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# European *Business Cycle* indicators

SHORT - TERM ANALYSIS FROM EUROPEAN COMMISSION'S DIRECTORATE GENERAL FOR ECONOMIC AND FINANCIAL AFFAIRS

## Developments in business and consumer survey data in 2014Q3

- Both the EU and the euro-area Economic Sentiment Indicator (ESI) declined over the third quarter of 2014 compared to June.
- Worsened sentiment in both the EU and the euro area reflected less optimistic consumers and retailers, and to a lesser extent, managers in industry and services.
- Compared with June 2014, the ESI decreased in four of the seven largest EU economies (Germany, Italy, Poland and the UK), while it remained virtually unchanged in France, Spain and the Netherlands.
- Capacity utilisation in the manufacturing sector increased slightly in July, but remained below its long-term average in the EU and the euro area. The new series of capacity utilisation in services was flat in the euro area and increased slightly in the EU.

## Highlight I: Inflation perceptions and expectation dynamics in the EU: evidence from BCS survey data

The highlight section presents an overview of two quantitative questions about price developments included in the harmonized questionnaire of DG ECFIN's EU-wide consumer survey programme. Focusing on the EU aggregate and its five largest Member States, the analysis shows that consumers' quantitative estimates of expected and, to a greater extent, perceived inflation are higher than the HICP inflation measured by Eurostat. Notwithstanding these differences in levels, the survey series closely track the dynamics of HICP inflation. Moreover, consumers' expectations are found to be not only based on past and current inflation developments but also contain a limited-but-significant forward-looking component.

## Highlight II: BCS data from Macedonia, Turkey and Croatia – unearthing a survey treasure

The Joint Harmonised EU BCS programme has seen several "enlargements" over the past few years. This highlight section provides a brief analysis of the characteristics of survey data from selected candidate countries and Croatia, which has become an EU member in 2014. The data is shown to exhibit clear cyclical patterns, display high correlations with relevant statistical reference series and not to suffer from overly high short-term volatility.



Note 1: The horizontal line (rhs) marks the long-term average (=100) of the sentiment indicator.

Note 2: Both ESI and y-o-y GDP growth are plotted at monthly frequency. Monthly GDP data are obtained by linear interpolation of quarterly data.

"European Business Cycle Indicators" provides short-term analysis based on Business and Consumer Survey data. It appears quarterly.

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## 1. Recent developments in survey indicators for the EU and the euro area

The Economic Sentiment Indicator (ESI) for the EU decreased over the third quarter of 2014, bringing to a halt the upward trend that had started in May 2013. The indicator decreased throughout the whole quarter with the decline being particularly important in August. In the euro area the indicator broadly flattened out over April to July, decreased strongly in August and declined further – albeit to a lesser extent – in September. The ESI remains above its long-term average in the EU with a score of 103.6, while in the euro area the indicator fell slightly below its long-term average of 100, which it had surpassed only in December 2013.

Compared to the readings at the end of the second quarter of 2014 the ESI decreased by 2.8 points in the EU and by 2.2 points in the euro area. Though the evolution in the individual months is slightly different, the quarterly profile of the ESI is broadly in line with both the results of the Ifo Business Climate Index (for Germany), and Markit Economics' Composite PMI for the euro area.

At the sector level, the worsening of the sentiment index in both the EU and the euro area was due to deteriorations in all sectors – except construction – and among consumers. The decline was however particularly marked in retail trade and among consumers, with losses in all three months of the quarter. The waning of industry and services confidence remained comparatively contained. Construction confidence improved over the quarter, resuming the timid recovery that had been interrupted in the second quarter of 2014. Nevertheless, construction confidence remains at very low levels particularly in the euro area, where the third quarter gains only partly offset the declines registered during the first half of the year.

At the country level, sentiment worsened in four of the seven largest EU economies compared to June. Sentiment worsened markedly in the UK (-5.3), almost offsetting the gains registered in the previous quarter, and in Italy (-3.4). Confidence decreased also in Germany (-2.7) and Poland (-2.3), while it remained virtually unchanged in France, Spain and the Netherlands.

### Sector developments

Over the third quarter of 2014, **industrial** confidence for the EU lost ground in August and September. The euro-area indicator decreased strongly in August but stabilised somewhat in September. Compared with June 2014, the indicator registered a decrease in both the EU (-1.8 points) and the euro area (-1.2

points). All in all, in both areas the indicator has been on a (moderate) downward trend since May/June 2014.

In both European aggregates, managers' production expectations and their assessment of the stocks of finished products worsened over the quarter. In the EU, managers' assessment of the current level of order books decreased, while in the euro area it remained broadly stable. Managers' assessment of past production trends and export order books declined in both the EU and the euro area. Also selling price and, to a lesser extent, employment expectations were revised downwards. In the seven largest EU countries the picture was rather mixed: compared to the end of the second quarter 2014, industry confidence decreased markedly in the UK and Italy, and – to a lesser degree – in Germany and Poland. By contrast, the indicator increased in France, Spain and – to a lesser extent – in the Netherlands.

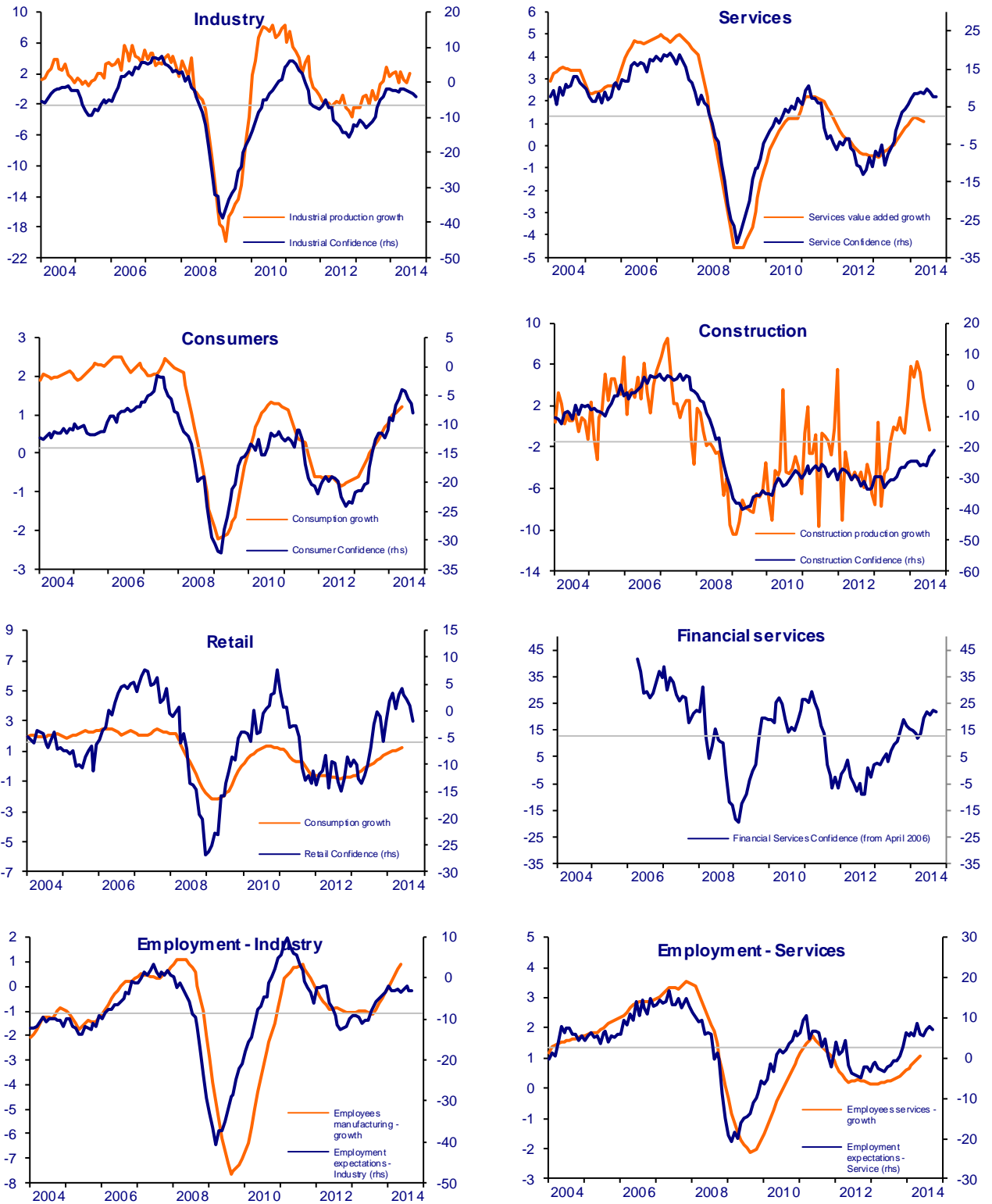
July's results for the quarterly manufacturing survey showed a slight uptick of the rate of capacity utilisation. **Capacity utilisation in manufacturing** increased to 80.2% in the EU (from 79.4%) and 79.8% in the euro area (from 79.5%). However, these figures are still below their respective long-term averages, by 0.6 points in the EU and by 1.3 points in the euro area.

