European Business Cycle Indicators

1st Quarter 2019

EUROPEAN ECONOMY

Economic and
Financial Affairs

European Economy Technical Papers are reports and data compiled by the staff of the European Commission's Directorate-General for Economic and Financial Affairs.

Authorised for publication by José Eduardo Leandro, Director for Policy, Strategy and Communication.

The Report is released every quarter of the year.

European Commission
Directorate-General for Economic and Financial Affairs

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1st Quarter 2019

Special topic

- New data set on consumers' quantitative estimates of past and expected inflation in the euro area and the EU

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- The EA and the EU registered drastic losses in industry confidence, as well as more moderate decreases in services confidence. In the EA, brightening consumer sentiment provided a glimmer of hope, while confidence in retail trade and construction remained flat. In the EU, positive signals from consumers were less pronounced, and the construction sector also declined, however, confidence in retail trade increased.

- Focussing on the seven largest EU economies, 2019-Q1 brought sharp losses in UK sentiment (-4.6), as well as considerable losses in Italy (-3.1), Germany (-2.7), the Netherlands (-2.4) and Poland (-1.8). The ESI in France remained broadly flat (+0.5), while Spain stood out with a solid increase (+2.4).

- Capacity utilisation in manufacturing remained unchanged in both the EA (at 83.6%) and the EU (at 83.2%), i.e. well above the two regions' respective long-term averages of around 81%. In services, capacity utilisation increased by 0.6 (EA) / 0.4 (EU) points. At 90.7% (EA) and 90.0% (EU) respectively, capacity utilisation thus stood well-above its long-term average of around 88.8% (calculated from 2011 onwards).

Special topic: New data set on consumers' quantitative estimates of past and expected inflation in the euro area and the EU

With this edition, the European Commission (DG ECFIN) starts with the regular publication of consumers' quantitative estimates of past and expected inflation, i.e. their inflation perceptions and expectations. The special topic briefly introduces the main features of the new quarterly data set for the euro area and the EU and presents first results. Despite the fact that consumers' quantitative inflation estimates are generally above HICP inflation (harmonised index of consumer prices), there is a high level of co-movement between inflation estimated by consumers and HICP measured by statistical offices. Even respondents providing estimates largely above actual HICP inflation demonstrate understanding of the relative level of inflation during both high and low inflation periods. Moreover, consumers' price estimates can influence their behaviour and consumption decisions independently from whether they are correct or not. An additional advantage of the dataset is that it provides for socio-economic breakdowns by gender, income, age, and education, something that is not available from official HICP price statistics.

1. RECENT DEVELOPMENTS IN SURVEY INDICATORS

1.1. EU and euro area

Following marked losses in 2018-Q4, the Economic Sentiment Indicators (ESI) for the euro area (EA) and the EU continued declining in the first quarter of 2019, but at a slower pace. Shedding 1.9 (EA) and 2.5 (EU) points on the quarter, the indicators currently stand at 105.5 (EA) / 105.0 (EU) points, i.e. still well above their long-term averages of 100.

Graph 1.1.1: Economic Sentiment Indicator
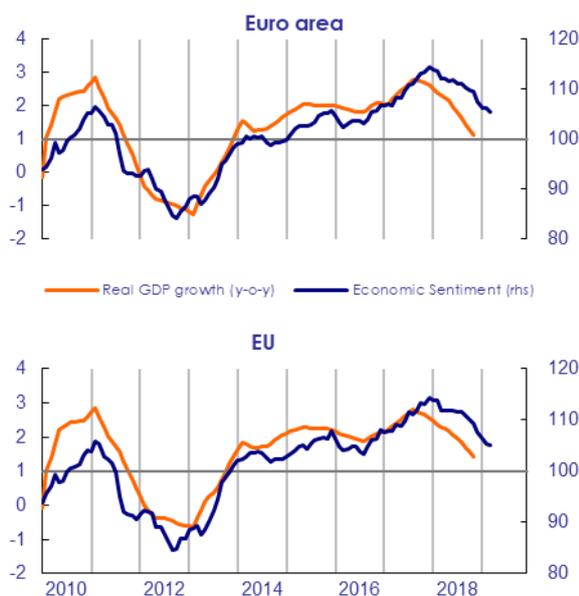
Note: The horizontal line (rhs) marks the long-term average of the survey indicators. Confidence indicators are expressed in balances of opinion and hard data in y-o-y changes. If necessary, monthly frequency is obtained by linear interpolation of quarterly data.

In line with the ESI results, the Ifo Business Climate Index (for Germany) reported another quarter of weakening confidence, albeit finishing on a positive note with an uptick in March. The signals from Markit Economics' PMI Composite Output Index were somewhat more encouraging, as the indicator stabilised over the first quarter after the hefty losses of 2018-Q4.

Graph 1.1.2: Radar Charts
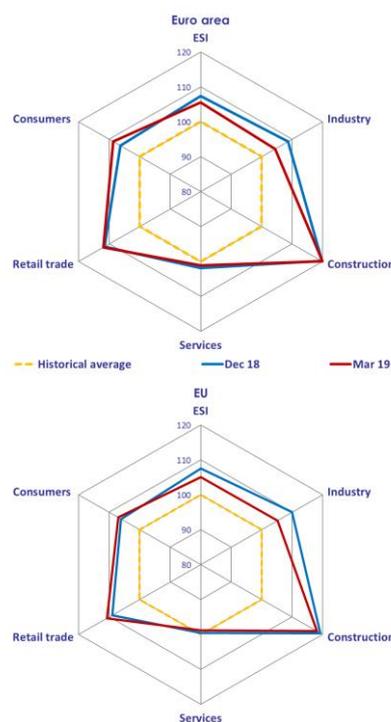
Note: A development away from the centre reflects an improvement of a given indicator. The ESI is computed with the following sector weights: industry 40%, services 30%, consumers 20%, construction 5%, retail trade 5%. Series are normalised to a mean of 100 and a standard deviation of 10. Historical averages are generally calculated from 1990q1. For more information on the radar charts see the Special Topic in the 2016q1 EBCI.

From a sectoral perspective (see Graph 1.1.2), both the EA and the EU registered drastic losses in industry confidence, as well as more moderate decreases in services confidence. In the EA, brightening consumer sentiment provided a glimmer of hope, while confidence in retail trade and construction remained flat. In the EU, positive signals from consumers were less pronounced, and the construction sector also declined, however, confidence in retail trade increased.

In terms of levels, EA and EU confidence indicators generally remained well above their respective long-term averages. Services confidence, by contrast, is currently only slightly above (EA) / slightly below (EU) its long-term average.

Focussing on the seven largest EU economies, 2019-Q1 brought sharp losses in UK sentiment (-4.6), as well as considerable losses in Italy (-3.1), Germany (-2.7), the Netherlands (-2.4) and Poland (-1.8). The ESI in France remained broadly flat (+0.5), while Spain stood out with a solid increase (+2.4).

Sector developments

Industry confidence registered the sharpest decline in some seven years in both the EA (-4.0) and the EU (-4.3). Despite the indicators' steady losses since the beginning of 2018, both remained above their respective long-term averages, as illustrated in Graph 1.1.3.

Graph 1.1.3: Industry Confidence indicator
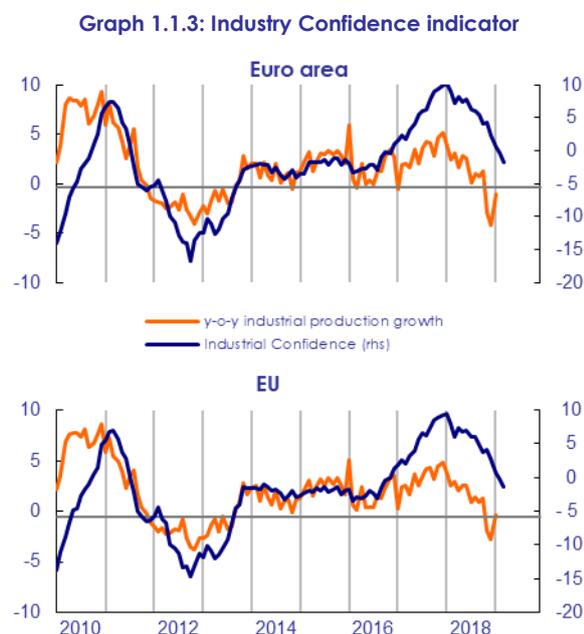
The drop in confidence was propelled by a sharp deterioration of managers' production expectations, appraisals of overall order books and, to a lesser extent, their assessments of the stocks of finished products.

