European Commission

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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 2012Q4

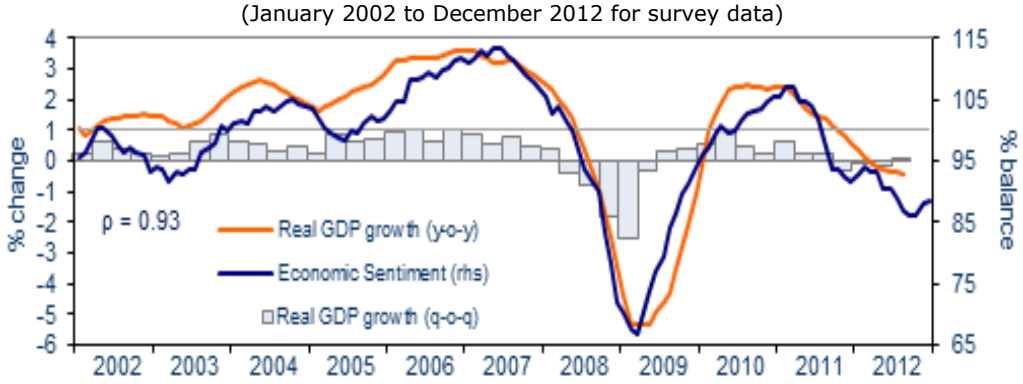
- *In the fourth quarter of 2012, economic sentiment bottomed out in both the EU and the euro area. The ESI remains well below its level one year ago and its long-term average.*
- *The stabilisation was driven by developments in industry and services, where confidence started to pick up again.*
- *Overall, developments in survey data suggest a broad stabilisation of economic activity in 2012Q4.*
- *EU manufacturing managers report zero real investment growth for 2012 and 2013.*

Highlight: Using BCS data for tracking q-o-q GDP growth

The Economic Sentiment Indicator (ESI) is a powerful tool for tracking year-on-year GDP growth. However, its performance is weaker when GDP growth is expressed in quarter on quarter changes. This quarter's highlight section presents an experimental indicator using BCS data that explicitly aims at tracking q-o-q GDP growth. Its construction deviates from the ESI in that i) only the survey questions best correlated with q-o-q GDP growth are used and ii) the ups and downs of the indicator are amplified if they reflect coherent changes in a high number of underlying survey questions. The logic is that changes in the survey results should be taken more "seriously" if they are broad-based. The experimental indicator indeed achieves promising results: Its coincident correlation with q-o-q GDP growth is comparable to the one of Markit Economic's headline PMI indicator (Final Eurozone Composite Output Index) and the leading correlation is even superiour.

ESI and GDP growth for the EU

(January 2002 to December 2012 for survey data)



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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Directorate A – Policy strategy, coordination and communication
Unit A4 – Economic situation, forecasts, business and consumer surveys
http://ec.europa.eu/economy_finance/db_indicators/index_en.htm

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

In the fourth quarter of 2012, the Economic Sentiment Indicator (ESI) bottomed out and eventually reversed the downward trend that had characterised economic sentiment in the EU and the euro area since March 2012. While the pace of the decline started to slow down around September/October, improvements were recorded in November and December. By the end of 2012, the ESI gained 2.3 (EU) and 2.7 (euro area) points compared to its low point in October. However, at 88.4 (EU) and 87.0 (euro area), the indicator is still well below its position one year ago (around 92 points) and its long-term average of 100. The ESI has been below its long term average since August 2011. The ESI results for recent months are broadly in line with developments in other survey indicators (PMI and ZEW expectations for the euro area, ifo business climate for Germany).

At the sector level, the turnaround in the composite ESI in the fourth quarter is mainly due to developments in industry and services. Consumer confidence has also clearly bottomed out since autumn 2012, but does not (yet) show signs of a turnaround. Retail trade confidence continues to fluctuate around a flat trend since spring 2012, while construction confidence is fluctuating around a continued downward trend.

At the country level, Germany, France and Poland have largely followed the movement of the EU aggregate, dropping steadily since March 2012 and picking up in November. Having stabilised already over the summer 2012, the ESI for Italy has been showing similar signs of a recovery at the end of the year. In Spain the recovery of the ESI set in in September 2012 and was perpetuated throughout the last quarter of the year. The UK, where the latest low point in economic sentiment was already reached in December 2011, saw strong increases in October and November 2012, which were however partly reversed in December. Following a horizontal path since June 2012, the Dutch ESI registered a sharp drop in November and recoverd only mildly in December.