In the third quarter of the year confidence in **services** decreased in both the EU the euro area, halting the upward trend that was visible since mid-2013. However, after the two decreases of July and August, the indicator remained stable in September in both areas. Compared with June 2014, the indicator registered a decrease of 2.4 points in the EU and of 1.2 points in the euro area.

In both the EU and the euro area, the decline in confidence was due to worsened views on the past business situation but also on expected demand. Managers' assessment of past demand declined only slightly in the EU and remained broadly stable in the euro area.

Looking at the largest EU countries, compared with June 2014, confidence decreased markedly in the UK (-7.1) and, to a lesser degree, in Germany (-2.5) and the Netherlands (-2.6). It increased in Italy (+2.0), France (+0.6) and Spain (+0.6), while remaining unchanged in Poland.

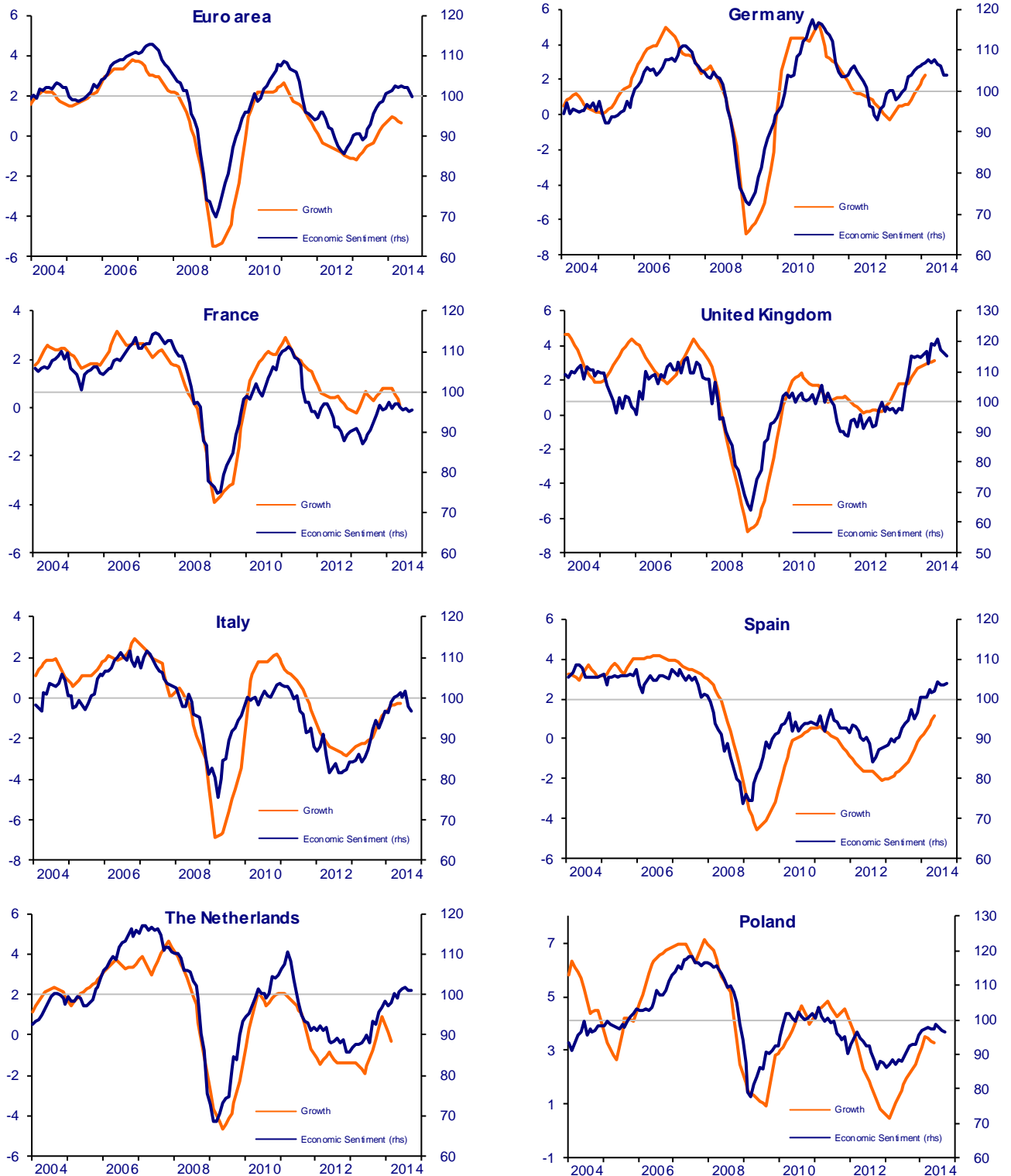
Graph 1.1: Sectoral confidence indicators and reference series for the EU (January 2004 to September 2014 for survey data)



Note 1: The horizontal line (rhs) marks the long-term average of the survey indicators.

Note 2: 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.

Graph 1.2: **Economic Sentiment Indicator — Selected EU Member States**  
(January 2004 to March 2014 for survey data)



Note 1: The horizontal line marks the long-term average (=100) of the sentiment indicator.

Note 2: Confidence indicators are expressed in balances of opinion and GDP in y-o-y changes. Both variables are plotted at monthly frequency. Monthly GDP data are obtained by linear interpolation of quarterly data.

The new quarterly series of **capacity utilisation in services** that has been on an upward trend since early 2013 remained flat in July in the euro area (at 87.3%) and increased slightly in the EU (by 0.3 points to 87.7%).<sup>1</sup>

**Retail trade** confidence decreased strongly in the third quarter of 2014 in both the EU and the euro area. In both areas, the indicator registered strong decreases in August and September. Worsened confidence in both areas resulted from very negative developments in all confidence components: managers' appraisal of both companies' past and expected business activity and their assessment of the adequacy of their volume of stocks. Focusing on individual countries, marked losses were registered in Germany, France, Italy and the UK, while Poland registered a smaller decline. By contrast, confidence improved slightly in Spain and more markedly in the Netherlands.

Compared to the end of the second quarter of 2014, confidence in **construction** improved in both the EU and the euro area. In the EU the indicator increased for three months in a row, while it made a pause in the euro area in August. Despite these latest improvements, construction confidence remains well below its long-term average particularly in the euro area. For both aggregates the increases were fuelled by marked improvements in both managers' employment expectations and their appraisal of current order books. Confidence improved markedly over the quarter in the UK, the Netherlands and, particularly, Spain and - to a much lesser extent - in Poland; by contrast, it decreased substantially in France and Italy and somewhat in Germany.

Confidence among **consumers** worsened significantly in the third quarter of 2014, halting the upward trend that was visible since the beginning of 2013. In both the EU and the euro area, confidence decreased throughout the quarter. Worsening confidence among consumers was due to markedly negative developments in consumer expectations about the general economic situation and unemployment; also their expectations about the personal financial situation declined to a lesser

degree. Consumers' expectations about savings declined slightly in the EU and remained broadly unchanged in the euro area. All the seven largest EU economies, except the Netherlands, booked significant declines, ranging from -5.8 points (in Poland) to -2.3 points (in France).

After the improvement registered in the second quarter of 2014, confidence in **financial services** (not included in the ESI) declined over the second quarter. Compared to June 2014, worsened sentiment was due, in the EU, to managers' more negative assessment of past and expected demand, while their assessment of the past business situation improved. In the euro area all three components declined.

The developments in survey data over the first quarter are illustrated by the evolution of the climate tracers. The economic climate tracer for the EU entered the downswing quadrant (see Annex 1 and Annex 2 for further details). This movement was driven mainly by the climate tracers for industry, and retail trade. Also the climate tracer for services is approaching the downswing quadrant, entering almost directly from the upswing quadrant. The consumer climate tracer, despite the decline registered during the quarter, is still in the expansion quadrant. The climate tracer for the construction sector moves very slowly in the direction of the expansion area. For the euro area, the overall economic climate tracer is in a neutral position, but seems to move from the upswing to the contraction area. In contrast to the EU, the euro-area consumer climate tracer is still in the upswing quadrant, pointing to the expansion quadrant, while the construction climate tracer is just on the border between the upswing and the contraction areas. At the country level, the climate tracers for Germany and the UK entered the downswing area, while Poland is just on the border between expansion and downswing. Italy and France moved from upswing directly to the contraction quadrant. By contrast, the Netherlands and Spain moved further into the expansionary quadrant.