Of the components not included in the confidence indicator, managers' views on past production and, in particular, export order books deteriorated.

During 2019-Q1, EA and EU managers' selling price, as well as employment expectations staged the sharpest quarterly decline in almost seven years. Specifically, the latest results for employment expectations mean a steepening of the downward trend which started a year ago (see Graph 1.1.4).

Graph 1.1.4: Employment - Industry Confidence indicator
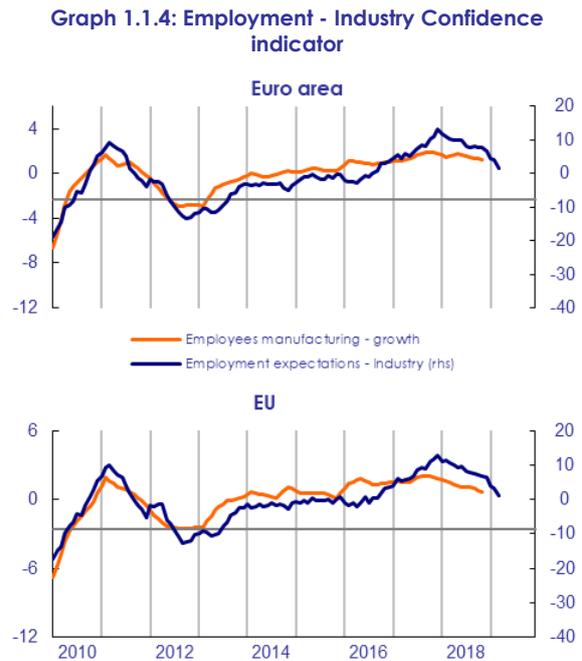
Among the seven largest EU Member States, industry confidence plunged in the UK (-8.1), Germany (-5.7), France (-3.9), Poland (-3.5) and Italy (-3.2), while the Netherlands (-1.3) experienced a more moderate decrease. Spain bucked the trend, with a 1.2-points increase.

According to the quarterly manufacturing survey (carried out in January), **capacity utilisation in manufacturing** remained unchanged in both the EA and the EU, at 83.6% and 83.2% respectively. Both values are high by historical standards, in comparison to the indicators' long-term averages of around 81%.

After hefty losses in 2018-Q4, the first quarter of 2019 saw some stabilisation of **services confidence**, as the indicator reduced by only 0.9 (EA) / 1.0 (EU) points. The current confidence levels are just above (EA) / slightly below (EU) their long-term averages (see Graph 1.1.5).

Graph 1.1.5: Services Confidence indicator

Euro area

— Services value added growth   — Service Confidence (rhs)

EU

In both regions, the slight easing of confidence resulted from managers' less optimistic views on past and expected demand, while appraisals of the past business situation stayed broadly unchanged.

Employment expectations remained flat in the EA, putting an end to the mild downward trend observed throughout 2018. EU-wide expectations, by contrast, showed the sharpest decline since 2012-Q2, bringing the indicator back to levels last seen in summer 2016 (see Graph 1.1.6). Selling price expectations mildly reduced in both the EA and the EU.

Focussing on the seven largest EU economies, services confidence decreased in Poland (-3.1), Germany (-2.1) and, to a lesser extent, the UK (-1.3), Italy (-0.7) and Spain (-0.5). Sentiment in the Netherlands stayed broadly flat (+0.3), while it edged up in France (+0.6).

Capacity utilisation in services, as measured by the quarterly survey in January, increased by 0.6 (EA) / 0.4 (EU) points. At 90.7% (EA) and 90.0% (EU) respectively, capacity utilisation thus stood well-above its long-term average of around 88.8% (calculated from 2011 onwards).

Graph 1.1.6: Employment - Services Confidence indicator

Euro area

— Employees services - growth
— Employment expectations - Service (rhs)

EU

Retail trade confidence in the EA stayed virtually flat in 2019-Q1 (+0.3), while it gained 1.3 points in the EU. In a longer-term context, the latest developments mean a continuation of the indicators' see-sawing around a historically high, horizontal trend, which has characterised their evolution since late 2016/early 2017 (see Graph 1.1.7).

Graph 1.1.7: Retail Trade Confidence indicator

Euro area

— Consumption growth   — Retail Confidence (rhs)

EU
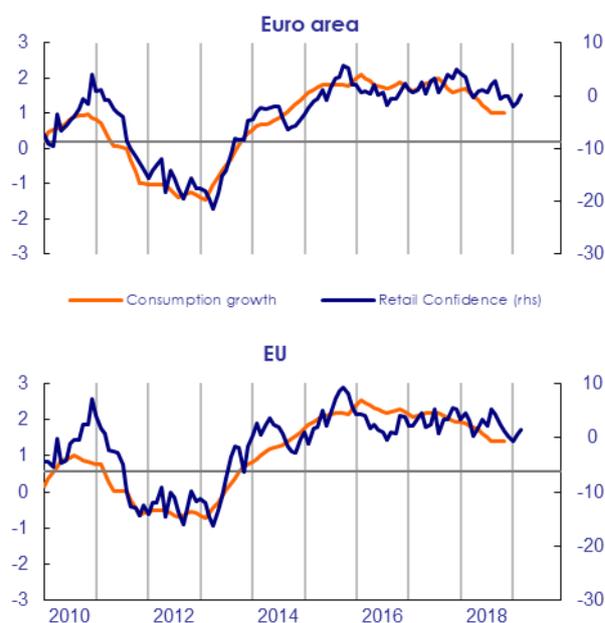
The uptick in EU confidence was driven by more upbeat managerial assessments of the past and future business situation, while their appraisals of the level of stocks stayed broadly

stable. In the EA, slightly more positive views on the level of stocks and the future business situation were counterbalanced by an equivalent deterioration in the assessments of the past business situation.

For the seven largest EU economies, confidence firmed in the UK (+8.0) and, to a lesser extent, Germany (+2.2), Italy (+1.8) and France (+1.2). By contrast, sentiment eased in Spain (-0.7), the Netherlands (-0.7) and, sharply so, in Poland (-4.6).

Construction confidence remained broadly stable in the EA (+0.2), while it eased somewhat in the EU (-1.4). In conjunction with the flat trend of 2018-Q4, the latest figures corroborate the impression that the sector's forceful recovery since 2013/2014 has reached its peak (see Graph 1.1.8).

At component level, managers' views of order books remained virtually unchanged in both areas. Employment expectations, by contrast, edged up in the EA, while they deteriorated in the EU.

Graph 1.1.8: Construction Confidence indicator
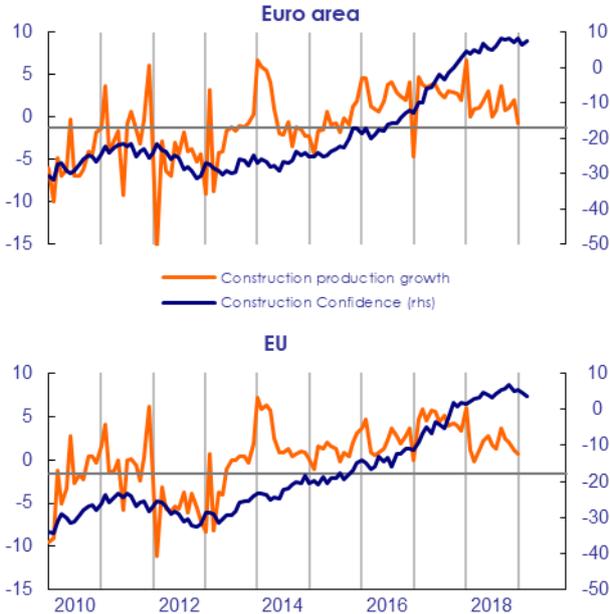
Among the seven largest EU economies, the indicator decreased strongly in the UK (-10.7) and, to a lesser extent, in Germany (-2.5), the Netherlands (-1.4) and Poland (-1.4). Meanwhile, France (+0.7) and, particularly, Italy (+3.8) and Spain (+5.8) saw confidence grow.

Moderate gains in EA (+1.1) and EU (+0.5) **consumer confidence** put a preliminary end to the indicators' broad decline throughout 2018. Both measures remained comfortably above their respective long-term averages (see Graph 1.1.9).

Looking at the individual components of consumer confidence, consumers were more upbeat about their past and future personal financial situation, while more cautious as regards their intentions to make major purchases. Expectations about the future general economic situation in the country brightened up in the EA, while they stayed virtually unchanged in the EU.

