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European Business Cycle Indicators

2nd Quarter 2018

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European Commission
Directorate-General for Economic and Financial Affairs

European Business Cycle Indicators

2nd Quarter 2018

Special topic

- Is there scope for increasing confidence in consumer confidence indicators?

This document is written by the staff of the Directorate-General for Economic and Financial Affairs, Directorate A for Policy, Strategy, Coordination and Communication, Unit A3 - Economic Situation, Forecasts, Business and Consumer Surveys (http://ec.europa.eu/info/business-economy-euro/indicators-statistics/economic-databases/business-and-consumer-surveys_en).

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OVERVIEW

Recent developments in survey indicators

- After a small decline during the first quarter of 2018, the euro-area (EA) and EU Economic Sentiment Indicators (ESI) remained essentially unchanged during 2018Q2. Over the last three months, both indicators booked a minor decrease of 0.5 points, remaining nevertheless at historically elevated levels of 112.3 (EA) and 112.2 (EU) points.

- Broadly stable developments in the euro area resulted from virtually unchanged confidence in industry, retail trade, construction, and among consumers, while confidence decreased moderately in the services sector. The results were similar at EU-level, except for the construction sector, where confidence improved slightly, and among consumers, where confidence edged down.

- Among the seven largest EU economies, in 2018Q2, economic sentiment remained broadly stable in France (+0.4), Italy (−0.2), Spain (+0.4), and Poland (−0.1). Sentiment decreased in the Netherlands (−2.9) and, more marginally so, in Germany (−0.8), while it increased slightly in the UK (+1.6).

- Capacity utilisation in manufacturing decreased slightly in the euro area (−0.2 percentage points) and remained stable in the EU (+0.0), putting on hold a streak of seven consecutive quarters of increase. Currently, capacity utilisation is at 84.3% (EA) and 84.0% (EU), i.e. clearly above the two regions' respective long-term averages of around 81%. Also capacity utilisation in services saw a decrease of 0.2 percentage points in the EA, while increasing by 0.2 points in the EU. The current rates of 90.2% (EA) and 90.0% (EU) correspond to levels clearly above the long-term averages (calculated from 2011 onwards) of around 88½%.

Special topic: Is there scope for increasing confidence in consumer confidence indicators?

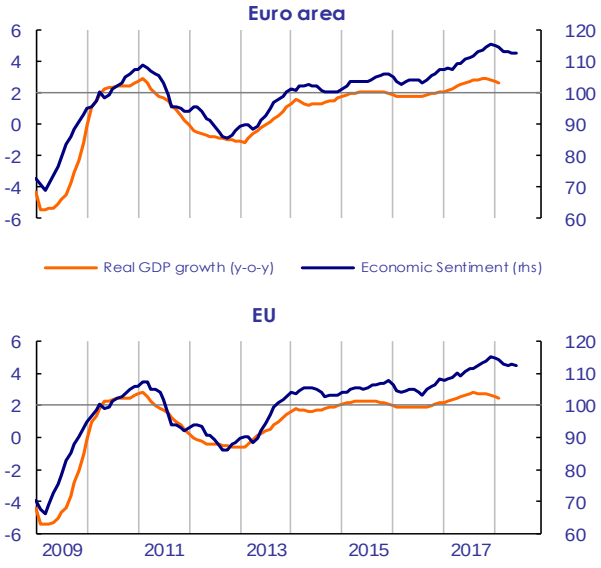
This special topic assesses possible alternatives to the current Consumer Confidence Indicator (CCI). The current CCI was designed in 2001. Since then, significant structural and geographical changes have taken place in the EU economy. Thus, while the CCI continues to track private consumption in the euro area well, some improvements may be conceivable. The choice of questions included in the alternative composite indicators is based on both their individual performance in tracking private consumption growth and a solid theoretical foundation. In terms of methodology, the comparison relies on six analytical blocks: correlation analysis, ability to track directional change, in- and out-of-sample forecasting performance, volatility analysis, and an examination of the impact on the European Commission's Economic Sentiment Indicator (ESI). The analysis, which is performed both on the aggregate euro area/EU and the country level, concludes that there is no silver bullet. However, some of the more micro-oriented alternative indicators score well from both a conceptual and empirical point of view.

1. RECENT DEVELOPMENTS IN SURVEY INDICATORS

1.1. EU and euro area

After a small decline during the first quarter of 2018, the euro-area (EA) and EU Economic Sentiment Indicators (ESI) remained essentially unchanged during 2018Q2 (see Graph 1.1.1). Over the last three months, both indicators booked a minor decrease of 0.5 points, remaining nevertheless at historically elevated levels of 112.3 (EA) and 112.2 (EU) points.

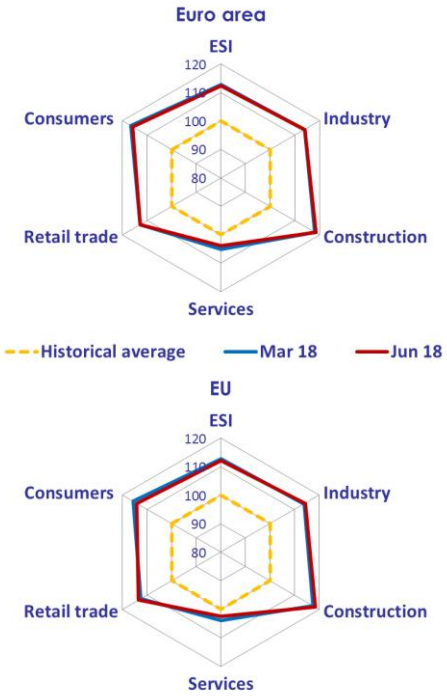
Graph 1.1.1: Economic Sentiment Indicator



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, Markit Economics' Composite PMI for the euro area decreased only marginally during 2018Q2 following the steep fall in 2018Q1. By contrast, the Ifo Business Climate Index (for Germany) continued its decline in 2018Q2.

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, euro-area confidence remained broadly stable in 2018Q2 in industry, retail trade, construction, and among consumers, while it decreased mildly in the services sector (see Graph 1.1.2). The results were similar at EU-level, except for the construction sector, where confidence improved slightly, and among consumers, where confidence edged down.

In terms of levels, all euro-area and EU confidence indicators remain well above their respective long-term averages. In particular, the confidence indicator for construction reached its highest level on record in the middle of the second quarter.

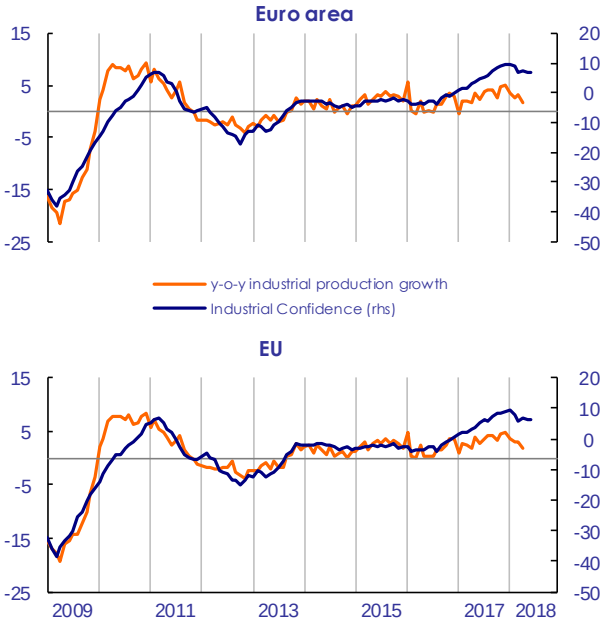
Among the seven largest EU economies, in 2018Q2, economic sentiment remained broadly stable in France (+0.4), Italy (−0.2),

Spain (+0.4), and Poland (−0.1). The indicator decreased in the Netherlands (−2.9) and, marginally so, in Germany (−0.8), while it increased slightly in the UK (+1.6).

Sector developments

In both the euro area and the EU, **industrial confidence** remained virtually unchanged during 2018Q2, after a decline in the previous quarter. The indicators are now 0.1 points lower (EA) and 0.5 points higher (EU) than in March. As illustrated by Graph 1.1.3, industry confidence remains strong by historic standards in both the EA and the EU.

Graph 1.1.3: Industry Confidence indicator

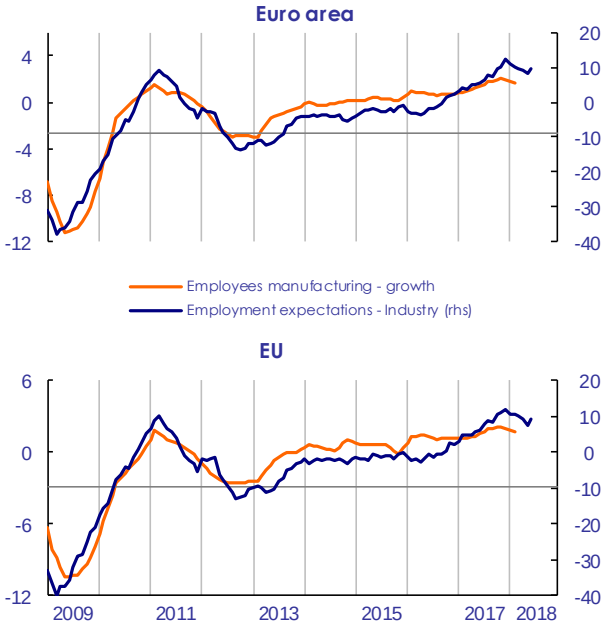


The broadly flat developments in the confidence indicators resulted from managers' virtually stable assessments of overall order books and the stocks of finished products, compensating for slightly brighter production expectations.

Of the components not included in the confidence indicators, managers' views on past production worsened markedly in 2018Q2, while their assessment of export order books registered only a small decline in the EU and a marginal one in the euro area.

During 2018Q2, selling price expectations lowered in both the euro-area and the EU. Manufacturing managers' employment expectations were broadly unchanged over the quarter, thanks to a recovery in June that interrupted the downward trend that had started at the end of 2017 (see Graph 1.1.4).

Graph 1.1.4: Employment - Industry Confidence indicator

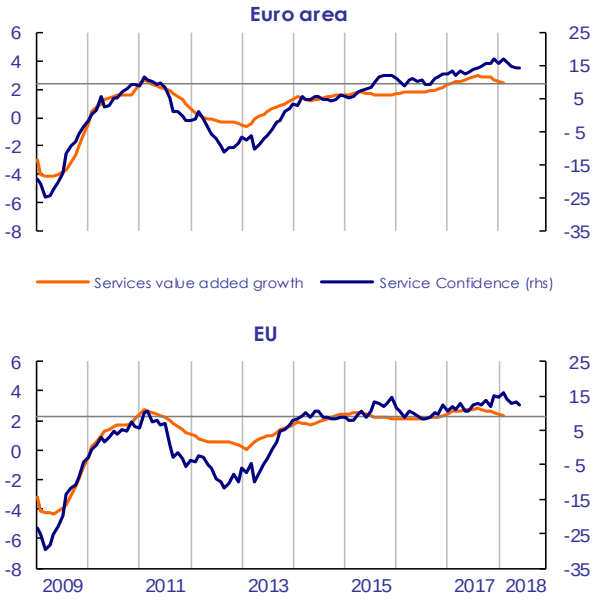


Among the seven largest EU Member States, confidence in industry steamed ahead in the UK (+5.8) and France (+4.0). By contrast, the indicator decreased in Spain (−2.4), Italy (−2.1) and, to a lesser extent, in the Netherlands (−1.5), and remained essentially unchanged in Germany (+0.3) and Poland (+0.6).