Sector developments

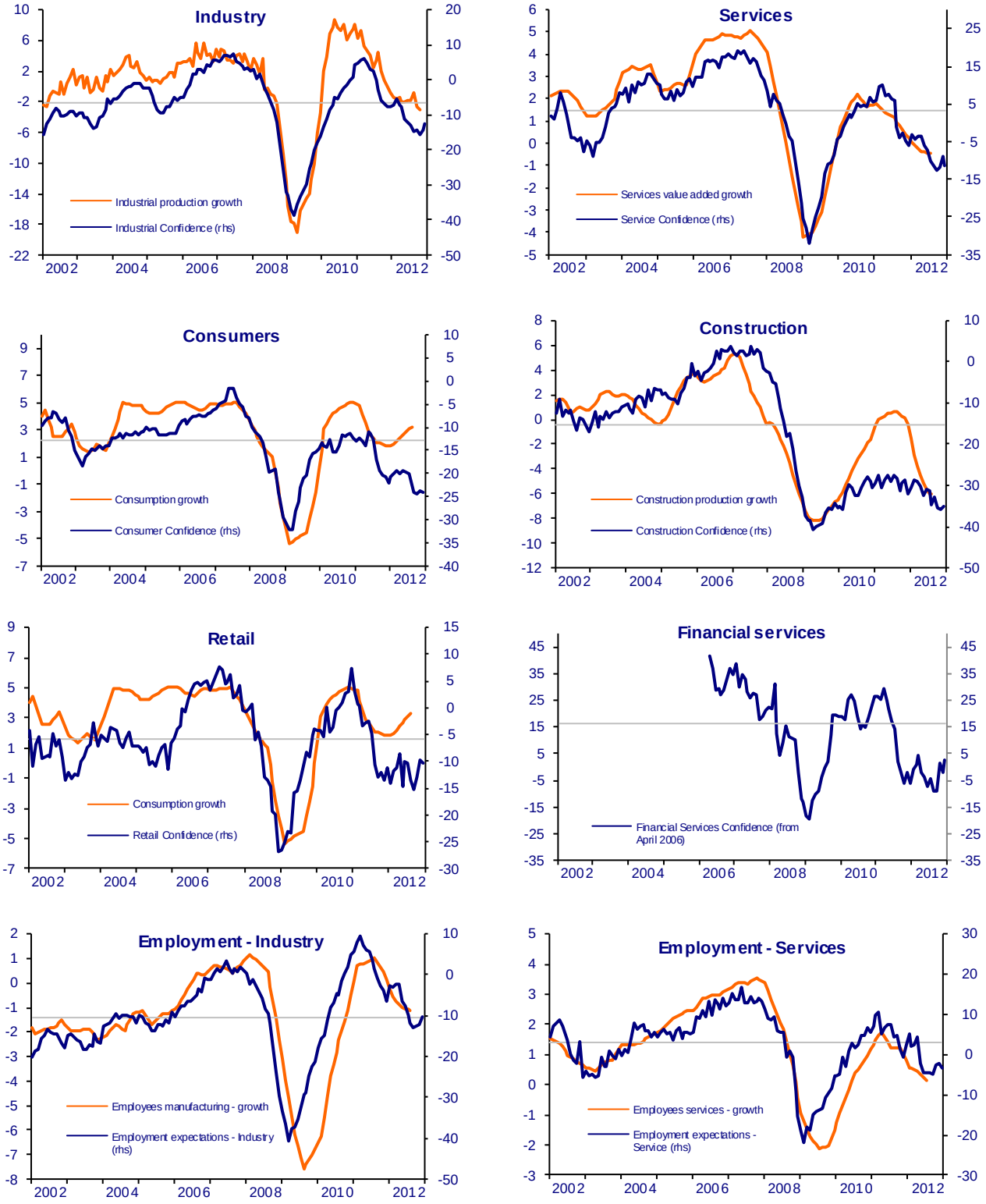
Sentiment in **industry** improved by around 1½ points in the EU and the euro area over the fourth quarter. Compared to the low point in October, the combined increases of November and December amount to around 3 (EU) and 4 (EA) points. Compared to September, the industrial confidence indicator increased in the majority of the seven largest Member States, except France and the Netherlands. In terms of the monthly profile in 2012Q4, industry confidence was generally considerably higher in December than in October, the only exception being the UK.