Graph 1.1.9: Consumer Confidence indicator
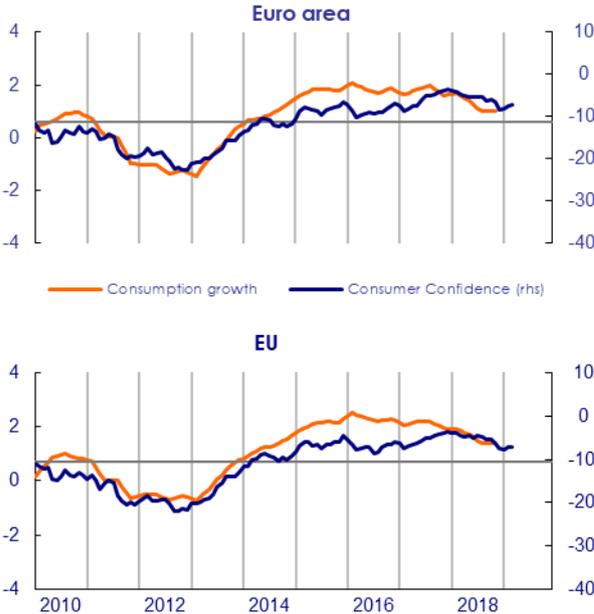
Consumer sentiment rallied in three of the seven largest EU economies, namely France (+6.7), Spain (+5.2) and Poland (+4.6), while it eased in the Netherlands (-4.5), Italy (-2.9) and the UK (-2.5). Confidence levels in Germany remained virtually unchanged (+0.3).

Thanks to a drastic rebound in March, the **financial services** sector (not included in the ESI) broke the downward trend it had followed throughout 2018. Gaining 6.1 (EA) / 8.3 (EU) points on the quarter, the indicator stands in both regions firmly above its long-term average again (see Graph 1.1.10).

EA-, as well as EU-managers were more upbeat about past and expected demand, as well as the past business situation.

Graph 1.1.10: Financial Services Confidence indicator

Euro area

— Financial Services Confidence

EU

Reflecting the deterioration in overall sentiment in 2019-Q1, both the EA and EU **climate tracers** (see Annex for details) continued to move closer to the contraction quadrant (from the downswing quadrant, see Graphs 1.1.11 and 1.1.12).

Graph 1.1.11: Euro area Climate Tracer

The sectoral climate tracers (see Graph 1.1.13) for industry and services behaved in line with the overall tracers, either getting closer to the downswing/contraction frontier (EA/EU industry, EA services), or even passing it (EU

services). The climate tracers for retail trade and construction remained virtually unchanged, while the consumer tracer moved somewhat closer to the expansion quadrant (both in the EA and the EU).

Graph 1.1.12: EU Climate Tracer

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Graph 1.1.13: Economic climate tracers across sectors

Euro area

EU

Industry

Services

Retail trade

Construction

Consumers

1.2. Selected Member States

2019-Q1 brought sharp losses in UK sentiment (-4.6), as well as considerable losses in Italy (-3.1), Germany (-2.7), the Nethe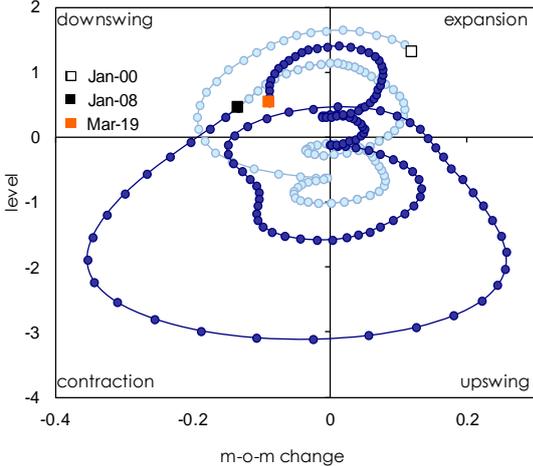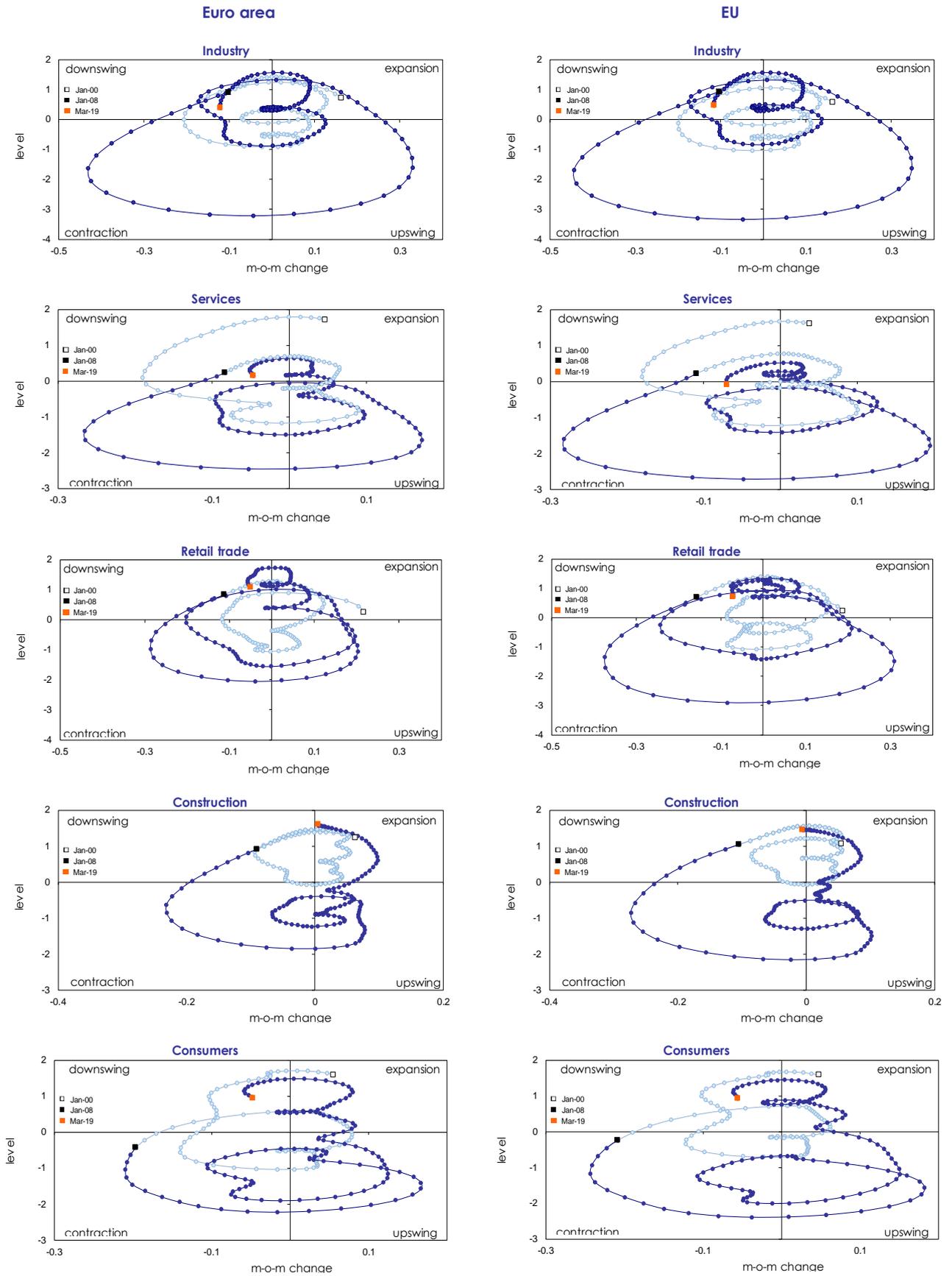rlands (-2.4) and Poland (-1.8). The ESI in France remained broadly flat (+0.5), while Spain stood out with a solid increase (+2.4).

Sentiment in **Germany** deteriorated for the second quarter in a row (-2.7), but, at 106.6 points, the current level of the ESI is still high by historical standards for the country (the long-term average being 100). In terms of the climate tracer (see Graph 1.2.1), the German economy advanced deeper into the downswing quadrant.