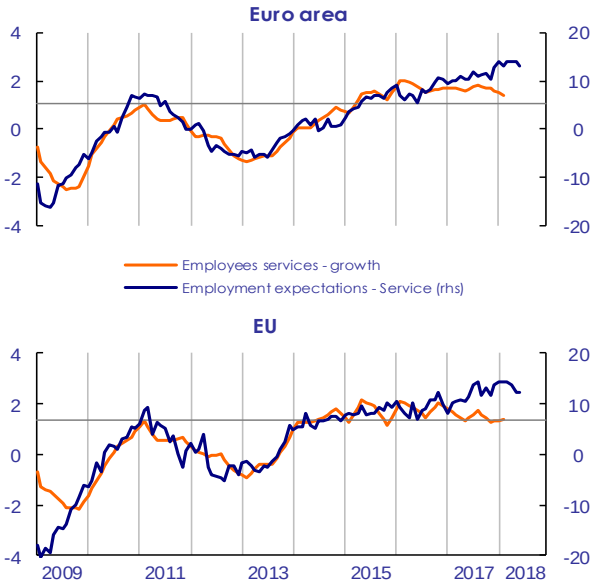
In the quarterly manufacturing survey (carried out in April), **capacity utilisation in manufacturing** decreased slightly in the euro area (−0.2 percentage points) and remained stable in the EU (+0.0), putting on hold a streak of seven consecutive quarters of increase. Currently, capacity utilisation is at 84.3% (EA) and 84.0% (EU), i.e. markedly above the two regions' respective long-term averages of around 81%.

Confidence in the **services sector** edged down again in 2018Q2. The indicator lost 1.6 (EA) and 1.9 (EU) points over the quarter but remains comfortably above its long-term average (see Graph 1.1.5).

Graph 1.1.5: Services Confidence indicator



Graph 1.1.6: Employment - Services Confidence indicator



The worsening of the confidence indicator in the euro area and the EU resulted mainly from deteriorating views on the past business situation and, to a lesser extent, on past demand. Managers' demand expectations remained broadly stable in the euro area, while they edged down in the EU.

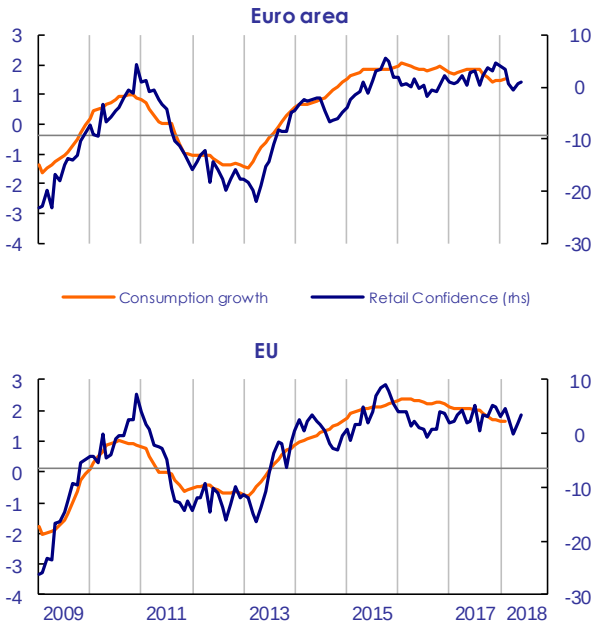
In both areas, service managers' employment expectations are at a lower level in June than in March, interrupting the slow but steady upward trend observable since around mid-2016 (see Graph 1.1.6). Meanwhile, selling price expectations remained broadly unchanged in the euro area and edged up in the EU.

Focussing on the seven largest EU economies, a comparison of March and June readings shows moderate improvement only in Italy (+1.8). By contrast, the indicator decreased markedly in the UK (−4.3) and Germany (−3.2), while losing momentum also in Spain (−3.0), France (−2.1), and Poland (−1.1); it remained essentially unchanged in the Netherlands (−0.1).

Capacity utilisation in services, as measured by the quarterly survey in April, saw an decrease of 0.2 percentage points in the EA, while the indicator increased by 0.2 points in the EU. The current rates of 90.2% (EA) and 90.0% (EU) correspond to levels clearly above the long-term averages (calculated from 2011 onwards) of around 88½%.

Retail trade confidence remained unchanged in the euro area (+0.0) and broadly stable in the EU (+0.5). All in all, the two indicators are showing rather flat developments around historically high levels since late 2016/early 2017 (see Graph 1.1.7).

Graph 1.1.7: Retail Trade Confidence indicator



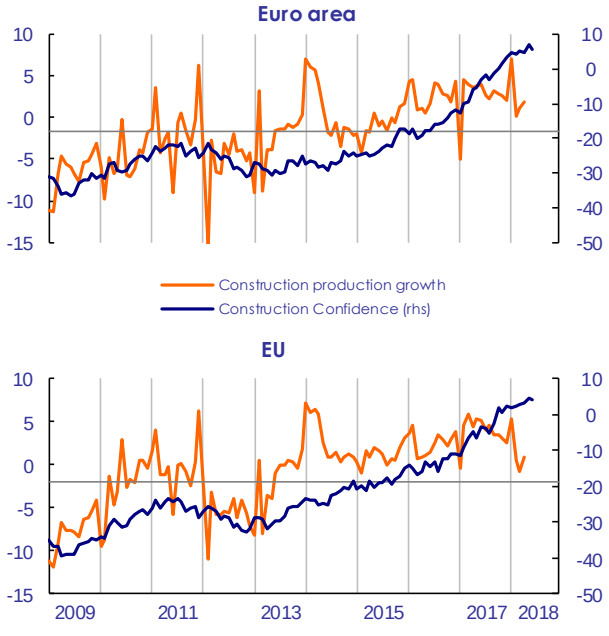
In both areas, (virtually) flat developments resulted from more positive views on the expected business situation, which were partly offset by the worsening of managers' assessment of the past business situation; their views on the adequacy of the volume of stocks

edged down in the EU and decreased only marginally in the euro area.

At the level of the seven largest EU economies, confidence increased in the UK (+2.7) and France (+2.6). By contrast, the indicator decreased strongly in the Netherlands (−3.3) and, to a lesser extent, Poland (−1.8) and Italy (−1.7), while sentiment remained broadly flat in Spain (+0.6) and Germany (+0.1).

Continuing the upward trend that started in mid-2014, **construction confidence** increased further in 2018Q2, gaining 1.2 points on the quarter in the EU; the increase was only marginal in the euro area (+0.4). In both areas, the appraisal of firms' current order books was brighter, although only slightly so in the euro area, while managers' employment expectations remained broadly unchanged.

Graph 1.1.8: Construction Confidence indicator

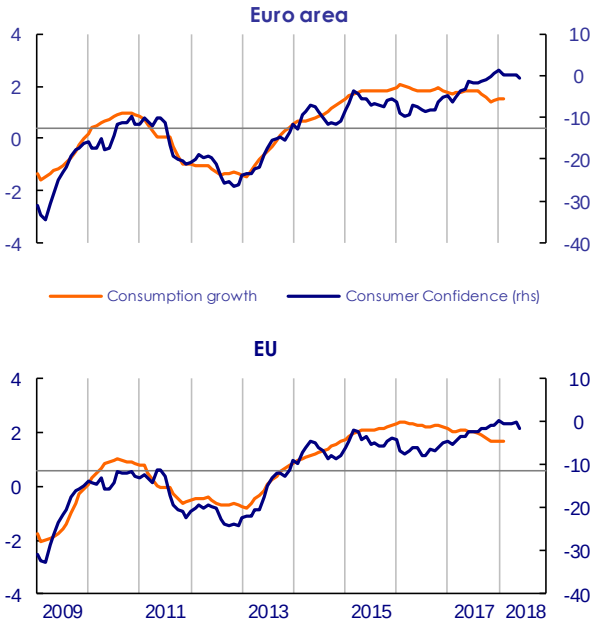


Among the seven largest EU economies, the indicator increased strongly in the UK (+5.6) and Spain (+3.8). By contrast, confidence worsened markedly in the Netherlands (−4.6), and edged down in Italy (−1.1), while remaining broadly stable in Germany (−0.6), Poland (−0.4), and France (+0.6).

Consumer confidence edged down in 2018Q2. June readings compared to March were slightly lower in the EU (−1.0), while the decrease was only minor in the euro area (−0.6). Both indicators remained nevertheless at historically high levels (see Graph 1.1.9).

In both areas, consumers were more pessimistic about the future general economic situation of their country, while their expectations about their personal financial situation, their savings, and about unemployment remained virtually unchanged in both areas.

Graph 1.1.9: Consumer Confidence indicator



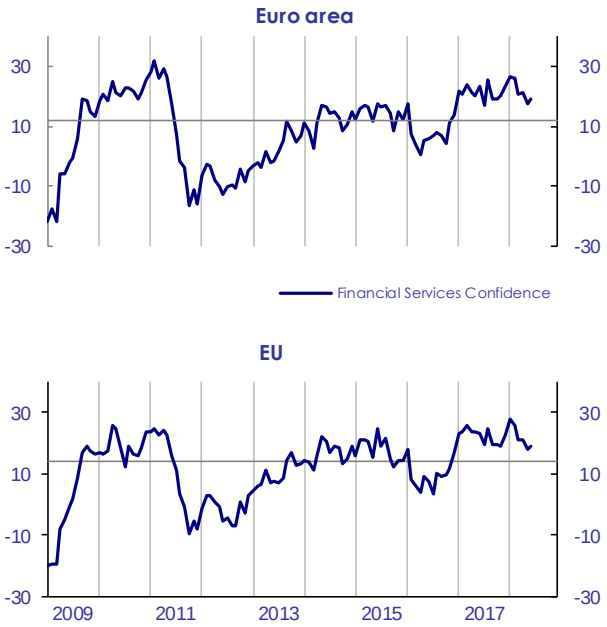
In the seven largest EU economies, consumer confidence worsened markedly in the UK and France (−3.6 in both countries). It booked somewhat more moderate decreases in the Netherlands (−2.3) and Germany (−1.5). By contrast, consumer confidence improved strongly in Spain (+5.3) and brightened also in Italy (+2.4) and Poland (+1.7).