## 2. Recent developments in selected Member States

During the second quarter of 2014, sentiment has deteriorated in Germany, Italy, Poland and the UK, while it remained broadly unchanged in France, Spain and the Netherlands. The sentiment index has kept scoring above its long-term average only in Germany, Spain, the Netherlands and the UK.

Economic sentiment in **Germany** decreased during the third quarter of 2014. Compared to June 2014, the indicator lost 2.7 points, resulting from a slight decrease in July, followed by a marked decline in

<sup>1</sup> A new question on capacity utilisation was introduced into the services survey in July 2011. Seasonally adjusted results were published for the first time in July 2014. As in the manufacturing survey, the services survey includes the question on capacity utilisation in January, April, July and October of each year. Background information and a preliminary analysis of the seasonally unadjusted results until October 2013 are available at [http://ec.europa.eu/economy\\_finance/db\\_indicators/surveys/method\\_guides/index\\_en.htm](http://ec.europa.eu/economy_finance/db_indicators/surveys/method_guides/index_en.htm)



August and a broadly stable score in September. Nevertheless the ESI remains above its long-term average of 100, at 103.8 points. The decrease of the headline indicator was driven by decreases in all business sectors and among consumers.

In **France**, the ESI increased in July, dropped in August and remained stable in September, resulting in an unchanged situation over the quarter. At 95.3 points, the sentiment index remained clearly below its long-term average of 100. Confidence worsened strongly in retail trade and construction and – to a lesser extent – among consumers, while it improved in industry and services.

In the **United Kingdom** sentiment decreased in all three months of the quarter, resulting in a marked drop compared to June. Nevertheless, the indicator is still well above its long-term average of 100, at 115.4. The decline in sentiment was due to worsened confidence among consumers and in all sectors but construction, which scored an important increase.

In **Italy**, the ESI declined markedly compared to June. This outcome resulted from an important increase observed in July, followed by a marked decline in August and a further drop in September. The sentiment index declined below its long-term average of 100, to 96.9 points. At sector level, confidence decreased among consumers and in all the business sectors except for services, which scored an increase.

The ESI in **Spain** remained broadly unchanged compared to June, resulting from a loss recorded in July that was offset by gains registered in August and September. At 104.0 points, the sentiment indicator is well above its long-term average of 100. Gains were registered in all business sectors, and were particularly important in construction and industry. By contrast, confidence decreased markedly among consumers.

In the **Netherlands**, sentiment remained broadly stable in the third quarter of 2014 compared to June 2014. The ESI increased in July, dropped in August and remained broadly stable in September. At 101.2, the indicator remains stable above its long-term average. At sector level, sentiment improved among consumers and in all business sectors but services, which declined compared to June.

Sentiment in **Poland** decreased in all three months of the third quarter, resulting in an important loss compared to June. At 96.4 points the ESI continues to score slightly below its long-term average. All surveyed sectors, except for construction that registered an increase and services that remained broadly unchanged, marked negative changes on a quarterly basis; the decline was particularly important among consumers.

### 3. Highlight I: Inflation perceptions and expectation dynamics in the EU: evidence from BCS survey data

Expectations about future developments in inflation have a central role in many fields of macroeconomic theory. At the current juncture, characterised by very low inflation rates (0.5% in the EU in August) positive and well-anchored inflation expectations are a crucial line of defence against the risk of deflation. In the present-day environment it is therefore particularly important to monitor the available indicators of inflation perceptions and expectations.

Against this backdrop, this section illustrates evidence drawn from quantitative inflation perceptions and expectations among consumers as measured by DG ECFIN's Consumer survey. These data have the advantage of providing a direct measure of inflation perceptions and expectations that does not necessitate deriving indirect quantitative figures from qualitative data. Accordingly, they represent a valuable source of information for the empirical testing of theories of expectation formation. Moreover, understanding how agents form their beliefs about future price changes is not only of theoretical interest but also has important practical implications for monetary policy.<sup>2</sup>

Unlike previous studies, the present analysis aims at assessing the degree of forward-lookingness of consumers' expectations by using quantitative information for the EU aggregate as well as its five largest EU economies. The results suggest that consumers' expectations are not only based on past and current inflation developments but also contain a forward-looking component.

#### Survey data on inflation perceptions and expectations

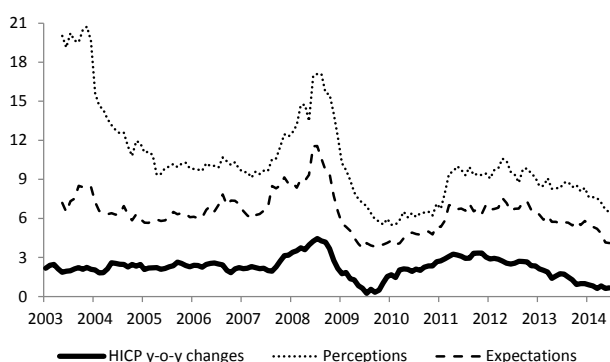
Since May 2003, the European Commission (EC) has been collecting, via its consumer opinion survey, direct quantitative information on consumers' inflation perceptions and expectations in the European Union (EU). Two questions have been added to the existing, qualitative, monthly questionnaire, which provide a subjective measure of (perceived and expected) inflation from the

<sup>2</sup> See, among others, Gerberding, C. (2001), The information content of survey data on expected price developments for monetary policy. Bundesbank Discussion Paper Series, 2001-09; Fuhrer, J., G. Olivei and G. Tootell (2012), Inflation Dynamics When Inflation is Near Zero. *Journal of Money, Credit, and Banking*, 44 (s1), 83-122; Fuhrer, J. (2012), The Role of Expectations in Inflation Dynamics, *International Journal of Central Banking*, 8, 137-165.

perspective of consumers.<sup>3</sup> These questions complement the information derived from the qualitative measures contained in the EU harmonised survey, and broaden the available data set for the analysis of inflation developments in the EU. However, they do not provide an objective measure of inflation, in a way similar to more formal indices of consumer prices, such as the Harmonised Index of Consumer Prices (HICP).

Graph 1 plots the quantitative inflation perceptions and expectations reported by EU consumers over the sample period (May 2003 to June 2014). The time series are based on weighted aggregated country means.

Graph 1: EU: EC Consumer survey inflation perceptions and expectations and HICP; y-o-y changes



Source: European Commission.

The chart shows that consumers' quantitative estimates of inflation are higher than the EU HICP inflation measured by Eurostat over the entire sample period. However, the size of the gap has tended to narrow over time. For perceptions, the overestimation has remained less severe than at the beginning of the sample, including when actual inflation peaked at the all-time high of 4.5% in July 2008. Between July 2008 and October 2009, both perceptions and expectations have eased sharply, mirroring the drop in HICP inflation during the Great Recession. Afterwards, both perceptions and expectations increased but less steeply than HICP,

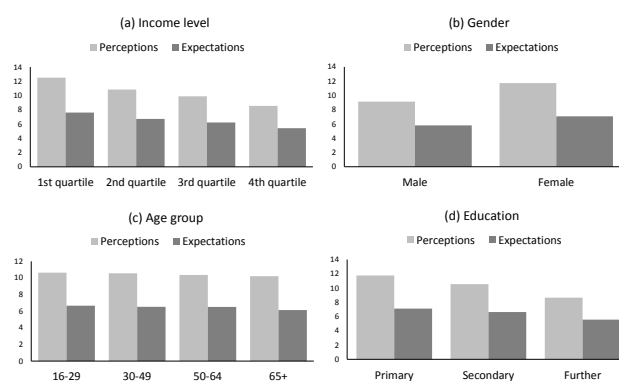
<sup>3</sup> The qualitative question on expected inflation and the six response options are: "By comparison with the past 12 months, how do you expect that consumer prices will develop in the next 12 months? They will..." (1) increase more rapidly, (2) increase at the same rate, (3) Increase at a slower rate, (4) stay about the same, (5) fall, (6) don't know. When respondents choose an option different from (4) or (6), the two quantitative questions ask respondents to quantify past and future inflation and give their responses in percent.

narrowing further the gap between opinions and the measured inflation rate. In line with HICP, perceptions and expectations are on a downward trend again since the end of 2012.

