2025. According to unreported results for the individual HICP components, the hump-shaped trajectory during the first part of the forecast horizon is mainly driven by the "food" and "non-energy-industrial goods" components, while the forecast for services inflation exhibits a downward trajectory.

Graph 3.4: **Median and 25th and 75th percentile of point forecast distribution for HICP inflation across all models and information sets, for horizons 1 to 6 ahead (i.e., for the period October 2024 to March 2025)**



Source: Authors' calculations.

Conclusions

In conclusion, this special topic highlights that selling price expectations from the harmonised business surveys provide valuable leading information for forecasting short term developments in the Harmonised Index of Consumer Prices (HICP), even amid challenges such as the major inflationary shocks seen in the past few years and the resulting parameter instability. The models deployed in the analysis exhibit relatively small forecast errors, despite being solely based on qualitative survey data. Forecast accuracy gains are most pronounced for horizons of up to four months ahead, and when including longer lags of SPE data. The analysis also shows the merit of exploiting the granularity of the available SPE dataset, in particular its rich sectoral breackdown. Starting from the estimated HICP inflation for the euro area in September 2024 (1.8%), forecasts for HICP inflation for the next six months (i.e. October 2024 to March 2025) point to a temporary increase in October 2024 to 2% or above. Thereafter the forecast shows a mild downward trajectory up to January 2025 and a stabilisation at levels below 2% in February and March 2025.

ANNEX

Reference series

Confidence indicators	Reference series from Eurostat (volume/year-on-year growth rates)
Total economy (ESI)	GDP, seasonally- and calendar-adjusted
Industry	Industrial production, working day-adjusted
Services	Gross value added for the private services sector, seasonally- and calendar-adjusted
Consumption	Household and NPISH final consumption expenditure, seasonally- and calendar-adjusted
Retail	Household and NPISH final consumption expenditure, seasonally- and calendar-adjusted
Building	Production index for building and civil engineering, trend-cycle component

Economic Sentiment Indicator

The economic sentiment indicator (ESI) is a weighted average of the balances of replies to selected questions addressed to firms and consumers in five sectors covered by the EU Business and Consumer Surveys Programme. The sectors covered are industry (weight 40 %), services (30 %), consumers (20 %), retail (5 %) and construction (5 %).

Balances are constructed as the difference between the percentages of respondents giving positive and negative replies. EU and euro-area aggregates are calculated on the basis of the national results and seasonally adjusted. The ESI is scaled to a long-term mean of 100 and a standard deviation of 10. Thus, values above 100 indicate above-average economic sentiment and vice versa. Further details on the construction of the ESI can be found here.

Long time series (ESI and confidence indices) are available here.

Economic Climate Tracer

The economic climate tracer is a two-stage procedure. The first stage consists of building economic climate indicators, based on principal component analyses of balance series (s.a.) from five surveys. The input series are as follows: industry: five of the monthly survey questions (employment and selling-price expectations are excluded); services: all five monthly questions except prices; consumers: nine questions (price-related questions and the question about the current financial situation are excluded); retail: all five monthly questions; building: all four monthly questions. The economic climate indicator (ECI) is a weighted average of the five sector climate indicators. The sector weights are equal to those underlying the Economic Sentiment Indicator (ESI, see above).

In the second stage, all climate indicators are smoothed using the HP filter in order to eliminate short-term fluctuations of a period of less than 18 months. The smoothed series are then normalised (zero mean and unit standard deviation). The resulting series are plotted against their first differences. The four quadrants of the graph, corresponding to the four business cycle phases, are crossed in an anti-clockwise movement and can be described as: above average and increasing (top right, 'expansion'), above average but decreasing (top left, 'downswing'), below average and decreasing (bottom left, 'contraction') and below average but increasing (bottom right, 'upswing'). Cyclical peaks are positioned in the top centre of the graph and troughs in the bottom centre.

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  (European Business Cycle Indicators)

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