Confidence in the **financial services** sector (not included in the ESI) deteriorated over the quarter (−1.9 in the euro area; −2.3 in the EU). Overall, the indicator has moved sideways around a constant trend since the beginning of 2017 and is still above its long term average (see Graph 1.1.10).

In the EU, the worsening of confidence resulted from a deterioration of all three components (managers' assessment of the past business situation, past demand, and their demand expectations), while in the euro area, the latter remained virtually stable and only managers'

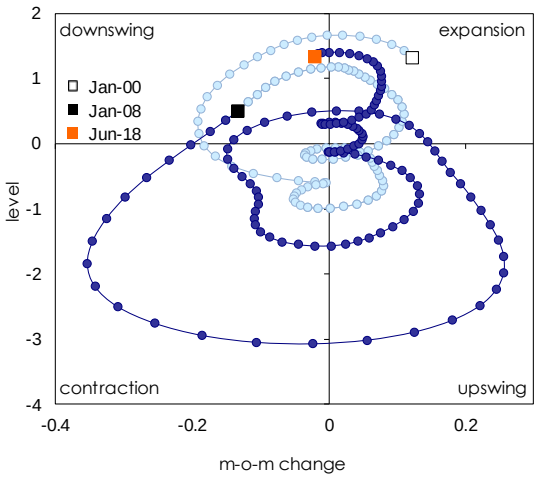
assessment of the past business situation and past demand worsened.

Graph 1.1.10: Financial Services Confidence indicator



Reflecting the developments of overall sentiment in the first half of 2018, both the euro area and EU **climate tracers** (see Annex for details) left the expansion quadrant and moved to the downswing area (see Graphs 1.1.11 and 1.1.12).

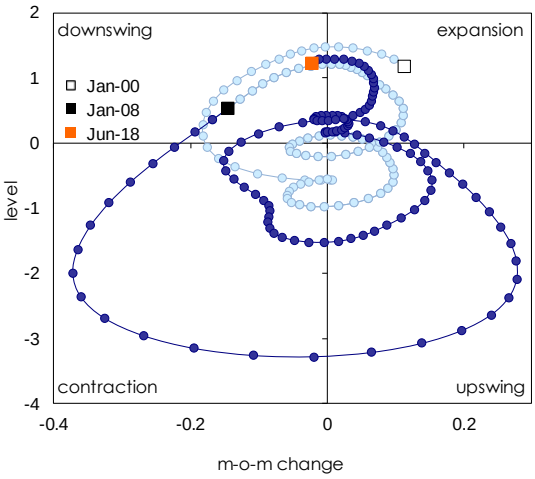
Graph 1.1.11: Euro area Climate Tracer



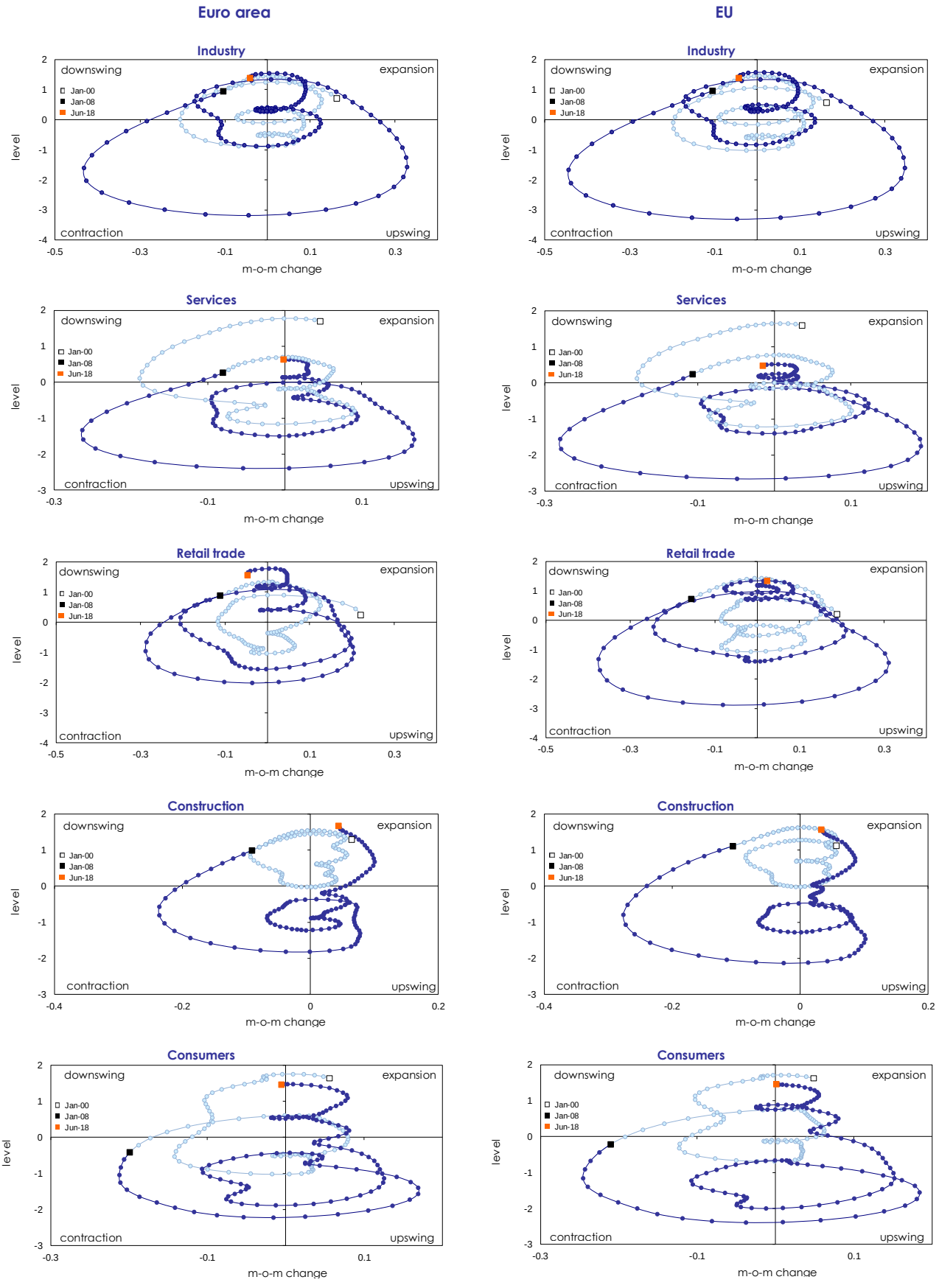
The sectoral climate tracers (see Graph 1.1.13) are in line with the overall tracers in so far as most of them moved from the expansion area to the downswing quadrant, or are about to. In the case of the EU retail trade sector, the climate tracer almost entered the downswing area before moving back to the expansion quadrant.

Only the climate tracer for the construction sector remained firmly in the expansion quadrant.

Graph 1.1.12: EU Climate Tracer



Graph 1.1.13: Economic climate tracers across sectors

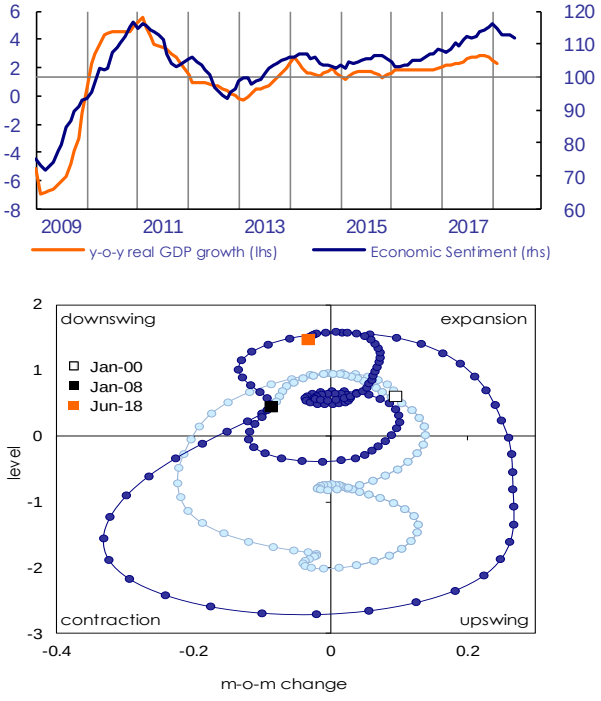


1.2. Selected Member States

Over 2018Q2, economic sentiment remained broadly unchanged in France (+0.4), Italy (−0.2), Spain (+0.4), and Poland (−0.1). Sentiment increased slightly in the UK (+1.6), while it worsened in the Netherlands (−2.9) and decreased marginally in Germany (−0.8).

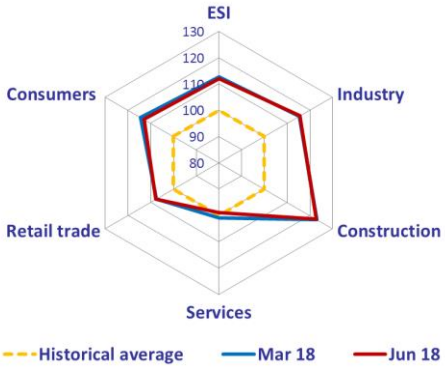
Sentiment in **Germany** booked a minor decrease after a decline in the first quarter, losing only 0.8 points compared to March. At 111.9 points, the indicator remains very comfortably above its long-term average of 100. In terms of the climate tracer (see Graph 1.2.1), the German economy moved from the expansion area to the downswing quadrant, although its position remains quite high.

Graph 1.2.1: Economic Sentiment Indicator and Climate Tracer for Germany



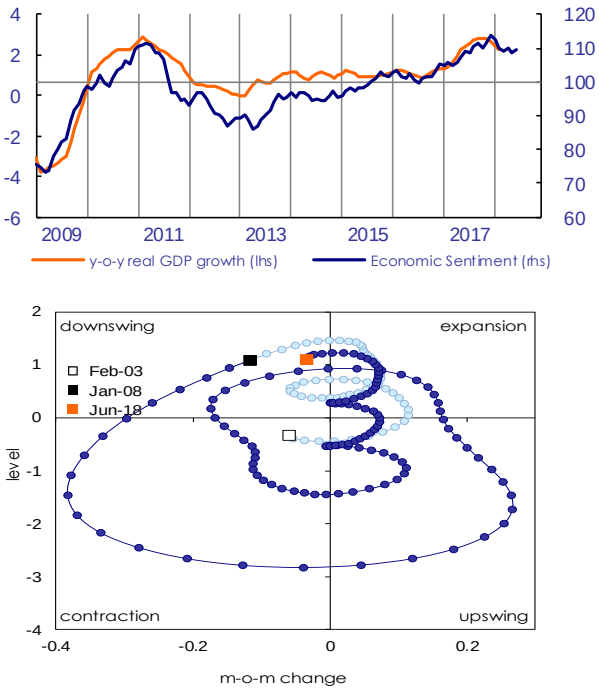
From a sectoral perspective, June confidence is broadly at the same level as in March in industry, retail trade and construction, while it deteriorated visibly in services. Confidence also edged down among consumers. In line with the ESI, and with the notable exception of the services sector, the sectoral confidence indicators are still at levels well in excess of their respective historical averages (see Graph 1.2.2). The level of confidence is particularly high in the German construction sector.