### Different people, different inflation assessments?

Empirical evidence shows that particular demographic groups systematically expect prices to rise more quickly or slowly than other groups.<sup>4</sup> This seems to be the case also in the EU, as illustrated in Graph 2. In part, these differences are likely to reflect differences in consumption patterns and financial literacy among the various socio-economic groups.

Graph 2: EU: EC Consumer survey inflation perceptions and expectations by categories (averages over the period May 2005- June 2014)



Source: European Commission.

High-income earners tend to perceive and expect lower inflation rates than low-income earners (Graph 2a). Likewise, women do perceive/expect higher inflation rates than men (Graph 2b). Moreover, reported inflation estimates tend to decrease with the educational attainment of the respondents (Graph 2d). By contrast, no significant differences are visible across age groups (Graph 2c). These patterns are confirmed in a sub-sample analysis (pre-/post-crisis).

<sup>4</sup> See Bryan, M. F. and G. Venkatu (2001b), "The curiously different inflation perspectives of men and women", Economic Commentary, *Federal Reserve Bank of Cleveland*; Lombardelli, C. and J. Saleheen (2003), "Public expectations of UK inflation", *Bank of England Quarterly Bulletin*, Autumn; Del Giovane P., S. Fabiani and R. Sabbatini (2008), "What's behind 'Inflation Perceptions'? A survey-based analysis of Italian consumers", *Banca d'Italia Working Paper No. 655*, January.



One possible explanation of the above differences could be the fact that each person uses his or her own basket of goods and services to form an opinion on price changes. Indeed, the survey questions are deliberately vague as regards the meaning of 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 different mix of goods and services than the one covered by the HICP, or some measure of the cost of living more generally.

### Outliers and trimming measure

Another feature of the EC survey is that respondents are not "helped" by the interviewer or by the design of the questionnaire when answering the interview. In this respect the EC survey differs from the Bank of England/NOP survey in the United Kingdom (where respondents have to select their answer from a number of ranges) or the University of Michigan survey in the United States (where interviewers have to probe unusual replies). This may have an impact on the results as there is evidence that they are sensitive to the formulation of the question.<sup>5</sup> By being open-ended, the current wording of the survey questions allows for a more dispersed range of replies.

One of the consequences of open-ended questions and the absence of probing questions is the presence of a high number of outliers. Respondents may misunderstand the question or the concept of percentages and may find it difficult to formulate inflation rates. They may choose provocative replies or tell random numbers owing to lack of interest or information, or there may be errors in entering the data. Regardless of the source, the outliers play an important role in shaping the outcome, especially when the analysis focuses on subsets of the data.

One way to correct for the impact of outliers is to trim the distribution. Graph 3 presents the series trimmed to exclude the top/bottom 25% of the distribution – which is applied, for example, in the Michigan Survey for the US.

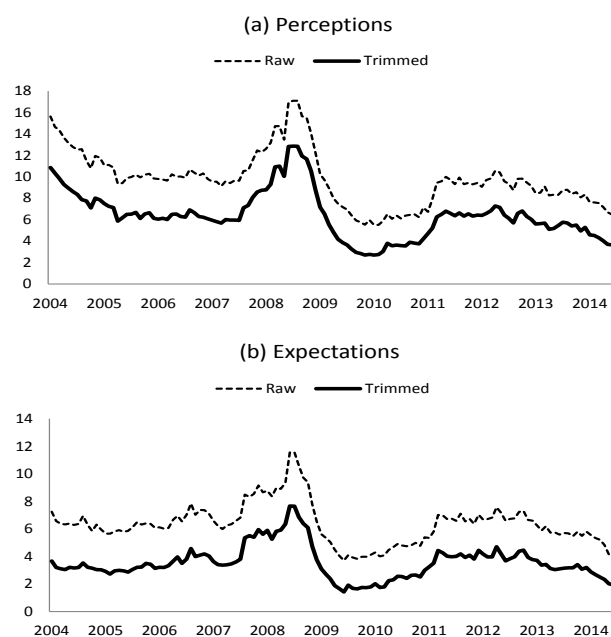
Looking at the evolution of the trimmed mean measure over time it appears that it is very closely correlated with the "raw" series. The main effect of

<sup>5</sup> A Spanish experiment in mid-2005 – during which the open-ended question was dropped and a possible choice of answers between 0% and 10% was suggested – introduced a break in the time series, but it temporarily provided a range of answers that was much closer to actual inflation developments, without any significant drop in the response rate.

trimming is to lower the mean as high positive outliers are excluded from the trimmed distribution. For example, in June 2014 trimmed perceived inflation was at 3.7%, while the expected one was at 1.9%. By comparison, in September 2009, trimmed perceived inflation was 2.9% and trimmed expected inflation 1.6%.

Trimming mechanically leads to a downward shift in the reported means, so that the resulting subjective measures of price changes turn out to be closer to the HICP series. An overall overestimation of inflation still persists, however, particularly for perceptions of past inflation. Another interesting difference between the raw and the trimmed expected inflation is the fact the trimmed series indicates a less steep decrease since the beginning of 2014 as compared to the picture emerging from raw data.

Graph 3: EU: EC Consumer survey inflation perceptions and expectations raw and trimmed (excluding the top/bottom 25% of the distribution) results



Source: European Commission.

### Country results

The main developments for the EU aggregate are broadly confirmed when considering the patterns observed for the five largest EU economies (namely, Germany, France, the UK, Italy and Spain). In particular, inflation perceptions and expectations have fallen over time across most reporting countries.

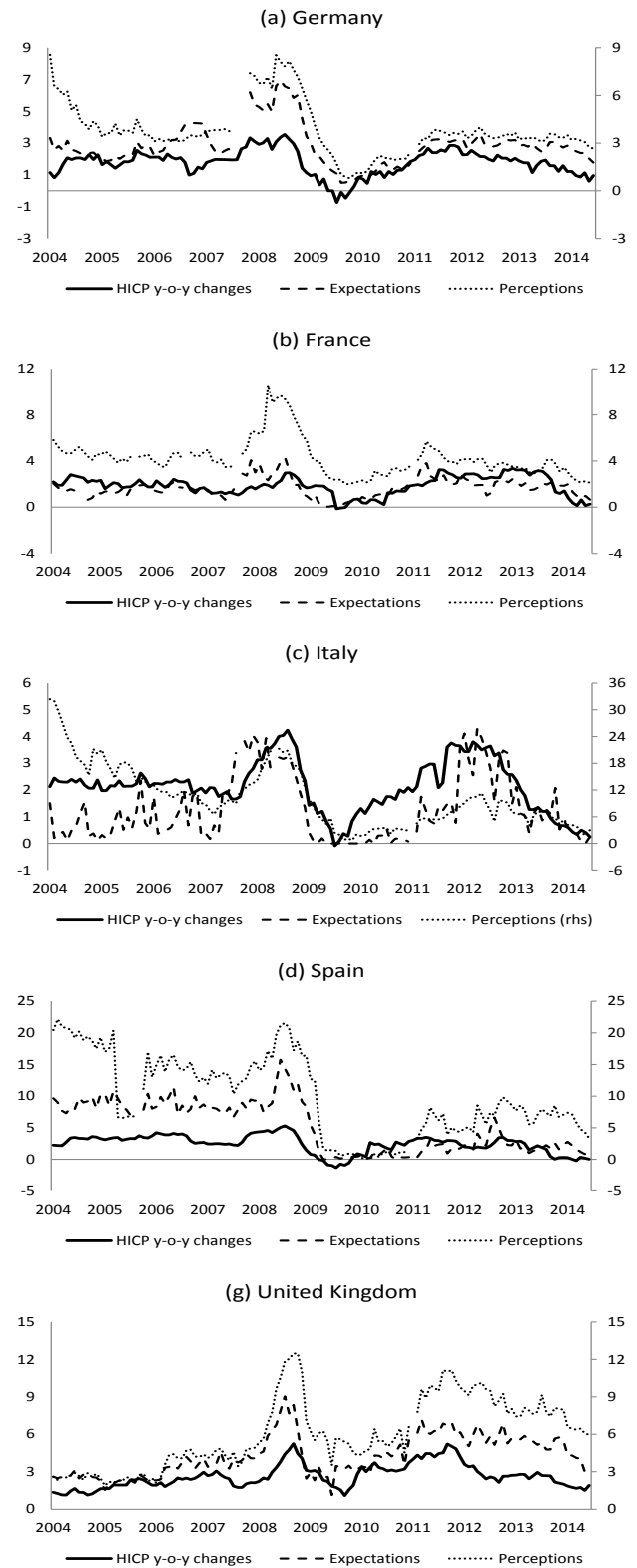
Graph 4 shows trimmed inflation perceptions and expectations (excluding the top/bottom 25% of the distribution) in the five largest EU Member States.<sup>6</sup> In all the five largest Member States both inflation perceptions and expectations closely track developments in the HICP inflation rate.<sup>7</sup>

In Germany (Graph 4a) and the United Kingdom, (Graph 4e) both trimmed perceptions and expectations have been on a downward trend since 2011/12 when the actual HICP inflation rate started decreasing. Opinion data have however stayed well above the measured results; for Germany, in June 2014 trimmed consumers' perceptions and expectations were at 2.9% and 1.9%, respectively, while actual HICP was at 1.0%. In the United Kingdom, trimmed inflation perceptions and expectations were at 6.0% and 3.0% as opposed to the actual HICP inflation rate of 1.9%.