Graph 1.2.1: Economic Sentiment Indicator and Climate Tracer for Germany
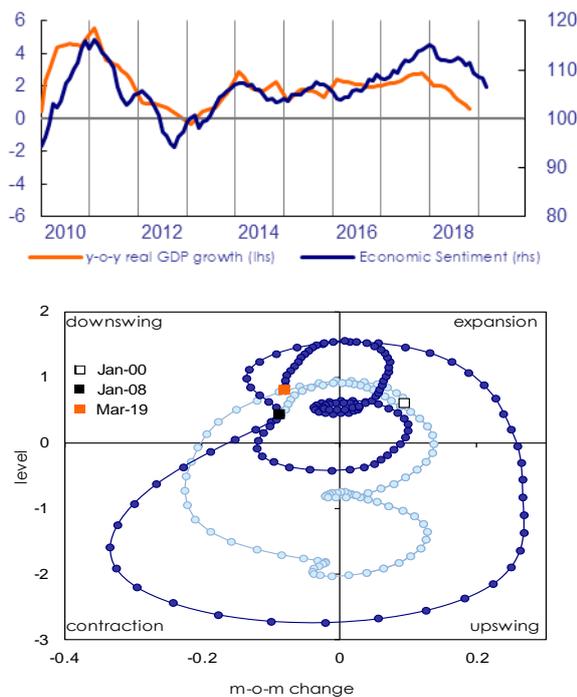
From a sectoral perspective, confidence plummeted in industry and eased more moderately in services and construction. With consumers reporting broadly unchanged levels of confidence, the only positive signals came from retail trade. In line with the ESI, all sectoral confidence indicators, except for those covering services, are still at levels well in excess of their respective long-term averages (see Graph 1.2.2). Construction confidence is particularly high, reflecting the sector's multi-annual recovery which started in 2015.

Graph 1.2.2: Radar Chart for Germany
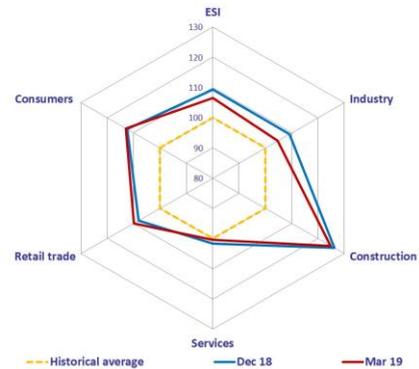
Following its steady slide throughout 2018, the ESI in **France** stayed virtually unchanged in 2019-Q1 (+0.5), providing some hope of a bottoming-out. At 101.0 points, the indicator remained just above its long-term average of 100.

Graph 1.2.3: Economic Sentiment Indicator and Climate Tracer for France
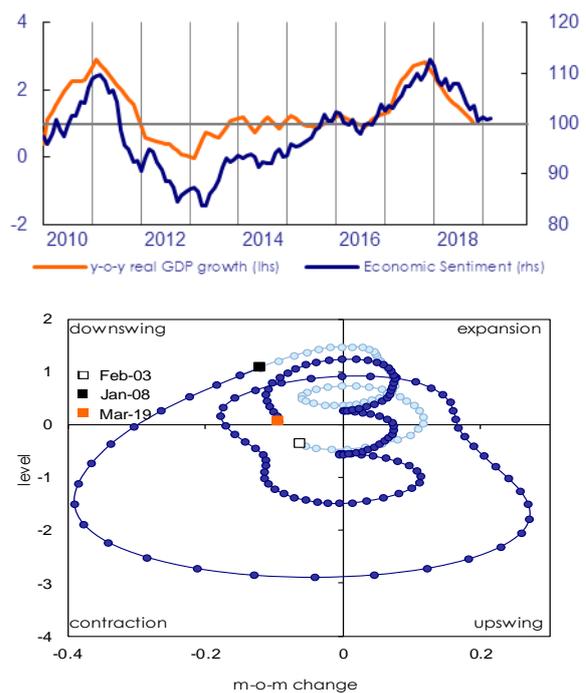
Based on the latest sentiment data, the French climate tracer moved to the intersection of the downswing and the contraction quadrant (see Graph 1.2.3).

A look at the French radar chart (see Graph 1.2.4) reveals flat overall sentiment resulting from two opposing forces; while consumer confidence staged a dramatic rebound putting

an end to its one-year slide and retail trade recovered from a sharp drop in the previous quarter, confidence in industry plummeted for the third quarter in a row. Sentiment in services and construction stayed broadly unchanged. Confidence levels continued to exceed long-term averages in construction and, to a lesser extent, in industry, services and retail trade. Despite its surge in 2019-Q1, consumer confidence remained low by historical standards.

Graph 1.2.4: Radar Chart for France

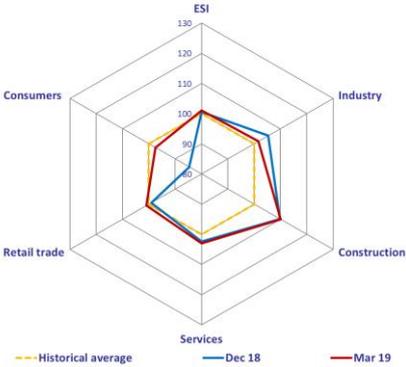Sentiment in **Italy** continued the declining trend observed throughout 2018, with the ESI shedding a significant 3.1 points on the quarter. At 101.0 points, the indicator is just slightly above its long-term average of 100 and at levels last seen in summer 2016. On a positive note, the month of March brought some respite with the first broadly flat reading in half a year. The hefty losses in 2019-Q1 sent the Italian climate tracer from a low position in the downswing quadrant to its intersection with the contraction area (see Graph 1.2.5).

Graph 1.2.5: Economic Sentiment Indicator and Climate Tracer for Italy
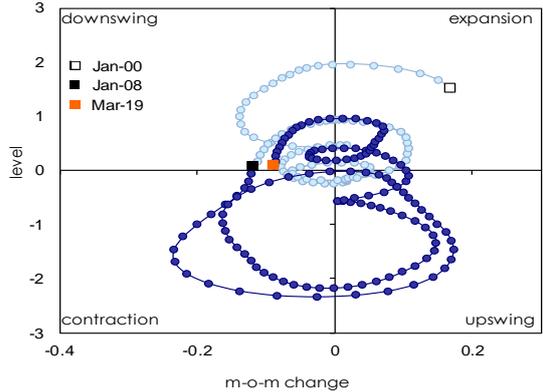
A look at the Italian radar chart (see Graph 1.2.6) shows confidence having plunged in industry and among consumers and mildly deteriorated in services. Meanwhile, sentiment in construction and, to a lesser extent, retail trade brightened. Confidence levels are generally in line with the long-term average, with the exception of retail trade and construction, where they are particularly high.

Graph 1.2.6: Radar Chart for Italy
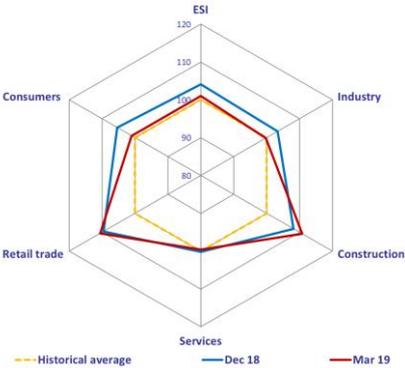
Defying the downward trend among its peer countries, **Spain** posted a solid improvement in sentiment during the first quarter of the year. Propelled by a sharp increase in March, the ESI gained 2.4 points, putting an end to a one-year period of declining readings. The current score (106.7) is comfortably above the indicator's

long-term average of 100. Paralleling the upbeat signals emanating from the ESI, the Spanish climate tracer inched closer towards the intersection of the downswing quadrant with the expansion area (see Graph 1.2.7).

Graph 1.2.7: Economic Sentiment Indicator and Climate Tracer for Spain

the ESI remained comfortably above its long-term average of 100, shedding 2.4 points on the quarter (at 105.2 points). The latest decline pushed the Dutch climate tracer deeper into the downswing quadrant (see Graph 1.2.9).