Graph 1.2.2: Radar Chart for Germany



Also in **France** the indicator remained broadly unchanged, following a decrease in the first quarter. At 109.6 points, the headline indicator remains well above its long-term average of 100. Nonetheless, the French climate tracer left the expansion area and entered the downswing quadrant (see Graph 1.2.3).

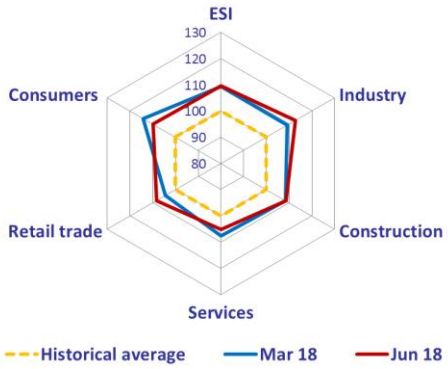
Graph 1.2.3: Economic Sentiment Indicator and Climate Tracer for France



A look at the French radar chart (see Graph 1.2.4) reveals that broadly flat overall developments resulted from increases in industry and retail trade, offsetting more pessimistic views among consumers and in services. In the construction sector, confidence

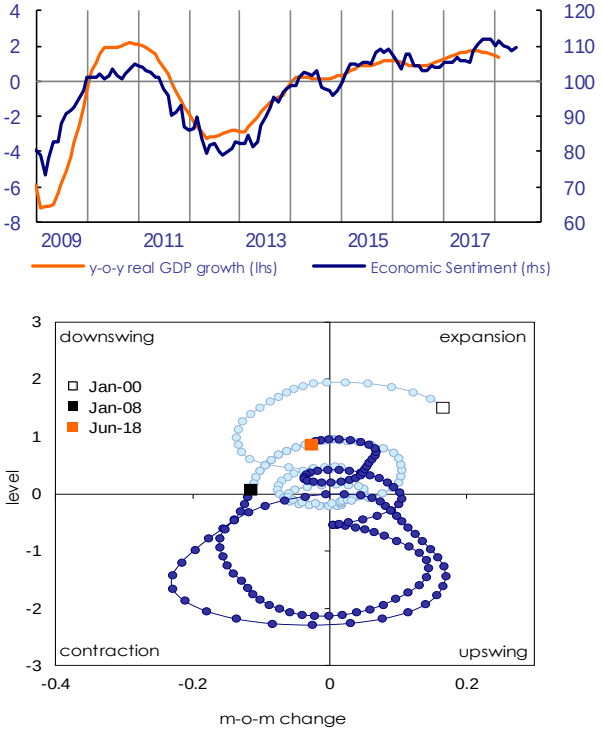
remained virtually unchanged. In terms of levels, sentiment continued to exceed its long-term average in all surveyed parts of the economy.

Graph 1.2.4: Radar Chart for France



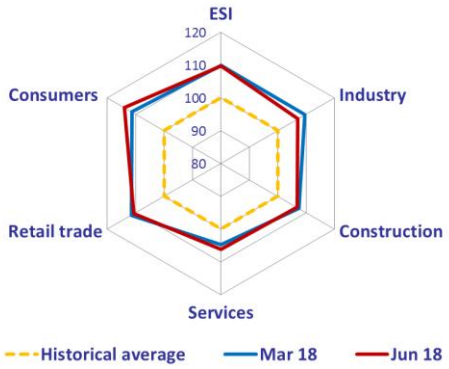
Similarly, the **Italian** ESI ended 2018Q2 broadly at the same level as in March (−0.2 points), after a decline in the first quarter. It now stands at 109.6 points, clearly above its long-term average of 100. Also the Italian climate tracer (see Graph 1.2.5) left the expansion quadrant and moved to the downswing area.

Graph 1.2.5: Economic Sentiment Indicator and Climate Tracer for Italy



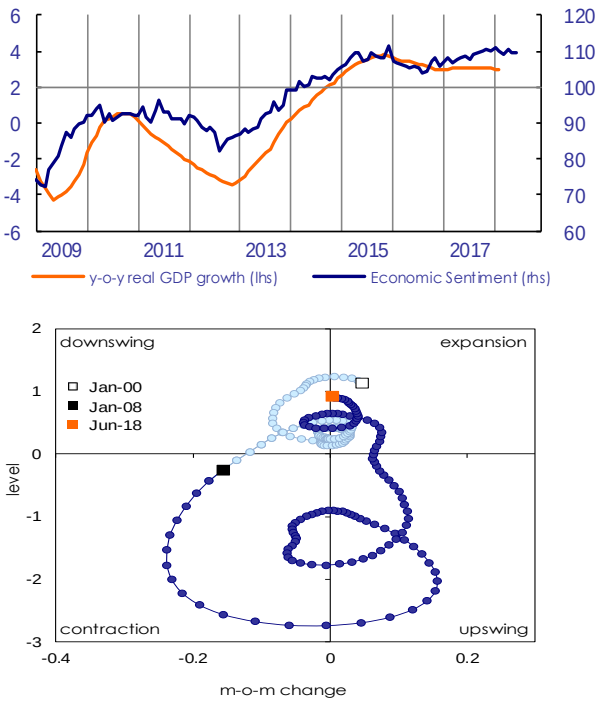
At sectoral level, it emerges that confidence edged down in the construction and retail trade sectors. Confidence decreased also in industry, while it improved in services and among consumers (see Graph 1.2.6). All sectoral indicators are clearly outperforming their respective historical averages.

Graph 1.2.6: Radar Chart for Italy



The **Spanish** ESI remained almost unchanged in 2018Q2 (+0.4 points). The indicator has showed a broadly constant level for more than a year now; at 109.4 points, it continues being firmly above its long-term average of 100. In line with this stable position at a high level, the country's climate tracer stayed on the border between the downswing and expansion areas (see Graph 1.2.7).

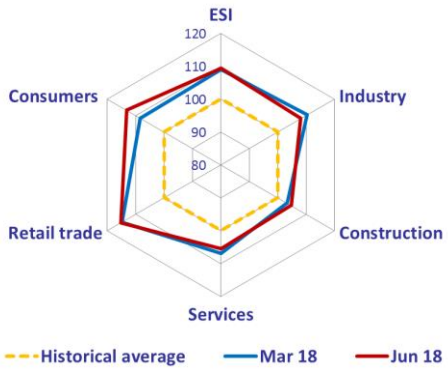
Graph 1.2.7: Economic Sentiment Indicator and Climate Tracer for Spain



As the radar chart highlights (see Graph 1.2.8), confidence increased significantly among

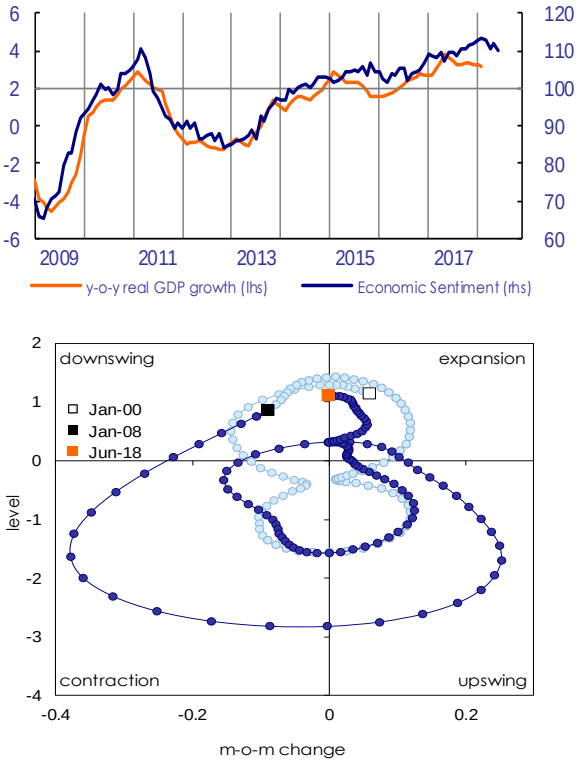
consumers and in construction. By contrast, confidence worsened in services and industry, and remained broadly stable in the retail trade sector. Currently, confidence is scoring rather high by historic standards in all the sectors.

Graph 1.2.8: Radar Chart for Spain



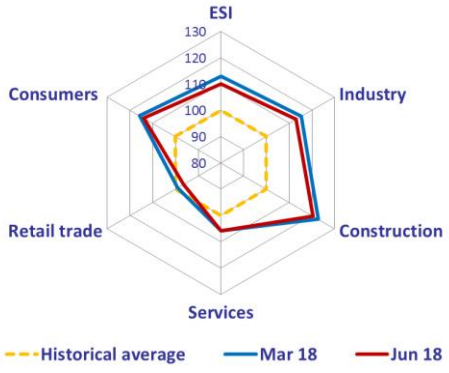
Dutch sentiment worsened during 2018Q2, interrupting the upward trend that was visible since mid-2016. The Dutch ESI lost 2.9 points on the quarter, but its current level of 109.9 points is nonetheless well in excess of the indicators' long-term average of 100. In terms of the climate tracer (see Graph 1.2.9), the Dutch economy is now on the border between the expansion and the downswing quadrants.

Graph 1.2.9: Economic Sentiment Indicator and Climate Tracer for the Netherlands



The Dutch radar chart (see Graph 1.2.10) shows that confidence is lower in June than in March in all surveyed sectors. It decreased markedly in construction and retail trade. It also decreased, to a lesser extent, among consumers and in industry, while confidence remained almost stable in services. Nevertheless, confidence in industry, services, among consumers and, in particular, construction, is well above the respective historical averages. Only retail trade confidence is now at a level slightly below the historical benchmark.