French respondents started to revise downward their opinions in September 2013, two months after the HICP began to decline. Trimmed expectations (+0.7%) remained only marginally above the actual HICP in June (0.3%) (Graph 4b). In Spain (Graph 4d), the inflation perceptions indicator started to decline in February 2014, six months after the drop registered in the actual HICP inflation rate. June 2014 results show trimmed inflation perceptions at 3.4%, while expectations were (at 1.0%) more aligned with the actual outcome of zero for the Spanish HICP inflation rate.

In Italy, the downward trend in both the official inflation rate and the subjective measures of price changes started declining in autumn 2012. While the trimmed perceptions indicator is clearly higher than the actual HICP inflation rate, the trimmed expectations series traces actual HICP quite closely. In June 2014, Italian trimmed perceptions were at 3.1%, while trimmed expectations were at 0.3%, very close to the actual HICP inflation rate of 0.2%.

Graph 4: **Trimmed inflation perceptions and expectations (excluding the top/bottom 25% of the distribution) in the five largest EU Member States (DE, FR, IT, ES and the UK)**



Source: European Commission.

<sup>6</sup> The quantitative questions on perceived and expected inflation became mandatory in the harmonised EC questionnaire in May 2011. Before the data were collected by national institutes on a voluntary basis and for some periods, institutes were testing new formulations of the questions. This caused breaks in the series and explains the presence of missing data in some countries.

<sup>7</sup> Given the extreme over-estimation of actual HICP inflation by Italian consumers, inflation perceptions for Italy are reported with a different scale on the right axis.

Looking at the actual and expected inflation levels, a close overlap for France and Germany emerges, apart from a limited period (from mid-2007 to mid-2008) where expected price changes clearly exceeded official figures in Germany. A closer alignment set in again when HICP was approaching its trough of late-2009.

Opposite developments occurred in Spain and the United Kingdom: while in Spain expected price changes were higher than official figures over the period 2004-2009 and then became broadly aligned, price expectations in the United Kingdom tended to be above the HICP particularly between 2007 and 2009 and then again since 2011. Finally, expectations in Italy stood below official figures until 2012; a broad overlap occurred afterwards, when HICP tended toward the zero level.

### Measuring the degree of forward-lookingness of consumers' expectations

Direct measures of inflation expectations are particularly useful in testing various hypotheses concerning the formation of consumers' beliefs about future changes in prices.

While there is a relative abundance of available sources for professional forecasters' expectations data, information about quantitative consumers' expectations is generally lacking or largely confined to the US case. Given this data limitation, indirect measures of consumers' expectations (i.e. derived through quantification methods of qualitative data) have been widely used when empirically testing theoretical models of expectation formation.<sup>8</sup>

The relevant literature identifies two main mechanisms behind the process of expectation formation. The first paradigm posits that expectations are mostly backward-looking, i.e. being the result of the extrapolation of past and current experience into the future. In contrast, the basis of the second mechanism of expectation formation relies on the idea that economic agents are Muthian-rational<sup>9</sup> and form their expectations in a forward-looking manner by processing all available information at their disposal.

Empirical studies focused on assessing the degree of forward-lookingness of consumer inflation

<sup>8</sup> See, among others, Döpke, J., Dovern, U. Fritsche and J. Slacalek (2008), The Dynamics of European Inflation Expectations. *The B.E. Journal of Macroeconomics*, 8, Article 1.

<sup>9</sup> Muth, John F. (1961) Rational expectations and the theory of price movements. *Econometrica* 29, 315-335.

expectations in European economies are limited.<sup>10</sup> The main message from these studies is the relative dominance of the backward-looking mechanism, with a more limited role for the forward-looking component.

The present analysis aims at validating the existent empirical evidence by using "genuine" quantitative information from surveys among consumers rather than indirectly computed estimates derived by quantification methods of qualitative replies.<sup>11</sup>

In order to quantify the relative importance of rational and adaptive expectations, we follow Gerberding (2001) and test a specification embedding both a forward-looking "rational" and a backward-looking component:<sup>12</sup>

$$\pi_{t+12|t} = b_1 + b_2 p_{t+12} + (1-b_2)[\pi_{t-1|t-13} + b_3(p_{t-13} - \pi_{t-1|t-13})] + \varepsilon_t \quad (1)$$

where  $\pi_{t+12|t}$  denotes 12-month ahead expectations on price changes formed in month  $t$ ,  $p_t$  denotes the prevailing y-o-y HICP inflation rate in  $t$ . In condition (1)  $b_1$  represents the intercept term, while the coefficients  $b_2$  and  $b_3$  measure the relative weight of forward- and backward-lookingness and the speed at which agents revise their expectations, respectively.<sup>13</sup>

Starting from equation (1) we obtain parsimonious specifications for each economy under scrutiny by selecting the relevant regressors through a top-down

<sup>10</sup> See Gerberding, C. (2001), *ibid.*; Forsells, M., G. and Kenny, (2004), Survey Expectations, Rationality and the Dynamics of Euro Area Inflation. *Journal of Business Cycle Measurement and Analysis*, 1, 13-41; Lyziak, T. (2009), Measuring consumer inflation expectations in Europe and examining their forward-lookingness, MPRA Paper No. 18890.

<sup>11</sup> For a critical view on the quantification methods of qualitative data, see Friz, R. and S. Lindén (2010), Can quantification methods lead to wrong conclusions? Evidence from consumers' inflation perceptions and expectations, EC mimeo, presented at the FRBNY Conference, New York, November 2010.

<sup>12</sup> See Section IV.3, Gerberding, C. (2001), *ibid.*

<sup>13</sup> If  $b_3$  is equal to 1, the backward looking component of model (1) corresponds to the "naïve" expectation formation model. If  $b_3$  is equal to zero, condition (1) becomes the "stubborn" expectations model by Roberts, J.M. (1998), Inflation expectations and the transmission of monetary policy, Board of Governors of the Federal Reserve System Working Paper.

reduction process by eliminating statistically insignificant variables.

As for the EU aggregate, estimation results in Table 1 suggest that consumers' beliefs about future price changes incorporate other information than merely extrapolations of past price developments and earlier forecasts. The weight of forward-looking factors is around 10% ( $b_2=0.096$ ); moreover, the estimated value for the speed-of-adjustment coefficient ( $b_3$ ) exhibits the expected positive sign.

A glance at the country-specific results confirms the presence of a forward-looking mechanism in consumers' inflation expectations formation, in a way consistent with previous evidence based on measures of expectations derived from quantification methods.

**Table 1: Estimation results for the EU aggregate its five largest economies: 2004m1-2014m6**

	$b_1$	$b_2$	$b_3$	R2adj	J-stat
EU	0.059 (0.045)	0.096 (0.048)	0.073 (0.041)	0.90	[0.67]
Germany	0.000 (0.053)	0.095 (0.046)	0.118 (0.051)	0.91	[0.78]
France	0.006 (0.044)	0.072 (0.043)	0 .	0.76	[0.39]
United Kingdom	0.187 (0.067)	0.097 (0.048)	0 .	0.80	[0.34]
Italy	-0.027 (0.069)	0.052 (0.032)	0 .	0.60	[0.20]
Spain	-0.082 (0.115)	0 .	0 .	0.90	[0.70]

Note. 2SLS estimates. 12 lags of HCPI y-o-y changes are used as instruments. Heteroskedasticity and autocorrelation (HAC) consistent standard errors in parentheses. p-values associated to the Hansen-J statistics of the null of no correlation between instruments and the disturbance process are reported in square brackets.