Graph 1.2.9: Economic Sentiment Indicator and Climate Tracer for the Netherlands
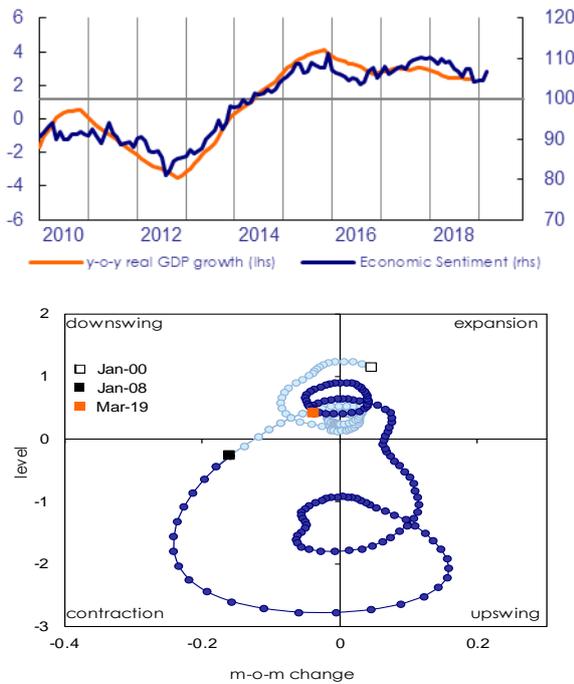
As shown in the radar-chart (see Graph 1.2.8), rising confidence was fuelled by more optimistic consumers, as well as managers in construction and, to a lesser extent, in industry. Sentiment in retail trade and services remained virtually flat. All confidence indicators fare above their long-term averages and are particularly high in retail trade and among consumers.

Graph 1.2.8: Radar Chart for Spain

Sentiment deteriorated sharply among consumers and, to a lesser extent, industry and construction managers. Morale in services and retail trade remained broadly unchanged. Compared to long-term averages, confidence is low among consumers and, to a lesser extent, retail trade managers, while high in industry, services and, particularly, construction (see Graph 1.2.10).

Graph 1.2.10: Radar Chart for the Netherlands

Dutch sentiment continued the downward trend embarked upon at the beginning of 2018, but
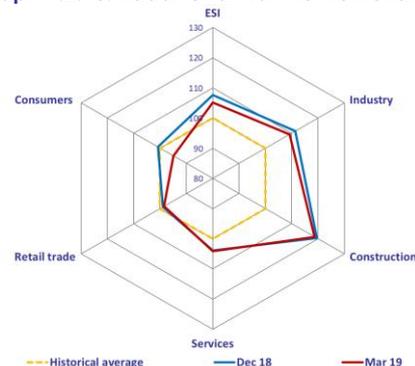
Sentiment in the **United Kingdom** worsened for the second consecutive quarter. Dropping by

a significant 4.6 points (to 100.8), the country's ESI is only just above its long-term average of 100. In terms of the UK climate tracer, the faltering confidence translated into a downward move towards the intersection of the downswing and the contraction quadrant (see Graph 1.2.11).

Graph 1.2.11: Economic Sentiment Indicator and Climate Tracer for the United Kingdom
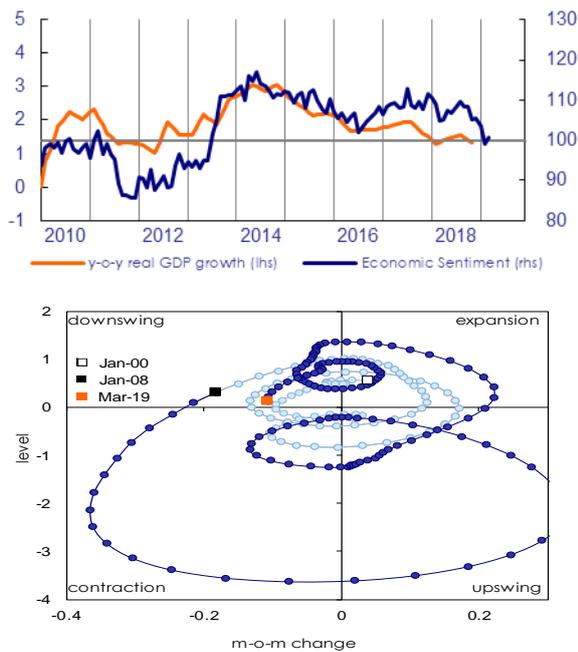
Focussing on sectoral developments (see Graph 1.2.12), confidence weakened in all surveyed parts of the economy (industry, services, construction, consumers), with the exception of the retail trade sector, which booked a significant increase. The level of confidence in industry and construction remained high by historical standards, while it was low in services and among consumers and normal in retail trade.

Graph 1.2.12: Radar Chart for the UK
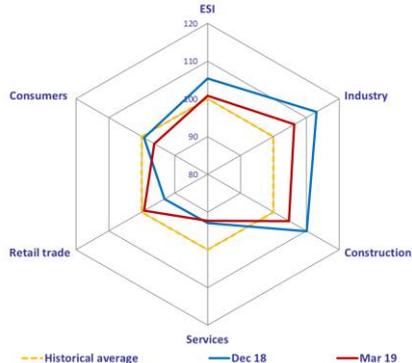
Sentiment in **Poland** deteriorated with the ESI shedding 1.8 points on the quarter. At 104.8 points, the indicator nevertheless continues exceeding its long-term average of 100. The slipping confidence sent the Polish climate tracer deeper into the downswing quadrant (see Graph 1.2.13).

Graph 1.2.13: Economic Sentiment Indicator and Climate Tracer for Poland
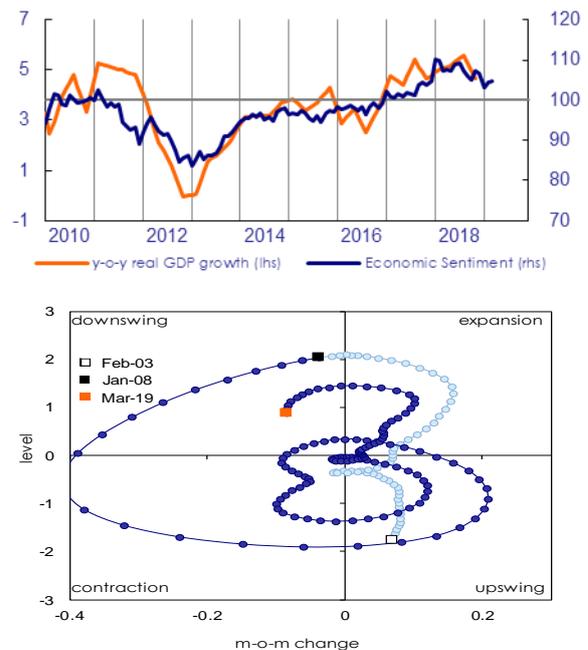
As the Polish radar chart shows (see Graph 1.2.14), confidence weakened in all surveyed business sectors (industry, services, retail trade and, less so, construction), while consumers were significantly more upbeat. The level of confidence is generally much above long-term averages, with the exception of the services sector.

Graph 1.2.14: Radar Chart for Poland
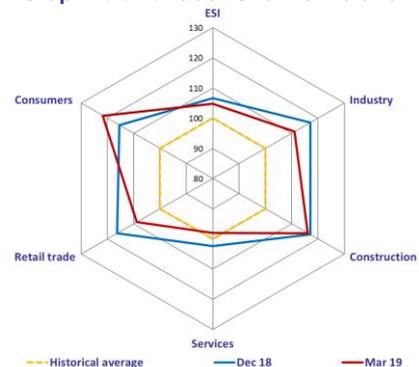
2. SPECIAL TOPIC: NEW DATA SET ON CONSUMERS' QUANTITATIVE ESTIMATES OF PAST AND EXPECTED INFLATION IN THE EURO AREA AND THE EU

Introduction

With this edition of the EBCI, the European Commission (DG ECFIN) starts with the regular publication of consumers' *quantitative* estimates of past and expected inflation, i.e. their inflation perceptions and expectations. This special topic briefly introduces the main features of the new quarterly data set for the euro area and the EU and presents first results.

Consumers' *qualitative* opinions on inflation developments are polled regularly by national partner institutes in the EU Member States on behalf of the European Commission as part of the "Joint Harmonised EU Programme of Business and Consumer Surveys".

Similar to other consumer surveys (e.g. the University of Michigan survey of consumer attitudes for the United States, the Bank of England/GfK NOP survey of inflation attitudes for the United Kingdom), since May 2003, DG ECFIN has included additional questions - to be posed whenever a respondent perceives or expects changes in consumer prices[1] - asking consumers to express in *quantitative* terms their estimates of past and expected inflation, i.e. their quantitative inflation perceptions and expectations.

These questions are:

Q51 - By how many percent do you think that consumer prices have gone up/down over the past 12 months? (Please give a single figure

estimate): consumer prices have increased by……,…% / decreased by……,…%.

Q61 - By how many percent do you expect consumer prices to go up/down in the next 12 months? (Please give a single figure estimate): Consumer prices will increase by……,…% / decrease by……,…%.