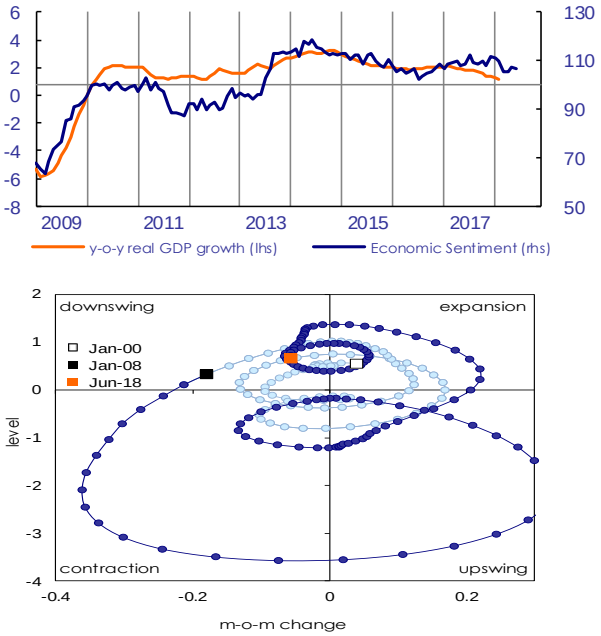
Graph 1.2.10: Radar Chart for the Netherlands



After falling in the first quarter of 2018, sentiment in the **United Kingdom** picked up slightly during the second quarter and is now

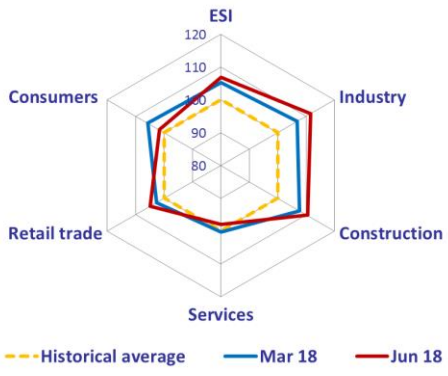
1.6 points higher than three months ago. At 106.9 points, the indicator remains above its long-term average of 100. Meanwhile, the UK climate tracer moved further into the downswing quadrant (see Graph 1.2.11).

Graph 1.2.11: Economic Sentiment Indicator and Climate Tracer for the United Kingdom



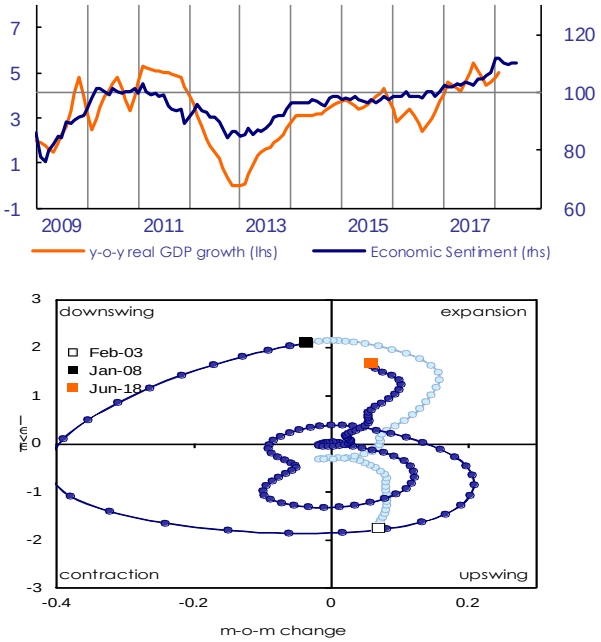
Focussing on sectoral developments (see Graph 1.2.12), confidence improved strongly in industry, construction, and, to a lesser extent, in retail trade. By contrast, confidence worsened markedly in services and among consumers. Currently, confidence remains high by historical standards in industry, construction and retail trade, while consumer confidence is moving close to its historical benchmark and confidence in services is now lower than its long-term average.

Graph 1.2.12: Radar Chart for the UK



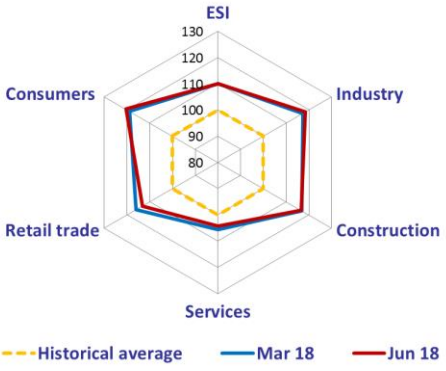
After an increase around the turn of the year, **Polish** sentiment remained broadly stable in 2018Q2. The polish ESI is currently 0.1 points lower than in March, at 109.9 points, significantly above the long-term average. The Polish climate tracer remained in the expansion quadrant, while bending slightly towards the downswing area (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), broadly flat developments in the overall sentiment resulted from almost stable confidence in industry and construction, while confidence increased slightly among consumers and edged down in services and retail trade. All the indicators remain well above their respective long-term averages.

Graph 1.2.14: Radar Chart for Poland



2. SPECIAL TOPIC: IS THERE SCOPE FOR INCREASING CONFIDENCE IN CONSUMER CONFIDENCE INDICATORS?

Introduction

The European Commission has published Consumer Confidence Indicators (CCI) since the 1970s. It is good practice to evaluate composite indicators periodically. The current CCI, based on four questions of the Harmonised EU-wide Consumer Survey, was designed in 2001[1]. Since then, significant structural and geographical changes have taken place in the EU economy. While the current CCI continues to track private consumption in the euro area rather well, some improvements are conceivable. In particular, the current CCI has been criticised both on conceptual grounds in terms of its composition and for tracking private consumption in some member states comparably poorly.[2]

Against this background, this special topic assesses possible alternatives to the current CCI and evaluates their strengths and weaknesses. The choice of questions to be included in the alternative composite indicators is based on two criteria: their performance in tracking private consumption growth at EU, euro-area and Member States levels, and a solid theoretical foundation. Currently, the CCI is a mix of macro- and micro-oriented questions covering expectations regarding the development of households' financial situation, the general economic situation, unemployment and savings. An alternative could be an indicator which has a more solid micro-foundation, as consumers can be assumed to have better knowledge of their own economic situation than of macro-economic variables.[3]

Five alternative indicators are constructed and compared to the current CCI. In terms of methodology, the comparison relies on six analytical blocks: correlation analysis, ability to track directional change, two simple in-sample models, an out-of-sample forecasting exercise and a volatility analysis. Finally, the impact of changing the composition of the CCI on the European Commission's Economic Sentiment Indicator (ESI) is tested.

Theoretical and conceptual considerations

The wealth of information contained in the BCS consumer questionnaire can be categorised in two ways. First, one can distinguish between household-specific (micro) and macro-oriented questions. Household-specific questions refer to households' past and expected financial situation, intentions to spend on major purposes, current savings and intentions to save. Macro-oriented questions cover perceptions of past and expected future changes in the general economic situation, inflation perceptions and expectations as well as unemployment expectations. Two questions lie in between micro- and macro-based questions, asking if in view of the general economic situation it is now the right moment to make major purchases or to save.[4] Second, one can regroup these questions by differentiating between forward-looking

1 See European Economy Supplement B, 8-9/2001, http://ec.europa.eu/archives/economy_finance/publications/archives/pdf/publication2498_en.pdf

2 See, for example, KBC (2017) Economic Opinions, 20 September 2017. Consumer confidence not always a reliable predictor of consumer spending https://multimediafiles.kbcgroup.eu/uploadpdf/EO20170920E.pdf, and DI Analysis (2017) Historical Optimism among EU Consumers. November 2017. https://di.dk/SiteCollectionDocuments/Historical%20Optimism%20Amongst%20EU%20Consumers.pdf.

3 See, for example, "The quest for the best consumer confidence indicator", by Andreas Jonsson and Staffan Lindén, European Economy, Economic Papers 372, March 2009. http://ec.europa.eu/economy_finance/publications/pages/publication_summary14351_en.htm

4 The question whether it is now the right moment to save (Q10) is not fully harmonised across the EU and is therefore not used in the analysis.

questions and those referring to past developments or the current situation.

It has to be noted that the relationship between inflation as well as savings and private consumption is ambiguous. As regards savings, intentions to save can derive from increases in income, which would equally produce a positive impact on consumption. At the same time, higher savings can reflect households' precautionary savings, which would negatively affect consumption. Therefore, in conceptual terms it does not seem warranted to include these questions in the CCI.[5]

As previous work on consumer confidence has shown, in theoretical terms micro-oriented questions seem to be better suited as predictors of private consumption compared to macro-oriented questions.[6] This is because, due to, among others, time and ability constraints, consumers can be expected to have better knowledge of their own economic situation than of the general economic environment. Moreover, provided that survey samples are representative, questions on households' financial situation and spending intentions should aggregate into an indicator mirroring consumption. For macro-oriented questions such an aggregation is somewhat more ambiguous in conceptual terms. Moreover, it can be argued that micro-based questions have a higher degree of complementarity to the information contained in 'hard-data' series, which is an advantage when using the CCI in forecasting models for private consumption.[7]

At the same time, when constructing a survey-based indicator, one has to bear in mind that an exclusive focus on micro-oriented questions might entail a risk of missing out on important information on consumer sentiment transmitted through macro-oriented questions in the BCS questionnaire. Therefore one should also rely on a second theoretical pillar, positing that the CCI should reflect expectations about the future. This is based on the basic insight of economic theory that consumer behaviour is guided by expectations about the future. While this role is primarily attributed to income expectations, it can arguably be maintained that expectations about major economic developments cannot be decoupled from consumers' confidence about their economic position in the future.[8]

Departing from these considerations, questions in an alternative CCI should be either expectation-based or micro-oriented or – ideally – fulfil both criteria. In this special topic five alternative CCIs are analysed and compared to the current indicator. In all alternative CCIs, the questions are attributed equal weights, as there is no *a priori* reason to proceed otherwise. As such, the decision to stick to the simple and transparent methodology used to construct the current CCI relies on the insight from previous work that indicators derived employing more complex data-driven statistical techniques (e.g. principal component analysis and ridge regression models) do not necessarily deliver significant improvements to the indicator's performance.[9]

First, relying on purely theoretical considerations, the ideal choice appears to be an indicator consisting of **Q2** (expected financial situation of the household over the next 12 months) and **Q9** (intended spending on major purchases), as, being expectations- and micro-based, these two questions fulfil both theoretical criteria at the same time. Moreover, Q2 and Q9 have high correlations with private consumption (see the annex to this section). This alternative indicator is called the '**Minimal-indicator**'.

5 In addition, BCS consumer survey questions on inflation are those most weakly correlated with private consumption.

6 See Jonsson and Lindén 2009 (op. cit.).

7 See Gayer, C., Girardi, A. and Reuter, A. (2016) Replacing Judgment by Statistics: Constructing Consumer Confidence Indicators on the Basis of Data-driven Techniques. European Commission Discussion Paper 034, July 2016. https://ec.europa.eu/info/sites/info/files/dp034_en_0.pdf.

8 Acemoglu, D. and Scott, A. (1994) Consumer Confidence and Rational Expectations: Are Agents' Beliefs Consistent with the Theory? The Economic Journal 104 (422), pp. 1 19.

9 See Gayer, Girardi and Reuter 2016 (op. cit.)

The second alternative indicator, called the '**Reduced Micro-indicator**', is a micro-based indicator composed of **Q1** (financial situation of the household over the past 12 months), **Q2** and **Q9**.[10]

The third alternative, called the '**Reduced Expectations-indicator**', is an expectations-based indicator with **Q2**, **Q4** (expected general economic situation in the country over the next 12 months) and **Q9**. It does not include the question on unemployment expectations (Q7) – which is forward-looking and part of the current CCI – for two reasons. First, Q7 has a lower correlation with private consumption compared to Q2, Q4 and Q9 (see the annex to this section). Second, in conceptual terms, Q7 would partly overlap with the information transmitted by Q4, as unemployment can arguably be considered part of the general economic situation.