The overall picture at the EU-level seems to be influenced by its largest economy: the expectations formation mechanism in Germany displays a degree of forward-lookingness almost identical to the European aggregate, although a slightly stronger feedback effect is found (as witnessed by the estimated value of  $b_3$ , equal to 0.118). Looking at the magnitude of the forward-looking component, it goes from 5% (for Italy) to 10% (for the United Kingdom). Spain's results constitute an exception, suggesting fully backward-looking consumer inflation expectations.<sup>14</sup> The speed-of-adjustment coefficient

in France, the United Kingdom and Italy turns out to be not statistically significant, suggesting a sort of forecast smoothing among consumers as discussed in Roberts (1998).<sup>15</sup>

## Conclusions

The downward trend of the HICP inflation rate since the beginning of 2012 has fostered a debate on the risks of 'too low' inflation or even 'deflation'. In this context, results on quantitative inflation perceptions and expectations as measured by DG ECFIN's Consumer survey could add valuable information.

The analysis reported in this highlight section shows that in the EU as a whole and the five largest Member States both inflation perceptions and expectations as measured by DG ECFIN's Consumer Survey closely track developments in the HICP inflation rate. However, consumers' perceived and, to a lesser extent, expected inflation (also when considering trimmed figures so as to exclude outliers) are generally higher than Eurostat's EU HICP inflation over the entire sample.

Our analysis indicates that consumers' short-term inflation perceptions and expectations in the EU embarked on a declining trend in mid-2012, in line with the trend in HICP inflation. The level of both consumers' perceptions and expectations in the EU is still positive and stays above the levels recorded at the end of 2009, when the HICP inflation rate for the EU was at its lowest. A similar declining pattern for both the official inflation rate and the two subjective measures can be detected for the five largest EU economies as well. A notable cross-country difference refers to the almost zero level of (trimmed) inflation expectations in Italy, Spain and, to a lesser extent, France over the most recent months as opposed to still positive values observed in Germany and the United Kingdom.

Concerning the question of expectation formation, preliminary estimation results provide evidence of a limited-but-significant role for the forward-looking component in the formation of consumers' expectations.

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the set of instruments is not rejected by data (p-values of the J-statistics well above the conventional levels of statistical significance).

<sup>14</sup> In all regressions, the explanatory content of the approach proves satisfactory (with adjusted coefficients of determination ranging from 60 to 91%) and the choice of

<sup>15</sup> Roberts, J.M. (1998), *ibid.*

#### 4. Highlight II: BCS data from Macedonia, Turkey and Croatia – unearthing a survey treasure

The major purpose of the Joint Harmonised EU Programme of Business and Consumer Surveys (BCS) is to help the European Commission to effectively survey the economies of the EU Member States. While this is primarily done on the basis of real activity data, which reflect economic fluctuations more accurately, survey data play an important complementary role. In contrast to real activity data, survey data are published at the end of the month to which they refer and thus allow for a very early indication of where the economy is heading.

In order to ensure that the geographical coverage of the BCS programme remains complete, i.e. surveys are produced for all EU Member States, every enlargement of the EU requires an extension of the BCS programme. What is less evident is that the data collection process already starts well before the country concerned eventually enters the EU – usually when it is granted the status of a candidate country. The underlying rationale is that the value added of survey data lies in the availability of long and comparable time series. Moreover, the data is most useful in seasonally adjusted form, which requires a minimum length of around 3 years of observations. Currently, the EU BCS programme covers four candidate countries<sup>16</sup>. As Table 1 shows, depending on the candidate country and the sector, data collection started between 2007 and 2013. As the cells highlighted in grey show, there is a number of sectoral surveys which were started more than three years ago so that seasonally adjusted series are readily available. Generally, as soon as a series can be seasonally adjusted, it is put on the EU BCS website for free download<sup>17</sup>.

To avoid that these releases go unnoticed and to encourage users to explore the relatively new data sets for candidate countries and 'fresh' EU Member States, this section provides a brief analysis of the characteristics of BCS data from these countries. Croatia changed status from candidate country to Member State only in 2014 and is therefore included in the analysis. On the other hand, given the still too short time series for Montenegro and Serbia (less than 2½ and 1½ years of data, respectively), the

<sup>16</sup> Albania only reached candidate status in June 2014 and is not yet included in the Programme. Iceland applied for EU membership in July 2009 and began accession negotiations in July 2010, but negotiations were put on hold by the Icelandic government in May 2013.

<sup>17</sup> See [http://ec.europa.eu/economy\\_finance/db\\_indicators/surveys/time\\_series/index\\_en.htm](http://ec.europa.eu/economy_finance/db_indicators/surveys/time_series/index_en.htm)

analysis cannot yet include the BCS data from these two countries.

Table 1: Starting dates of EU business and consumer surveys by country and sector

	INDU	SERV	RETA	BUIL	CONS	ESI
<b>candidate countries:</b>						
Albania	-	-	-	-	-	-
Iceland	-	-	-	-	-	-
Montenegro	05/12	05/12	05/12	05/12	05/12	05/12
Serbia	05/13	05/13	05/13	05/13	06/13	05/13
Macedonia	05/08	05/08	05/08	05/08	05/12	05/08
Turkey	05/07	05/11	05/11	05/11	05/07	05/07
<b>EU Member States having joined in 2014:</b>						
Croatia	05/08	05/08	05/08	05/08	05/05	05/08

Note:

INDU = industry survey ; SERV = services survey ;

RETA = retail trade survey ; BUIL = construction survey ;

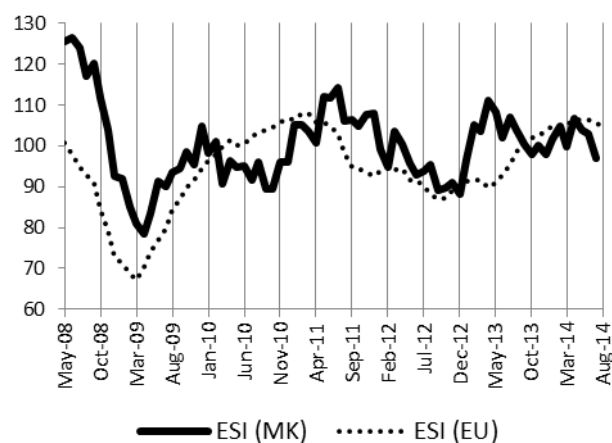
CONS = consumer survey ; ESI = Economic Sentiment Indicator

Source: European Commission.

#### Graphical inspection of the survey data

To get an impression of the characteristics of the new BCS data for Croatia, Macedonia and Turkey, we plot their Economic Sentiment Indicators (ESIs), which are supposed to summarise overall economic activity, against the ESI for the EU (see Graphs 1 to 3). A first observation is that, in spite of some month-on-month volatility, all national ESIs allow identifying clear cyclical patterns.

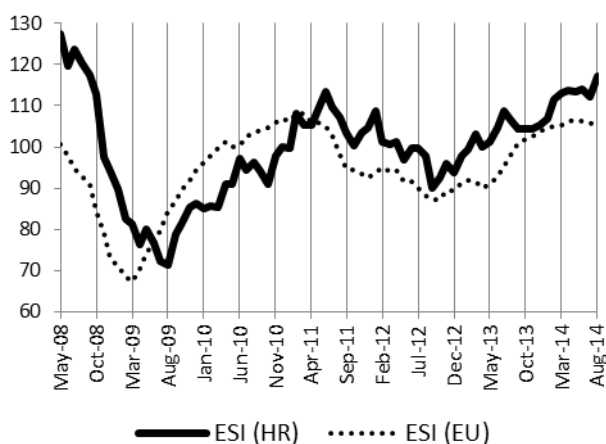
Graph 1: The ESI for Macedonia (monthly balances): May 2008 to August 2014



Source: European Commission.

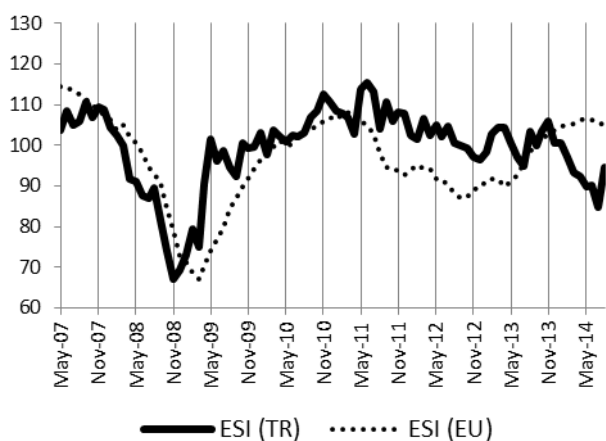


Graph 2: The ESI for Croatia (monthly balances):  
May 2008 to August 2014



Source: European Commission.