Respondents have to provide their own quantitative estimate of inflation. They are not "helped" in any way by the interviewer or by the design of the questionnaire, for example by having to select their answer from a number of ranges, as it is done in the Bank of England survey of inflation attitudes in the United Kingdom, or by probing unusual replies, as in the University of Michigan survey of consumer attitudes for the United States. By being open-ended, the current wording of the survey questions allows for a more dispersed range of replies. Moreover, the survey questions are deliberately vague as regards the meaning of consumer prices, implying that respondents are left to make their own interpretation as to what basket of goods to consider. For example, they may interpret the questions as being about the goods they purchase more frequently, a mix of goods and services, or some measure of the cost of living more generally.

All this makes consumers' inflation estimates distinctively different from the official inflation measurement in the European Union. Eurostat, the statistical office of the European Union, is publishing consumer price statistics for the EU and the euro area on a monthly basis. The Harmonised Index of Consumer Prices (HICP) is produced by each European Union Member State using a harmonised methodology; HICPs are therefore directly comparable between countries and can be aggregated to euro area/EU totals. The aim is to provide a high-quality and comparable measure of consumer price inflation used e.g. by the European Central Bank (ECB) for the purpose of

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[1] The two questions are not asked if the response to the qualitative questions is "don't know" or that prices will "stay about the same", as in this latter case it is assumed that the respondent perceives or expects no change in "consumer prices". When the respondent says that prices will "stay about the same", the interviewer is instructed to automatically input a zero inflation rate in response to the quantitative questions.

monetary policy and for the assessment of inflation convergence as required under the Maastricht criteria.

DG ECFIN, together with the ECB, evaluated several times the quality of consumers' quantitative price perceptions and expectations.[2] One of the main conclusions was that despite the fact that consumers' quantitative inflation estimates are generally higher than actual HICP inflation, there is a high level of co-movement between consumers' estimated (perceived/expected) inflation and HICP inflation measured by statistical offices. Even respondents providing estimates largely above actual HICP inflation demonstrate understanding of the relative level of inflation during both high and low inflation periods.

Based on these encouraging results, and because consumers' price estimates can influence their behaviour and consumption decisions independently from whether they are correct or not[3], DG ECFIN decided to start publishing quarterly aggregate indicators of consumers' quantitative inflation perceptions and expectations regularly in the quarterly EBCI publication. A corresponding database with results for the euro area and the EU will be updated quarterly and will be available to the public.[4]

An additional advantage of the dataset is that it provides for socio-economic breakdowns by gender, income, age, and education (something that is by definition not available from official HICP price statistics).

The dataset on consumers' inflation estimates and its statistical treatment

The dataset used to compile consumers' inflation estimates for the euro area is based on consumers' individual monthly replies from all EU Member States excluding Ireland[5], starting in January 2004.[6] Given that up to April 2010 the new questions were included in the national questionnaires on a voluntary basis[7], numerous data points are missing and had to be imputed. In order to keep homogenous EU/euro area aggregates, missing data have been calculated on the basis of replies made to the qualitative questions from the consumer survey.

Since the surveys are conducted at the national level, a weighting scheme is required to compute aggregate results for the euro area and the EU. This is done in two steps. First, individual country results are aggregated using sample weights to adjust results for the socio-demographic characteristics of the population. Then, aggregation to the EU and euro area totals uses country weights based on private consumption (as applied for the qualitative replies), resulting in weighted averages.

Besides missing data, there are also a number of outliers and/or "implausible" replies, which appear to be linked to the deliberately vague

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[2] A preliminary assessment of the EC quantitative dataset was provided in Lindén (2005). A second and third evaluation of the dataset was performed by DG ECFIN together with the ECB in 2010 and in 2016 (see Biau et al. (2010) "Consumers' quantitative inflation perceptions and expectations in the euro area: an evaluation"; Conference by the Federal Reserve Bank of New York "Consumer Inflation Expectations", November 2010; agenda and papers available at: https://www.newyorkfed.org/research/conference/201 0/consumer_surveys_agenda.html and Arioli and al. (2016) "EU Consumers' Quantitative Inflation Perceptions and Expectations: An Evaluation" https://ec.europa.eu/info/publications/economy-finance/eu-consumers-quantitative-inflation-perceptions-and-expectations-evaluation_en).

[3] In that sense, even a divergence between actual HICP and consumers' opinion could be considered as a useful piece of information that might potentially be useful for policy makers.

[4] Data are available in the 'Consumers' section of: https://ec.europa.eu/info/business-economy-euro/indicators-statistics/economic-databases/business-and-consumer-surveys/download-business-and-consumer-survey-data/time-series_en

[5] The collection of survey data in Ireland has seen a number of interruptions since the economic and financial crisis in 2008. Since May 2016, a new Irish partner institute has been providing consistent and complete BCS data again; however, the series on consumers' quantitative inflation perceptions and expectations are still too short to be included in the total EU and euro-area aggregates.

[6] The dataset before January 2004 had too many missing data to calculate EU and euro area aggregates.

[7] Moreover, it happened that alternative formulations of the questions where tested in some months in some countries, and that created additional "missing" data in the dataset.

wording of the questions and the fact that no probing of answers is carried out. Several statistical methods exist to treat such "outliers"; for the purposes of the quantitative consumer estimates of inflation, DG ECFIN excludes all answers exceeding the fixed limits of +100% and -50%[8] for perceived and expected inflation from the calculations.

For reporting the quarterly aggregates of inflation perceptions and expectations as well as their distribution, the following measures and indicators will be published:

- **Mean:** a classical indicator, calculated as a weighted average and excluding outliers beyond the fixed limit as stated before.
- **Median**: For unimodal and skewed distributions like in inflation expectations and perceptions, the median is often seen as the "better average". In order to account for the survey weights and missing observations to the quantitative answers, it is calculated in a two-step approach, taking into account the answers to the qualitative questions about inflation perceptions and expectations: first, for each answer category of the qualitative questions,[9] the median of the corresponding quantitative estimates is determined as usual. Then, these class medians are aggregated to an overall median as their weighted[10] average.
- **Quartiles**: the percentiles at 25% and 75% of the observed inflation perceptions and expectations provide a good illustration of the distribution of the answers, not only regarding variation, but also regarding skewness. Their calculation is done in the same way as for the median.

EU and euro-area results of consumers' quantitative inflation estimates

Graph 2.1 plots consumers' quantitative inflation perceptions and expectations over the period January 2004 to March 2019 together with the official HICP inflation as quarterly averages of the underlying monthly data. The graph confirms that quantitative estimates of inflation sentiment are higher than the official EU/euro area HICP inflation over the entire sample period. However, for perceptions the size of the gap has clearly narrowed over time.

Graph 2.1: Inflation: HICP, mean excluding outliers and median of consumers' price perceptions and expectations for the EU and the euro area (annual changes in %, quarterly averages)
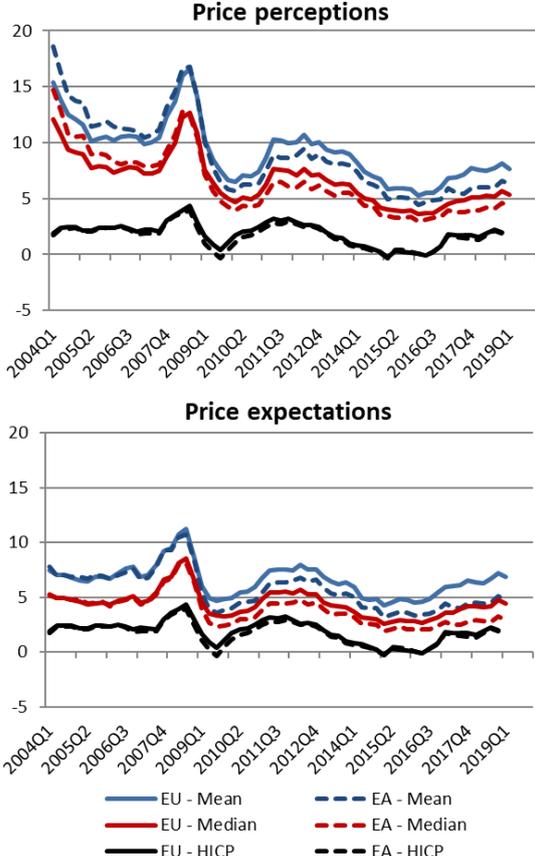
Besides totals for the EU and the euro area, the dataset also provides results broken down by socio-demographic characteristics. Table 2.1 summarises the outcome over the whole time period for the breakdowns by gender, age, income and education. It emerges that on average, women report consistently higher rates for inflation perceptions and expectations,

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[8] These percentages correspond to prices doubling (+100%) and prices halving (-50%).