The fourth alternative indicator is composed of **Q1**, **Q2**, **Q4** and **Q9** and called the '**Micro-and-Expectations-Mix**'. The idea behind it is to mainly rely on micro-based questions as included in the Reduced Micro-indicator, while complementing them with consumers' expectations in regard to general economic developments.

Finally, the current CCI and these four alternatives are compared to a benchmark based on macro-oriented questions only (forward- and backward-looking) – **Q3** (assessment of the general economic situation over the past 12 months), **Q4**, **Q7** and **Q8** (in view of the general economic situation, is it the right moment to make major purchases?) – in order to assess if the comparison with this '**Macro-benchmark**' corroborates the theory-based preference for micro-oriented and expectations-based questions.

Correlation analysis

The reference series for private consumption is Eurostat's Household & NPISH Final Consumption Expenditure, chain-linked volumes, reference year 2010, seasonally and calendar-adjusted. As the reference series is available with a quarterly frequency, the monthly BCS survey data are transformed into a quarterly frequency by calculating the average balance of the three months in each quarter.[11]

The correlations are computed for the euro area, the EU, the EU27 (without the UK) and individual Member States. Instead of EU, the main focus in this special is on the EU27 on the grounds of the technical assumption that the Brexit will take place in spring 2019 as currently envisioned. The correlations are calculated for two time periods. The first time period goes from 1995-q1 until 2017-q4, which reflects the availability of private consumption and survey data for most countries as well as the EA19 and EU27 aggregates. As the analysis take into consideration the y-o-y changes in the reference series, the first value entering the calculation is from 1996-q1. The second time period starts after the financial crisis, i.e. 2010-q1 until 2017-q4. 2010-q1 is chosen as it is the first quarter with euro area GDP growing after the financial crisis. It is important to analyse the performance of the different CCIs in this more recent time period, as during the financial crisis correlation values of several questions deteriorated, which cannot be assumed to represent a new normal. Moreover, recent correlations between the CCIs and private consumption are likely to be more indicative of a future statistical relationship than the values before the financial crisis.

Both coincident and one-quarter leading correlations are calculated. The correlation analysis is performed both on the aggregate euro area and EU27 and the country level. On the country level, a special focus is on the performance of indicators across the largest countries in the EU27 (i.e. Germany, Spain, France, Italy, the Netherlands and Poland), but results for all 27 countries are taken into account.

[10] The decision not to include the equally micro-oriented question Q12 is based on its low correlation with private consumption (see the annex to this section).

[11] The choice to proceed in this way is based on the fact that transforming quarterly data into monthly requires more, and stronger, assumptions.

Table 1 provides an overview of results on the aggregate level. Most indicators – Minimal, Reduced Expectations, Reduced Micro and Micro-and Expectations-Mix – consistently perform better than the current CCI, i.e. there are no instances where the current CCI is better than any of these four indicators, yet there are cases where its correlation values are equal. The differences between these four indicators and the current CCI are significant for the coincident and the leading correlations in 1996-q1 – 2017-q4. In contrast, for the shorter period from 2010-q1 until 2017-q4, only small or no differences between the current CCI and these four indicators can be observed.

Table 1: Correlations for the euro area and EU27

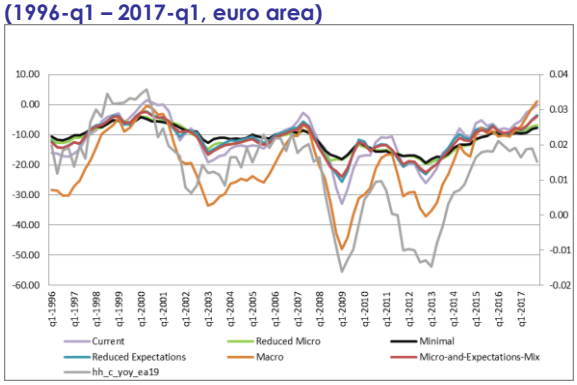
	Macro (Q3, Q4, Q7, Q8)	Minimal (Q2, Q9)	Reduced Expectations (Q2, Q4, Q9)	Reduced Micro (Q1, Q2, Q9)	Micro-and-Expectations-Mix (Q1, Q2, Q4, Q9)
Coincident correlation in 1996-q1 - 2017-q4					
No. of countries with a higher correlation	22	12	13	14	15
% of EU27	81.48%	44.44%	48.15%	51.85%	55.56%
No. of countries with the equal correlation	1	1	1	1	1
% of EU27	3.70%	3.70%	3.70%	3.70%	3.70%
% of countries with a higher or equal correlation	85.19%	48.15%	51.85%	55.56%	59.26%
Coincident correlation in 2010-q1 - 2017-q4					
No. of countries with a higher correlation	20	14	7	16	18
% of EU27	74.07%	51.85%	25.93%	59.26%	66.67%
No. of countries with the equal correlation	1	1	3	2	3
% of EU27	3.70%	3.70%	11.11%	7.41%	11.11%
% of countries with a higher or equal correlation	77.78%	55.56%	37.04%	66.67%	77.78%

Source: European Commission calculations.

Interestingly, all alternative CCIs as well as the current CCI consistently outperform the Macro-indicator, which corroborates the reservations against relying on macro-oriented and backward-looking questions. It has to be acknowledged, however, that the performance of the Macro-indicator has considerably improved after the financial crisis.

Next to comparing the numerical results of the correlation analysis, it is useful to look at a graphical representation of the reference series and alternative CCIs over time. Plotting all indicators in one graph (Graph1), it is striking that the Macro-benchmark is characterised by a much larger amplitude compared to, especially, the Minimal-, Reduced Expectations-, Reduced Micro- and Micro-and-Expectations-Mix-indicators. The amplitude of these four indicators is also somewhat smaller than that of the current CCI.

Graph 1: Private consumption and alternative CCIs (1996-q1 – 2017-q1, euro area)



Source: European Commission.

On the country level, a much more heterogeneous picture emerges. Focusing on the six largest EU27 economies, one can see that apart from Spain, correlations for all the other countries are much lower compared to the aggregate level (Table 2).

In Germany, Spain, France and Poland the current CCI performs worse compared to all other alternatives. Although this is not the case for Italy, this means that there is scope to improve the performance of the CCI across the largest EU economies.

Table 2: Coincident correlations in the largest EU27 economies in 1996-q1 – 2017-q4

	Coincident correlations in 1996-q1 - 2017-q4					
	Current (Q2, Q4, Q7, Q11)	Macro (Q3, Q4, Q7, Q8)	Minimal (Q2, Q9)	Reduced Expectations (Q2, Q4, Q9)	Reduced Micro (Q1, Q2, Q9)	Micro-and-Expectations-Mix (Q1, Q2, Q4, Q9)
DE	0.42	0.48	0.54	0.44	0.53	0.48
ES	0.81	0.86	0.89	0.85	0.91	0.89
FR	0.67	0.76	0.74	0.76	0.74	0.77
IT	0.69	0.66	0.51	0.64	0.61	0.68
NL	0.71	0.72	0.78	0.56	0.80	0.70
PL	0.69	0.74	0.72	0.69	0.71	0.70
AVG corr	0.67	0.70	0.70	0.66	0.72	0.70

Sources: European Commission calculations.

Comparing the indicators among each other, Reduced Micro and Minimal perform better than the current CCI in all largest countries apart from Italy. Conversely, the Micro-and-Expectations-Mix performs well in the case of Italy, but is marginally weaker than the current CCI in the Netherlands, where its performance is, however, still mid-range. The Macro-benchmark has the highest correlation in the case of Poland and performs well or mid-range

in the other countries. The current CCI and Reduced Expectations show the weakest results. Both have low correlations for Germany and comparatively low ones for Poland; the former is the weakest indicator for France, the latter for the Netherlands. This pattern is reflected in average correlations across the six countries, where Reduced Micro is the best (0.72) and Minimal, Micro-and-Expectations-Mix and Macro follow with 0.7.

Table 3 provides an overview of the percentage of countries in the EU27 in which their (coincident) correlation is higher compared to the current CCI. This is done for the periods 1996-q4 – 2017-q4 and 2010 – 2017-q4.

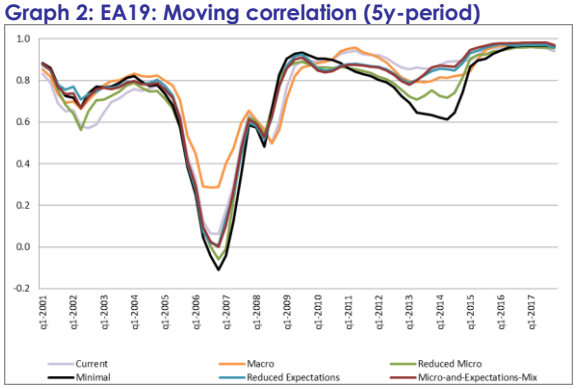
Table 3: Improvement or no change in country-level correlations in EU27 compared to current CCI

	Macro (Q3, Q4, Q7, Q8)	Minimal (Q2, Q9)	Reduced Expectations (Q2, Q4, Q9)	Reduced Micro (Q1, Q2, Q9)	Micro-and-Expectations-Mix (Q1, Q2, Q4, Q9)
Coincident correlation in 1996-q1 - 2017-q4					
No. of countries with a higher correlation	22	12	13	14	15
% of EU27	81.48%	44.44%	48.15%	51.85%	55.56%
No. of countries with the equal correlation	1	1	1	1	1
% of EU27	3.70%	3.70%	3.70%	3.70%	3.70%
% of countries with a higher or equal correlation	85.19%	48.15%	51.85%	55.56%	59.26%
Coincident correlation in 2010-q1 - 2017-q4					
No. of countries with a higher correlation	20	14	7	16	18
% of EU27	74.07%	51.85%	25.93%	59.26%	66.67%
No. of countries with the equal correlation	1	1	3	2	3
% of EU27	3.70%	3.70%	11.11%	7.41%	11.11%
% of countries with a higher or equal correlation	77.78%	55.56%	37.04%	66.67%	77.78%

Sources: European Commission calculations.

Table 3 shows that two indicators would bring about a deterioration of the performance of the CCI across countries: the Minimal-indicator in 1996-q1 – 2017-q4 and the Reduced-Expectations indicator in 2010-q1 – 2017-q4. Overall, the Macro-indicator would bring the highest improvement in terms of correlations across the EU Member States: 81.48% in 1996-q1 – 2017-q4 and 74.07% in 2010-q1 – 2017-q4. It is followed by the Micro- and-Expectations-Mix, which brings an improvement in 55.56% of EU Member States in 1996-q1 – 2017-q4 and in 66.67% of Member States in 2010-q1 – 2017-q4.