Graph 3: The ESI for Turkey (monthly balances):  
May 2007 to August 2014



Source: European Commission.

When focusing on the relation to the (smoother)<sup>18</sup> benchmark represented by the EU ESI, all of them show some degree of co-movement with it. This is most pronounced in Croatia and, with the exception of developments in 2014, also in Turkey. The Macedonian ESI shows more deviations, which is also evidenced by a correlation of 0.41 with the EU aggregate (period May 2008 to July 2014). The Croatian (0.56) and Turkish (0.57) correlation

<sup>18</sup> Since irregular (short-term) developments in individual EU Member States tend to cancel out in the weighted EU average, the benchmark series is necessarily smoother than a typical individual country series.

coefficients over the same period are significantly higher.

### The tracking performance of the survey data

The visual inspection can be complemented by a more formal assessment of the degree to which survey data correctly capture the underlying economic fluctuations. To this end, we correlate each national confidence indicator and ESI (in monthly levels) with the relevant hard data series<sup>19</sup>.

Table 2: Correlation between BCS time-series and hard-data reference-series

	INDU	SERV	RETA	BUIL	CONS	ESI
<b>Macedonia</b>						
- coincident	0.53	-	0.08	0.16	-	-
- lead 1	0.46	-	0.10	0.11	-	-
- lead 2	0.34	-	0.06	-0.02	-	-
- lead 3	0.20	-	-0.16	-0.07	-	-
<b>Turkey</b>						
- coincident	0.76	0.45	0.42	0.25	0.51	0.68
- lead 1	0.78	0.44	0.14	0.13	0.54	0.76
- lead 2	0.77	0.45	-0.05	-0.03	0.55	0.81
- lead 3	0.70	0.48	0.01	-0.18	0.54	0.83
<b>Croatia</b>						
- coincident	0.65	0.87	0.67	0.91	0.83	0.92
- lead 1	0.66	0.80	0.69	0.90	0.80	0.90
- lead 2	0.61	0.70	0.71	0.90	0.75	0.83
- lead 3	0.47	0.58	0.72	0.86	0.70	0.72
<b>Average across all EU Member States</b>						
- coincident	0.73	0.77	0.39	0.66	0.68	0.87
- lead 1	0.71	0.77	0.31	0.63	0.69	0.88
- lead 2	0.66	0.75	0.24	0.58	0.69	0.88
- lead 3	0.60	0.72	0.19	0.53	0.68	0.85

*Note:*

INDU = industry survey ; SERV = services survey ;  
RETA = retail trade survey ; BUIL = construction survey ;  
CONS = consumer survey ; ESI = Economic Sentiment Indicator  
The time-period considered is May 2008 to August 2014. However, depending on data-availability, it can be shorter.

Source: European Commission.

Table 2 reports the results for coincident correlations, as well as correlations where the survey series are

<sup>19</sup> The reference series are: (i) for industry: industrial production index; (ii) for services and retail trade: (a) national accounts data for NACE2 codes G to K or (b) turnover in retail; (iii) for construction: production in construction; (iv) for consumers: volume of private consumption; (v) for the ESI: GDP. All indicators are expressed in %y-o-y changes. If raw data is quarterly, it is first transformed into monthly data by linear interpolation. Given the absence of appropriate reference series, no correlation coefficients are reported for the Macedonian ESI and services confidence indicator.



shifted by 1 month (lead 1), 2 months (lead 2), etc. It turns out that all ESIs yield correlations well above 0.50, no matter if hard and soft data are correlated contemporaneously or considering a lead for the survey data. The same goes for roughly one half of the sectoral confidence indicators (CIs). Particularly for Croatia, there are even several cases where the tracking performance over the reported sample compares favourably to the average across all EU Member States.

Finally, there are four CIs demonstrating a markedly less strong tracking performance, namely the Macedonian retail trade and building, as well as Turkish building and the Croatian industry CI. These results, though, seem to be strongly influenced by the very high volatility of the hard data series which are used as reference series for the CIs.<sup>20</sup> Thus, the weaker performance of the corresponding CIs can (partly) be attributed to deficiencies of the statistical reference series.

### The volatility of the survey data

Having established that survey data from Croatia, Macedonia and Turkey track economic developments in these countries sufficiently closely, a last question to be addressed is how many months a user of survey data must observe the evolution of a given indicator before he or she can reasonably safely assume that the observed economy (or sector thereof) is indeed moving up- or downwards.

This question essentially concerns the relative impact which the irregular (noise) and the cyclical component have on the evolution of the survey indicator. To shed light on this issue, we calculate for all three countries the so-called Months for Cyclical Dominance (MCD). This measure is based on a trend/cycle-noise decomposition of the time series. It measures the number of months one (typically) has to wait before a change in direction of a series can be attributed to trend/cycle developments, rather than just irregular short-term noise. Table 3 summarises the results.

<sup>20</sup> Indeed, the Months for Cyclical Dominance (MCD), which is a measure of the volatility of a time-series (see more details in next section), records values of 5 and 6 for the Macedonian retail trade and construction reference series and even beyond 10 for the Croatian industry series. However, the Turkish construction reference series has a MCD of 1 so that the reason for the weaker performance of the construction CI does not seem rooted in the volatility level of the reference series.

Table 3: MCDs of BCS indicators by country and by sector

	INDU	SERV	RETA	BUIL	CONS	ESI
Macedonia	3	4	4	4	-	3
Turkey	3	4	5	5	3	3
Croatia	2	2	4	2	4	2
mean of all EU Member States	2.1	2.2	4.0	2.5	2.8	1.8

Note:

INDU = industry survey ; SERV = services survey ;

RETA = retail trade survey ; BUIL = construction survey;

CONS = consumer survey ; ESI = Economic Sentiment Indicator

Source: European Commission.

It emerges that the survey data from the three countries appear to be reasonably smooth. 9 out of 17 indicators have an MCD of 3 months or lower. This means that it takes a maximum of three months until a data-user can take an upward/downward shift in the indicator at face value. Comparison with the average sectoral MCDs across all EU Member States (see last data-row of the table) shows that the Croatian industry, services and building surveys even achieve particularly low MCDs (as highlighted in grey).

### Unearthing the survey treasure

BCS data from Croatia, Macedonia and Turkey have been shown to be useful for business cycle analysis. The survey data gathered so far report plausible economic tendencies, as testified by visual inspection and the correlation of sectoral confidence indicators with their hard-data reference series. What is more, the survey data does not seem to suffer from overly high volatility levels. Thus, users of the data will be in a position to make reliable guesses about the direction of change in the real economy on the basis of a relatively small amount of monthly observations. These characteristics make the data a true "survey treasure" which hopefully many analysts will use in various contexts of economic monitoring, analysis and forecasting.

**Annex 1: The Economic Climate Tracer**

The graphs below show the economic climate tracer for the EU (including sectoral components), the euro area and the seven largest EU Member States.