[9] The answer categories are: *prices have… "risen a lot", "risen moderately", "risen slightly", "stayed about the same", "fallen"* (question Q5), and *prices will… "increase more rapidly", "increase at the same rate", "increase at a slower rate", "stay about the same", "fall"* (question Q6).

[10] Using the sample weights (to adjust results for the socio-demographic characteristics of the population) within each country, including where quantitative answers were missing.

compared to male respondents. The inflation perceptions and expectations also tend to decrease with the age of the respondents. Finally, the levels of income and education attainment have a significant impact on consumers' quantitative estimates.

This is in line with the conclusions of several studies that, using the University of Michigan survey data, have already shown that socio-demographic characteristics play a role for consumers' inflation expectations and perceptions[11]. The results of these studies suggest that women, lower income earners and individuals with lower level of education tend to perceive and expect higher levels of inflation.

Table 2.1: Consumers inflation estimates (mean excluding outliers) for the EU and the euro area by socio-demographic groups (annual changes in %; 2004-2019)

	EU		Euro area	
	Perceptions	Expectations	Perceptions	Expectations
Gender				
Male	7.9	5.8	7.7	5.1
Female	10.5	7.4	10.1	6.4
Age				
16-29	9.8	7.1	9.3	6.0
30-49	9.4	6.7	9.1	5.8
50-64	8.9	6.4	8.6	5.6
65+	8.8	6.1	8.4	5.2
Education				
Primary	11.0	7.9	10.1	6.3
Secondary	9.3	6.7	8.8	5.8
Further	7.5	5.6	7.1	4.8
Income				
1st quartile	11.5	8.1	11.0	7.0
2nd quartile	9.6	6.9	9.2	5.9
3rd quartile	8.6	6.2	8.3	5.4
4th quartile	7.3	5.3	6.9	4.6

Source: Commission services.

Focusing on the latest developments, in both the EU and the euro area, the mean and the median of consumers' price perceptions decreased somewhat in 2019Q1 compared to 2018Q4. Also the mean and the median of consumers' price expectations decreased in the first quarter of the year compared with the last quarter of 2018 (see Graph 2.1).

The same picture emerges when looking at the socio-economic breakdown categories of the data. In nearly all categories, the mean and the median show a slight decrease for both perceptions and expectations (see tables A.2.1 and A.2.2 in the Annex to section 1).

Summary

The European Commission (DG ECFIN) starts with the regular publication of quantitative estimates by consumers on inflation perceptions and expectations for the EU and the euro area in its quarterly publication "European Business Cycle Indicators".

The data are based on individual replies from participants of DG ECFIN's harmonised EU-wide Consumer Survey and have been aggregated by statistical methods; missing data as well as outliers have undergone statistical treatment. European totals are calculated as weighted averages and data are reported as quarterly averages of underlying monthly data.

The quarterly data at total level and by socio-demographic groups will be available for download on the European Commission's Business and Consumer Surveys web site.

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[11] See Bryan, M. and Guhan V. (2001): "The demographics of inflation opinion surveys", Federal Reserve Bank of Cleveland Economic Commentary, Vol. October.; Pfajfar, D. and Santoro E., (2008): "Asymmetries in inflation expectation formation across demographic groups", Cambridge Working Papers in Economics, Vol. 0824.; de Bruin et al. 2010 "Expectations of Inflation: The Role of Demographic Variables, Expectation Formation, and Financial Literacy", Journal of Consumer Affairs 44, No. 2: 381–402.

ANNEX TO SECTION 2

Table A.2.1 : Inflation perceptions by socio-demographic category of respondent (in %)

	weighted mean adjusted for outliers					25% quartile					median					75% quartile				
	Average	2018			2019	Average	2018			2019	Average	2018			2019	Average	2018			2019
	2004-2019	Q2	Q3	Q4	Q1	2004-2019	Q2	Q3	Q4	Q1	2004-2019	Q2	Q3	Q4	Q1	2004-2019	Q2	Q3	Q4	Q1
EU	9.2	7.5	7.7	8.1	7.6	3.8	2.7	2.9	3.1	2.8	6.6	5.3	5.2	5.7	5.3	11.6	9.6	9.4	10.2	9.8
EA	8.8	6.0	6.0	6.6	6.3	3.7	2.4	2.4	2.6	2.5	6.4	4.2	4.1	4.6	4.4	11.1	7.5	7.1	8.0	7.8
Gender: Male																				
EU	7.9	6.4	6.7	7.1	6.7	3.3	2.5	2.6	2.8	2.6	5.7	4.3	4.6	5.0	4.7	9.9	7.9	8.1	8.5	8.1
EA	7.7	5.2	5.2	5.8	5.6	3.3	2.2	2.1	2.4	2.3	5.6	3.9	3.7	4.2	4.1	9.6	6.4	6.1	6.9	6.7
Gender: Female																				
EU	10.5	8.8	9.3	9.3	8.7	4.2	3.2	3.1	3.5	3.0	7.7	5.8	5.9	6.3	5.7	13.5	11.5	11.4	11.6	11.2
EA	10.1	7.0	10.1	7.6	7.3	4.2	2.6	2.7	3.0	2.8	7.3	4.8	4.6	5.1	4.7	12.7	8.9	8.5	9.3	9.0
Age: 16 to 29																				
EU	9.8	8.8	8.8	8.9	9.7	4.0	3.5	2.9	3.6	3.7	7.3	6.5	6.0	6.8	7.5	12.9	12.5	12.1	11.7	12.8
EA	9.3	6.0	5.9	6.1	7.7	3.9	2.7	2.2	2.6	2.9	7.0	4.4	3.9	4.8	5.9	12.2	8.2	7.8	7.6	9.5
Age: 30 to 49																				
EU	9.4	8.1	10.9	8.8	8.2	3.8	3.0	3.0	3.4	3.0	6.8	5.7	5.7	6.2	5.5	11.9	10.7	10.4	11.1	10.9
EA	9.1	6.3	11.5	6.8	6.6	3.8	2.5	2.3	2.7	2.7	6.6	4.4	4.2	4.7	4.5	11.5	8.1	7.4	8.0	8.6
Age: 50 to 64																				
EU	8.9	6.9	7.3	7.5	6.9	3.7	2.7	2.8	3.1	2.8	6.5	4.8	5.0	5.1	4.7	11.2	8.6	9.1	9.4	8.7
EA	8.6	5.9	6.1	6.7	6.1	3.7	2.4	2.5	2.7	2.6	6.2	4.1	4.2	4.6	4.3	10.8	7.5	7.4	8.3	7.6
Age: 65+																				
EU	8.8	6.2	6.2	6.8	6.3	3.9	2.8	2.8	3.1	2.8	6.5	4.5	4.4	5.0	4.5	11.1	7.3	7.3	8.3	7.5
EA	8.4	5.4	5.6	6.2	5.7	3.7	2.4	2.3	2.7	2.5	6.2	4.0	3.9	4.4	4.0	10.4	6.5	6.5	7.5	6.8
Income: 1st quartile																				
EU	11.5	9.9	9.8	10.2	10.3	4.5	3.5	3.5	3.7	3.6	8.3	6.8	6.8	7.0	7.1	15.0	12.7	12.4	13.3	13.6
EA	11.0	8.1	8.1	8.9	8.9	4.4	3.0	3.1	3.1	3.3	7.9	5.2	5.2	5.9	6.1	14.2	9.7	10.0	11.2	11.8
Income: 2nd quartile																				
EU	9.6	8.2	12.7	8.5	8.0	4.0	3.0	3.1	3.4	2.8	7.0	5.6	5.7	5.8	5.5	12.3	10.5	10.0	10.5	10.2
EA	9.2	6.6	13.3	7.1	6.7	3.9	2.6	2.5	2.9	2.8	6.7	4.7	4.6	5.0	4.6	11.8	8.3	7.9	8.5	8.3
Income: 3rd quartile																				
EU	8.6	6.8	7.2	7.6	7.3	3.6	2.6	2.7	3.1	2.9	6.3	5.0	5.0	5.6	5.3	10.9	8.5	8.9	9.7	9.4
EA	8.3	5.6	5.6	6.1	5.8	3.6	2.4	2.3	2.6	2.5	6.1	4.2	4.0	4.5	4.3	10.5	6.9	6.7	7.5	7.2
Income: 4th quartile																				
EU	7.3	5.9	6.4	6.8	6.0	3.1	2.2	2.5	2.7	2.6	5.4	4.1	4.4	4.7	4.4	9.2	7.4	7.9	8.4	7.7
EA	6.9	4.4	4.4	5.0	4.7	3.1	1.9	1.9	2.2	2.1	5.2	3.2	3.3	3.7	3.5	8.7	5.5	5.4	6.2	5.9
Education: Primary																				
EU	11.0	9.9	9.9	11.3	10.2	4.3	3.5	3.5	4.2	3.7	7.9	7.0	6.8	7.7	7.6	14.4	13.6	13.4	15.9	13.5
EA	10.1	6.9	7.3	8.4	7.5	4.1	2.8	2.9	3.1	3.0	7.2	4.9	5.2	5.4	4.9	12.8	8.2	9.1	10.9	9.3
Education: Secondary																				
EU	9.3	7.7	12.1	8.4	8.1	3.8	2.7	3.0	3.1	2.8	6.8	5.3	5.5	5.8	5.5	11.9	9.9	10.0	10.4	10.7
EA	8.8	6.4	12.6	7.2	7.0	3.7	2.6	2.5	2.8	2.7	6.4	4.5	4.3	4.9	4.6	11.1	8.0	7.6	8.7	9.1
Education: Further																				
EU	7.5	6.5	6.7	7.0	6.6	3.2	2.5	2.6	2.9	2.7	5.6	4.8	4.6	5.0	4.7	9.6	8.4	8.3	9.2	8.6
EA	7.1	4.9	4.8	5.3	5.1	3.1	2.1	2.0	2.3	2.3	5.2	3.7	3.4	3.8	3.7	9.0	6.3	5.8	6.7	6.6