Graph 2: EA19: Moving correlation (5y-period)



Source: European Commission.

Graph 2 presents all indicators' moving correlations over a period of five years, which show a similar pattern. In between 2001 and 2004, the current CCI and Reduced Micro show slightly lower correlations than the other CCIs. In 2011-2014 the Minimal-indicator and Reduced Micro perform comparatively weaker. Starting from 2015-q1 all indicators stabilise at a high level.

Tracking of directional change

Another criterion for the quality of a CCI is the frequency of periods in which it correctly indicates the direction of change (+ / - / 0) in the reference series. In this part of the analysis the focus is placed on the euro area and the analysis is performed with monthly indicator values.

As the reference series for private consumption consists of quarterly data, for each indicator, in a given quarter t the percentage change in month 1, month 2 and month 3 of quarter t with respect to month 3 of the previous quarter t-1 is calculated. For the reference series the q-o-q percentage changes in each quarter t with respect to t-1 is calculated.

For all indicators the percentage of correct indications of change in 1996-q4 – 2017-q4 is between 54% and 62%. According to the analysis the best-performing indicator is Reduced Micro (61.32% of correct indications of change) with a negligibly small distance to the Minimal-indicator (61.16%). Macro is the worst-performing indicator, while the result of the current CCI is mid-range.

Table 4: Percentage of correct indications of direction of change (euro area, 1996-q1 – 2017-q4)

	Current (Q2, Q4, Q7, Q11)	Macro (Q3, Q4, Q7, Q8)	Minimal (Q2, Q9)	Reduced Expectations (Q2, Q4, Q9)	Reduced Micro (Q1, Q2, Q9)	Micro-and-Expectations-Mix (Q1, Q2, Q4, Q9)
% correct indications of change	58.43%	54.76%	61.16%	60.16%	61.32%	56.50%

Sources: European Commission calculations.

In-sample modelling and out-of-sample forecasting exercise

Two simple linear models are run in order to compare the forecast/nowcast performance of each alternative CCIs: (1) a model with quarterly indicator values and (2) a model with indicator values for the first month of each quarter as the independent variable.

$$(1) \quad c_t = \alpha + \beta \cdot CCI_t + \varepsilon_t$$

$$(2) \quad c_t = \alpha + \beta \cdot CCI_{tm1} + \varepsilon_t$$

where c_t is the q-o-q change in private consumption, CCI_t is the quarterly value of a given CCI, CCI_{tm1} is the first-month-of-a-quarter value of a given CCI, α is the constant and ε_t the error term.[12] To assess the in-sample fit, the adjusted R^2 values are used.

To assess the forecasting power of the different CCIs, their performance in an out-of-sample scenario based on model (1) is also tested. The first estimation sample is 1995-q2 – 2005-q2, on the basis of which the forecast for 2005-q3 is made. The model is then re-calculated by extending the sample by one quarter and forecasting one quarter ahead, with the beginning of the estimation sample being fixed to 1995-q2. Subsequently, the root mean squared errors (RMSE) are calculated.

Table 5 provides an overview of results of the in-sample and out-of-sample analyses. The results of the two in-sample models follow a similar pattern. In both models, Reduced Expectations and Reduced Micro yield the highest adjusted R^2 – 0.5 and 0.5 in model (1) and 0.48 and 0.49 respectively in model (2). Micro-and-Expectations-Mix follows with a minor distance (0.48 in model (1) and 0.46 in model (2)). The Macro-indicator has the lowest adjusted R^2 in both models. Overall, one can see that model (1) offers a slightly better fit across all indicators.[13]

Table 5: Results – In-sample and out-of-sample analysis

	(1) $c_t=\alpha+\beta\cdot CCI_t+\varepsilon_t$			(2) $c_t=\alpha+\beta\cdot CCI_{tm1}+\varepsilon_t$	
	Adjusted R^2	t-stat	Out-of-sample RMSE	Adjusted R^2	t-stat
Current (Q2, Q4, Q7, Q11)	0.36	6.21	0.32	0.33	5.76
Macro (Q3, Q4, Q7, Q8)	0.28	4.81	0.35	0.26	4.68
Minimal (Q2, Q9)	0.45	6.41	0.25	0.44	6.06
Reduced Expectations (Q2, Q4, Q9)	0.5	7.56	0.25	0.48	7.24
Reduced Micro (Q1, Q2, Q9)	0.5	9.51	0.27	0.49	8.84
Micro-and-Expectations-Mix (Q1, Q2, Q4, Q9)	0.48	8.08	0.26	0.46	7.76

Sources: European Commission calculations.

The out-of-sample forecasting exercise based on model (1) produces results comparable to the in-sample analysis. Reduced Expectations and the Minimal-indicator yield the lowest RMSE of 0.25. Micro-and-Expectations-Mix and Reduced Micro follow with an RMSE of 0.26 and 0.27 respectively. The current CCI performs in the lower mid-range in both in-sample variants and the out-of-sample exercise.

Months-for-cyclical dominance (MCD)

To devise a good CCI, it is important to avoid that it suffers from high short-term volatility and disturbing noise signals. The MCD measure helps to distinguish between cyclical movements and noise in a time series. It indicates the time length over which a change in

[12] For the q-o-q series for private consumption, the current CCI and alternative CCIs stationarity tests were conducted using the Augmented Dickey-Fuller (ADF) unit root test. The series were found to be stationary.

[13] For all models the goodness of fit using the Akaike information criterion (AIC), the Schwartz criterion and the Durbin-Watson statistic consistently confirm the pattern yielded by the Adjusted R^2 values. A model with a one-quarter lead of the CCIs (quarterly values) was also run. Its fit in terms of R^2 is somewhat worse compared to the 'coincident' models, yet the performance of the different indicators relative to each other follows the same pattern.

a series needs to be observed in order to determine whether it represents a cyclical development rather than noise[14]. In a volatile series, the change in the irregular component dominates the cyclical component. To assess the relative importance of the two components, noise-to-signal ratios are calculated:

$$(3) \quad r_s = \frac{i_s}{a_s}$$

where r_s is the noise-to-signal ratio for a given span of months s, beginning with one month, i_s is the irregular component and a_s the cyclical component of the series. The MCD measure is defined as the number of months which it takes until r_s gets below one. A high MCD value indicates a higher degree of noise, Therefore, an indicator with a low MCD value is preferable to one with a high MCD.

Table 6 presents the MCD values and the noise-to-signal ratios for the time span of one month for the euro area, EU27, Germany, Spain, France, Italy, the Netherlands and Poland. In general, it can be observed that MCD values on the euro area and the EU27 level tend to be lower, i.e. better, across all indicators compared to the country level.

Both on the aggregate level and across countries the Macro-benchmark outperforms the other indicators. Especially for the euro area and the EU27, the MCD of 1 that it demonstrates is a very good result. Macro also has the lowest average MCD (2.67) across countries.

The current CCI also has an MCD of 1 on the EU27 level. While showing an MCD of 2 in the euro area, its noise-to-signal ratio for the time span of one month is only slightly higher than 1 (1.01), which means that it is very close to achieving an MCD of 1. The current CCI's average MCD across Germany, Spain, France, Italy, the Netherlands and Poland is 3.00.

Table 6: Overview of MCD results

		Current (Q2, Q4, Q7, Q11)	Macro (Q3, Q4, Q7, Q8)	Minimal (Q2, Q9)	Reduced Expectations (Q2, Q4, Q9)	Reduced Micro (Q1, Q2, Q9)	Micro-and-Expectations-Mix (Q1, Q2, Q4, Q9)
EA19	MCD	2	1	3	2	2	2
	r_1	1.01	0.92	2.03	1.13	1.5	1.07
EU27	MCD	1	1	3	2	2	2
	r_1	0.97	0.87	2.02	1.13	1.5	1.09
DE	MCD	2	2	3	2	3	2
	r_1	1.27	1.18	2.49	1.34	2.15	1.33
ES	MCD	3	3	3	3	3	3
	r_1	1.96	1.82	2.64	2.12	2.45	2.1
FR	MCD	3	3	4	3	3	3
	r_1	1.82	1.79	2.7	2.16	2.23	2.06
IT	MCD	3	3	5	3	4	3
	r_1	2.53	2.1	4.2	2.45	3.68	2.44
NL	MCD	3	2	5	3	4	3
	r_1	2.05	1.33	4.18	2.31	3.39	2.32
PL	MCD	4	3	5	4	4	4
	r_1	2.8	2.34	5.95	3.48	4.75	3.47
Average MCD across countries		3.00	2.67	4.17	3.00	3.50	3.00

Sources: European Commission calculations.

The average MCD of 3.00 on the country level is equally shown by Reduced Expectations and the Micro-and-Expectations-Mix. While having an MCD of 2 in the euro area and EU27, the latter is also characterised by a noise-to-signal-ratio that is very close to 1 for both aggregates.

The Minimal-indicator yields the highest MCD values across the euro area, EU27 and the countries analysed, i.e. it is characterised by a particularly strong presence of short-term volatility. This higher volatility derives from question Q9 which is characterised by very high MCD values on the aggregate and the country level. As the Minimal-indicator consists only of two question series, the impact of short-term volatility in Q9 is not mitigated to a sufficient extent by other series. Conversely, in the case of Reduced Expectations, Reduced Micro and Micro-and-Expectations-Mix, complementing Q9 with, respectively, 2 and 3 other questions mitigates its short-term volatility to a sufficient extent.

Impact on the Economic Sentiment Indicator (ESI)

The consumer sector has a weight of 20% in the computation of the Economic Sentiment Indicator (ESI), and theoretically the replacement of the current confidence indicator with a more performing one (at least at the

[14] For a detailed explanation, see ECB (2012) ECB Monthly Bulletin, May 2012, pp. 72-76. https://www.ecb.europa.eu/pub/pdf/mobu/mb201205en.pdf.

corresponding sector level) should also improve the performance of the ESI.[15]

To check if that is the case, the current ESI is recalculated by replacing the current questions coming from the consumer sector with the questions included in the alternative CCIs. Subsequently, the coincident correlation between the alternative ESIs and the real GDP growth (in q-o-q and y-o-y terms) is calculated at EU, euro-area and Member State levels.

Table 7 shows the coincident correlation coefficients between GDP growth and the different ESIs calculated using the alternative CCI indicators for euro area and EU27 over the period 1996-q1 – 2017-q4. The differences between the ESI indicators are very minor and can in most cases be considered insignificant. The Macro-benchmark, where for both aggregates a consistent albeit small worsening can be observed, could be considered as the only exception.