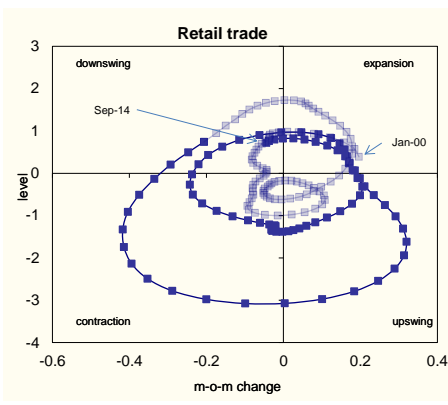
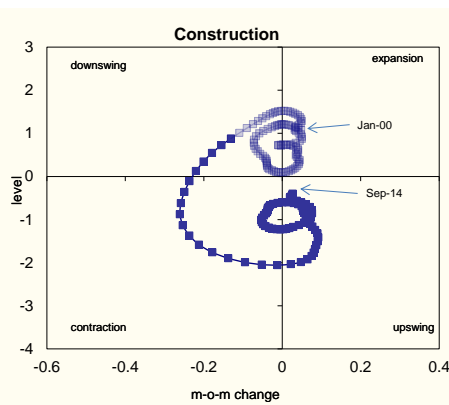
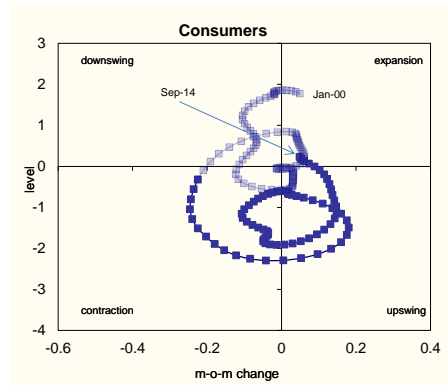
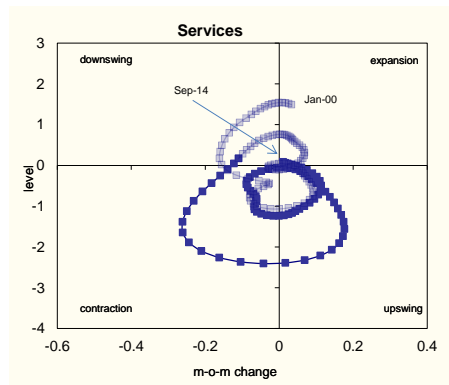
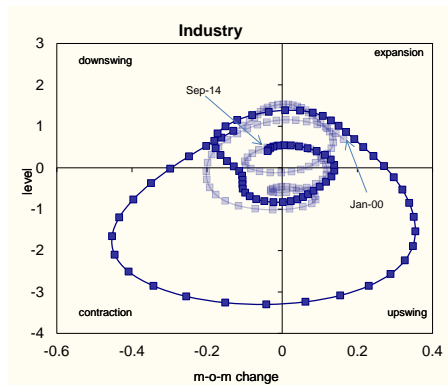
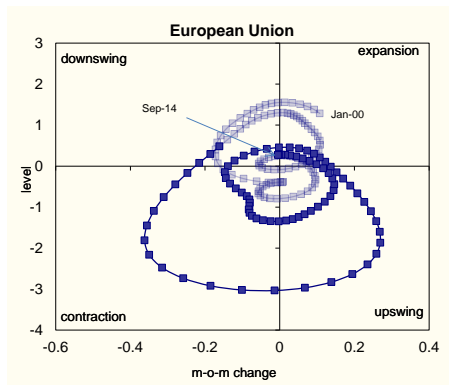
The series levels are plotted against their first differences (m-o-m changes), so that each chart depicts — at the same time — the current stance of the sector/country and its most recent dynamics. Series are smoothed to eliminate short-term fluctuations.

The four quadrants of the graphs enable to distinguish four phases of the business cycle: "expansion" (top right quadrant), "downswing" (top left), "contraction" (bottom left), and "upswing" (bottom right).

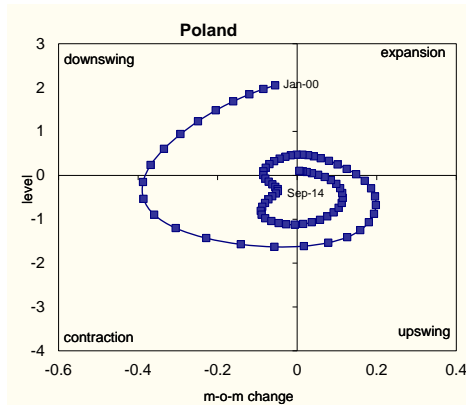
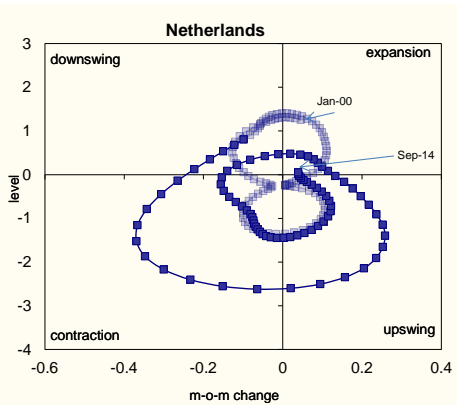
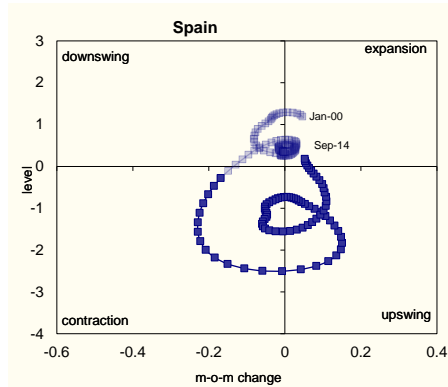
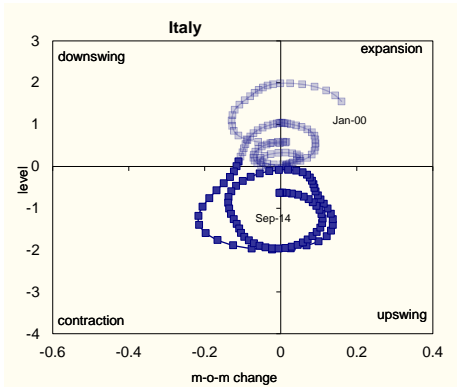
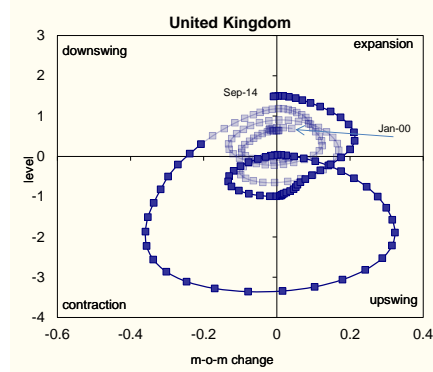
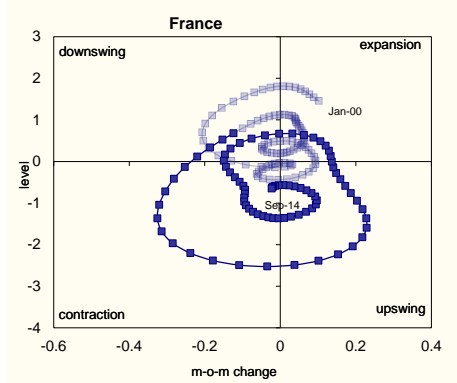
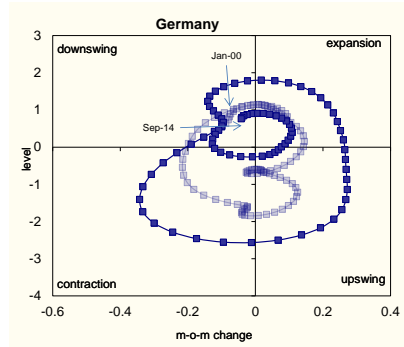
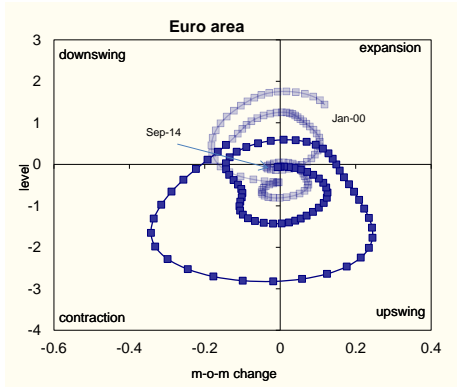
Cyclical peaks are positioned in the top centre of the graph, and troughs in the bottom centre.

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.

**Economic climate tracer across sectors, EU**



Economic climate, largest EU Member States



**Annex 2: Reference series**

The reference series are from Eurostat, via Ecwin:

<b>Confidence indicators</b>	<b>Reference series (volume/year-on-year growth rates)</b>
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. The Commission calculates EU and euro-area aggregates on the basis of the national results and it seasonally adjusts the balance series. The indicator is scaled to have a long-term mean of 100 and a standard deviation of 10. Thus, values greater than 100 indicate above-average economic sentiment and vice versa. Further details on the construction of the ESI can be found at:

[Methodological guides - Surveys - DG ECFIN website](#)

Long time series of the ESI and confidence indicators are available at:

[Survey database - DG ECFIN website](#)

**Economic Climate Tracer**

The economic climate tracer is a two-stage procedure. The first stage consists of building economic climate indicators. These are based on principal component (PC) analyses of balance series (s.a.) from the surveys conducted in industry, services, building, the retail trade and among consumers. In the case of industry, five of the monthly questions in the industry survey are used as input variables (employment and selling-price expectations are excluded). For the other sectors the number of

input series is as follows: 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 PC-based sector climate indicators. The sector weights are equal to those underlying the economic sentiment indicator (ESI), i.e. industry 40 %; services 30 %; consumers 20 %; construction 5 %; and retail trade 5 %. The weights were allocated on the basis of two broad criteria: the representativeness of the sector in question and historical tracking performance in relation to GDP growth.

In the second stage of the procedure, 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 standardised to a common mean of zero and a standard deviation of one. 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. The phases 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.