Table A.2.2 : Inflation expectations by socio-demographic category of respondent (in %)

	weighted mean adjusted for outliers					25% quartile					median					75% quartile				
	Average	2018			2019	Average	2018			2019	Average	2018			2019	Average	2018			2019
	2004-2019	Q2	Q3	Q4	Q1	2004-2019	Q2	Q3	Q4	Q1	2004-2019	Q2	Q3	Q4	Q1	2004-2019	Q2	Q3	Q4	Q1
EU	6.5	6.3	6.7	7.2	6.8	2.4	2.0	2.2	2.4	2.2	4.4	4.1	4.2	4.8	4.4	8.1	8.3	8.4	9.0	8.4
EA	5.7	4.4	4.5	5.1	4.7	2.1	1.5	1.6	1.8	1.6	3.8	2.8	2.7	3.2	2.9	6.9	5.3	5.2	5.9	5.3
Gender: Male																				
EU	5.8	5.4	5.9	6.4	6.1	2.2	1.8	2.0	2.2	2.1	3.9	3.3	3.6	4.1	3.8	7.0	6.4	7.3	7.6	6.9
EA	5.1	4.0	4.1	4.5	4.2	1.9	1.4	1.4	1.7	1.5	3.4	2.6	2.6	3.0	2.7	6.1	4.6	4.7	5.3	4.8
Gender: Female																				
EU	7.4	7.3	6.4	8.2	7.7	2.7	2.4	2.5	2.8	2.5	5.1	5.1	4.9	5.4	5.3	9.4	9.8	9.8	10.4	9.7
EA	6.4	4.9	6.4	5.8	5.2	2.3	1.6	1.7	2.0	1.8	4.3	3.3	3.2	3.6	3.4	8.0	6.3	6.2	6.8	6.2
Age: 16 to 29																				
EU	7.1	7.7	8.0	8.0	8.4	2.5	2.6	2.7	3.1	3.0	5.0	5.7	5.8	6.1	6.4	9.3	10.7	10.9	10.9	11.6
EA	6.0	4.5	4.8	4.4	5.0	2.1	1.5	1.7	1.6	1.7	4.1	3.4	3.0	3.0	3.8	7.8	6.0	6.1	5.4	6.4
Age: 30 to 49																				
EU	6.7	6.9	7.6	8.0	7.6	2.4	2.4	2.4	2.7	2.5	4.5	4.8	4.8	5.3	5.1	8.4	9.0	9.3	10.1	9.9
EA	5.8	4.7	7.2	5.2	5.0	2.1	1.6	1.5	1.9	1.6	3.9	3.0	2.8	3.3	3.2	7.2	5.6	5.3	6.4	5.9
Age: 50 to 64																				
EU	6.4	5.6	6.3	6.6	6.1	2.4	1.9	2.2	2.4	2.1	4.3	3.5	3.9	4.3	3.9	7.9	6.6	7.9	7.7	7.2
EA	5.6	4.3	4.6	5.2	4.5	2.1	1.6	1.6	1.8	1.7	3.8	2.8	2.8	3.1	2.8	6.8	5.1	5.4	6.0	5.3
Age: 65+																				
EU	6.1	5.0	5.1	5.9	5.3	2.5	2.1	2.1	2.4	2.2	4.3	3.4	3.6	4.1	3.6	7.5	5.9	6.1	7.2	6.4
EA	5.2	4.0	4.1	4.8	4.2	2.1	1.6	1.7	1.9	1.7	3.7	2.7	2.8	3.3	2.8	6.4	4.7	4.7	5.6	5.0
Income: 1st quartile																				
EU	8.1	8.2	8.3	8.7	8.7	2.8	2.6	2.5	2.8	2.7	5.5	5.7	5.5	5.7	5.5	10.5	10.7	10.8	11.0	11.6
EA	7.0	5.6	5.7	6.5	6.1	2.4	1.7	1.7	2.1	1.8	4.7	3.6	3.6	4.0	3.7	8.9	6.7	6.9	8.0	8.0
Income: 2nd quartile																				
EU	6.9	7.0	8.9	7.6	7.4	2.6	2.4	2.4	2.5	2.4	4.8	4.6	4.4	5.0	4.7	8.7	9.1	8.8	9.5	9.3
EA	5.9	4.9	8.6	5.4	5.0	2.2	1.8	1.8	1.9	1.7	4.1	3.2	3.1	3.4	3.2	7.5	6.0	5.9	6.4	6.0
Income: 3rd quartile																				
EU	6.2	5.8	6.3	6.8	6.6	2.4	2.1	2.2	2.5	2.2	4.3	4.0	4.2	4.7	4.2	7.7	7.5	7.9	8.5	8.5
EA	5.4	4.2	4.2	4.8	4.4	2.0	1.6	1.6	1.8	1.7	3.7	3.0	2.8	3.2	3.0	6.7	5.1	5.0	5.7	5.2
Income: 4th quartile																				
EU	5.3	5.1	5.9	6.4	5.5	2.1	1.8	2.0	2.3	2.1	3.7	3.3	3.8	4.2	3.8	6.5	6.2	7.4	7.8	7.0
EA	4.6	3.3	3.6	4.1	3.5	1.8	1.3	1.4	1.7	1.5	3.2	2.3	2.3	2.8	2.5	5.6	4.0	4.2	5.0	4.3
Education: Primary																				
EU	7.9	7.9	8.7	9.5	8.7	2.7	2.6	2.9	2.9	2.8	5.4	5.3	6.0	6.8	5.9	10.2	10.0	11.8	13.3	11.1
EA	6.3	4.8	5.2	6.2	4.9	2.2	1.7	1.9	2.0	1.6	4.3	3.3	3.4	4.0	3.1	7.9	6.0	6.1	7.6	5.7
Education: Secondary																				
EU	6.7	6.4	8.2	7.3	7.1	2.4	1.8	2.4	2.5	2.2	4.6	4.2	4.7	5.0	4.6	8.4	8.6	8.9	9.1	8.8
EA	5.8	4.7	7.8	5.5	5.2	2.1	1.6	1.7	2.0	1.7	3.9	3.1	3.1	3.4	3.2	7.1	5.8	5.7	6.5	6.3
Education: Further																				
EU	5.6	5.8	6.1	6.6	6.3	2.2	2.1	2.1	2.4	2.2	3.8	3.9	3.9	4.3	4.2	6.9	7.4	7.7	8.6	7.5
EA	4.8	3.9	3.9	4.4	4.1	1.9	1.5	1.5	1.8	1.6	3.3	2.5	2.5	2.9	2.7	5.9	4.6	4.6	5.2	4.7

ANNEX

Reference series

Confidence indicators	Reference series from Eurostat, via Ecowin (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. In order to make the graphs more readable, two colours have been used for the tracer. The darker line shows developments in the current cycle, which in the EU and euro area roughly started in January 2008.

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  (EU Candidate & Potential Candidate Countries' Economic Quarterly)
- http://ec.europa.eu/economy_finance/publications/cycle_indicators/index_en.htm
  (European Business Cycle Indicators)

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