Table 7: Coincident correlations between ESI and GDP growth for the euro area and EU27

	Current CCI (Q2,Q4,Q7,Q11)	Macro (Q3, Q4, Q7, Q8)	Minimal (Q2, Q9)	Reduced Expectations (Q2, Q4, Q9)	Reduced Micro (Q1, Q2, Q9)	Micro-and-Expectations-Mix (Q1, Q2, Q4, Q9)
	Coincident correlations with y-o-y GDP growth - 1996Q1 - 2017Q4					
EU27	0.91	0.90	0.92	0.92	0.91	0.92
EA19	0.92	0.91	0.93	0.93	0.92	0.92
	Coincident correlations with q-o-q GDP growth - 1996Q1 - 2017Q4					
EU27	0.71	0.69	0.71	0.72	0.70	0.71
EA19	0.70	0.69	0.71	0.71	0.70	0.71

Sources: European Commission calculations.

Table 8 presents the share of EU countries where the coincident correlation between the alternative ESIs and real GDP growth (in q-o-q and y-o-y terms) improved, remained unchanged or worsened. For all indicators, in the analysis with q-o-q GDP growth, the correlation with ESI improves or remains unchanged in at least two third of Member States; for y-o-y GDP growth this is the case for at least 73% of countries. Moreover, in most of the cases where the ESI's correlation worsens, the decrease is of an insignificant magnitude of -0.01 or -0.02.

Table 7: Changes (improvements, status quo or worsening) at country-level of correlations between ESI and GDP growth in EU27 compared to current CCI

	Macro (Q3, Q4, Q7, Q8)	Minimal (Q2, Q9)	Reduced Expectations (Q2, Q4, Q9)	Reduced Micro (Q1, Q2, Q9)	Micro-and-Expectations-Mix (Q1, Q2, Q4, Q9)
	Coincident correlations with y-o-y GDP growth - 1996Q1 - 2017Q4				
% of EU27 Member States where correlation improves	42.3%	50.0%	50.0%	42.3%	50.0%
% of EU27 Member States where correlation remains unchanged	38.5%	19.2%	26.9%	23.1%	19.2%
% of EU27 Member States where correlation worsens	19.2%	30.8%	23.1%	34.6%	30.8%
	Coincident correlations with q-o-q GDP growth - 1996Q1 - 2017Q4				
% of EU27 Member States where correlation improves	53.8%	50.0%	50.0%	53.8%	61.5%
% of EU27 Member States where correlation remains unchanged	23.1%	23.1%	26.9%	23.1%	15.4%
% of EU27 Member States where correlation worsens	23.1%	26.9%	23.1%	23.1%	23.1%

Sources: European Commission calculations.

Conclusions

This special topic was guided by the question if by using a different set of questions the performance of the European Commission's CCI could be improved for the euro area, the EU and across Member States.

Based on theoretical and conceptual considerations – privileging micro- and expectations-oriented questions – as well as the correlation of individual survey questions with private consumption in the euro area, five alternative indicators were evaluated: Macro, Minimal, Reduced Micro, Reduced Expectations, Micro-and-Expectations-Mix. In contrast to the current CCI, these indicators do not include the question on savings expectations, whose relationship with private consumption is theoretically ambiguous.

Overall, a rather heterogeneous picture emerged across the different parts of the empirical analysis, where no indicator scored clearly better across all categories. Throughout the analysis, a trade-off between lower volatility (MCD) and better results in the correlation, in-sample and out-of-sample forecast analysis was observed. On the aggregate euro area and EU level, the Micro-Expectations-Mix-, the Minimal- and the Reduced Expectations-indicators obtained the highest correlation with the reference series and performed better in terms of in-sample and out-of-sample forecasting. Conversely, the Macro-benchmark and the current CCI performed better in terms of MCD.

[15] However, it has to be pointed out that the purpose of this analysis is not to optimise the ESI performance on tracking the GDP growth but rather to prevent a worsening in the performance of the ESI due to a change in the CCI.

Moreover, the performance of indicators at the euro area and EU level did not necessarily correspond to their quality at the country level. In fact, an indicator might improve performance in most countries, yet in others it will nevertheless entail a worsening. The country-level analysis showed that the Macro-indicator, the Micro-and-Expectations-Mix and Reduced Micro managed to increase the correlation in a larger number of countries. By contrast, the Minimal- and Reduced Expectation indicators would cause a deterioration in the CCI's ability to track private consumption in most of the EU27 Member States.

Overall, it emerges that there is no silver bullet for tracking private consumption with alternative confidence indicators. Yet, across five out of six categories of the analysis (correlation analysis; directional change; in-sample models; out-of-sample forecasting and impact on the ESI), the current CCI finds itself among the weaker indicators. The weak performance of the Macro-benchmark corroborates the theory-based preference for an indicator based on micro- and expectations-oriented questions. Some of these conceptually appealing indicators achieve slightly better results - at euro area and EU27 level and in most of the countries - for the majority of the criteria analysed. This is the case notably for the 'Micro-and-Expectations-Mix' (composed by Q1, Q2, Q4 and Q9) and 'Reduced Micro' (composed by Q1, Q2, Q9).

Coincident correlations over the period 2010-q1 – 2017-q4

	Current (Q2, Q4, Q7, Q11)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q11	Q12	Macro (Q3, Q4, Q7, Q8)	Minimal (Q2, Q9)	Reduced Expectations (Q2, Q4, Q9)	Reduced Micro (Q1, Q2, Q9)	Micro-and-Expectations-Mix (Q1, Q2, Q4, Q9)
EA	0.81	0.79	0.87	0.75	0.76	-0.32	0.13	-0.70	0.60	0.85	0.69	0.42	0.76	0.90	0.88	0.88	0.88
EU_2019	0.81	0.79	0.86	0.76	0.76	-0.30	0.09	-0.72	0.60	0.86	0.68	0.48	0.76	0.90	0.87	0.87	0.87
EU28	0.83	0.83	0.87	0.81	0.74	-0.38	0.15	-0.76	0.72	0.91	0.77	0.56	0.81	0.91	0.88	0.90	0.88
BE	0.42	0.22	0.21	0.30	0.17	-0.28	-0.06	-0.37	0.16	-0.04	0.44	0.17	0.34	0.11	0.18	0.17	0.2
BG	0.69	0.46	0.60	0.70	0.61	-0.08	0.24	-0.79	-0.05	0.10	-0.22	0.10	0.75	0.50	0.63	0.51	0.62
CZ	0.64	0.73	0.48	0.72	0.55	-0.20	-0.05	-0.54	0.79	0.50	0.61	0.34	0.74	0.55	0.57	0.63	0.62
DK	0.36	0.56	0.23	0.62	-0.03	-0.34	0.15	-0.43	0.43	0.55	0.40	0.30	0.51	0.47	0.16	0.55	0.34
DE	0.42	0.50	0.48	0.50	0.31	-0.38	0.26	-0.35	0.52	0.57	0.57	0.13	0.48	0.54	0.44	0.53	0.48
EE	0.25	0.49	0.26	0.81	0.56	0.20	0.67	-0.33	0.24	0.54	-0.20	-0.30	0.58	0.47	0.54	0.49	0.55
IE	0.68	0.80	0.81	0.64	0.57	0.21	0.39	-0.57	0.69	0.65	0.51	0.26	0.74	0.70	0.75	0.68	0.73
EL	0.77	0.77	0.76	0.78	0.72	0.03	0.25	-0.80	0.52	0.76	0.59	0.49	0.78	0.79	0.78	0.79	0.78
ES	0.81	0.91	0.81	0.91	0.73	0.10	0.24	-0.76	0.63	0.90	0.68	0.70	0.86	0.89	0.85	0.91	0.89
FR	0.67	0.71	0.75	0.74	0.71	-0.43	-0.31	-0.64	0.75	0.51	-0.26	0.22	0.76	0.74	0.76	0.74	0.77
HR	0.86	0.79	0.84	0.80	0.84	-0.49	-0.21	-0.85	0.79	0.81	0.67	0.40	0.86	0.84	0.79	0.83	0.84
IT	0.69	0.64	0.73	0.66	0.53	-0.31	0.02	-0.55	0.53	0.31	0.69	0.63	0.66	0.51	0.64	0.61	0.68
CY	0.39	0.39	0.18	0.56	0.38	0.32	0.44	-0.40	0.67	0.68	0.42	-0.27	0.59	0.67	0.65	0.62	0.61
LV	0.76	0.70	0.74	0.79	0.82	0.33	0.67	-0.72	0.74	0.70	0.21	0.27	0.88	0.80	0.84	0.78	0.81
LT	0.86	0.73	0.90	0.86	0.86	-0.19	0.49	-0.87	0.63	0.63	0.31	0.43	0.89	0.83	0.89	0.81	0.88
LU	0.23	0.21	0.16	0.26	0.13	-0.06	0.16	-0.28	0.13	0.18	-0.02	-0.24	0.24	0.18	0.17	0.19	0.18
HU	0.78	0.76	0.71	0.86	0.77	-0.60	-0.27	-0.64	0.46	0.74	0.78	0.83	0.82	0.73	0.77	0.75	0.78
MT	0.35	0.43	0.36	0.38	0.32	-0.48	-0.46	-0.29	0.41	0.06	0.37	0.35	0.37	0.32	0.32	0.39	0.37
NL	0.71	0.76	0.79	0.71	0.33	-0.17	0.44	-0.72	0.76	0.53	0.69	0.47	0.72	0.78	0.56	0.8	0.7
AT	0.29	0.12	0.09	0.28	0.24	-0.25	-0.16	-0.19	0.01	0.19	0.34	0.04	0.24	0.16	0.24	0.15	0.23
PL	0.69	0.67	0.67	0.66	0.64	-0.02	0.11	-0.75	0.77	0.51	0.20	0.15	0.74	0.72	0.69	0.71	0.7
PT	0.77	0.74	0.79	0.74	0.80	-0.22	-0.31	-0.64	0.65	0.62	0.47	0.18	0.76	0.77	0.83	0.78	0.82
RO	0.80	0.64	0.75	0.79	0.80	-0.08	-0.02	-0.78	0.81	0.78	0.54	0.31	0.85	0.79	0.81	0.74	0.78
SI	0.54	0.50	0.47	0.60	0.60	-0.02	0.05	-0.47	0.53	0.40	-0.04	0.35	0.62	0.52	0.59	0.57	0.6
SK	0.47	0.40	0.29	0.62	0.56	-0.02	0.08	-0.61	0.26	0.61	-0.06	0.06	0.62	0.45	0.52	0.44	0.49
FI	0.47	0.56	0.54	0.66	0.24	-0.15	0.075	-0.57	0.32	0.69	-0.32	-0.34	0.59	0.65	0.43	0.64	0.49
SE	0.58	0.26	0.18	0.7	0.52	-0.44	0.1	-0.7	0.68	0.61	-0.076	-0.086	0.77	0.41	0.56	0.36	0.54
UK	0.7	0.7	0.64	0.83	0.51	-0.62	0.25	-0.78	0.78	0.83	-0.028	0.39	0.82	0.82	0.78	0.79	0.79

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; 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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