In both the EU and the euro area, the pick-up in the industrial confidence indicator in the fourth quarter is mirrored in all three of its components: production expectations and the assessment of overall order books and the adequacy of the stocks of finished products clearly improved since October. Also the survey questions not included in the industrial confidence indicator (managers' assessment of production trends observed during recent months, export order books and employment prospects) improved markedly. Finally, selling price expectations of industry managers continued to increase over the fourth quarter.

Quarterly survey data published in October show that capacity utilisation in the manufacturing sector descended for the third consecutive quarter to 77.3% (EU) and 76.8% (euro area), which is in both cases some 4 percentage points below the long-term average. The latest investment survey points to flat real manufacturing investment in the EU in both 2012 and 2013 (see section 3. below).

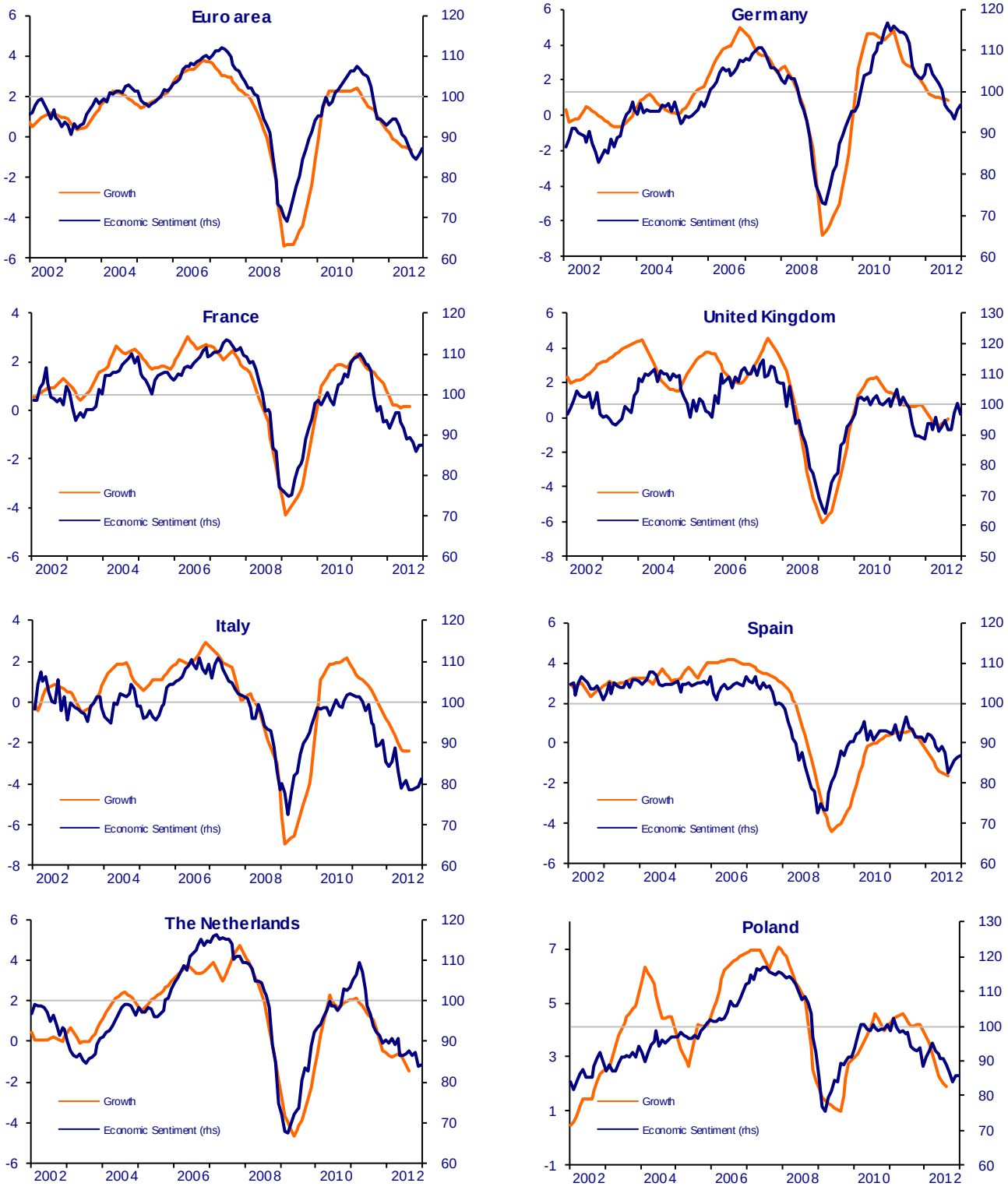
During 2012Q4, sentiment in **services** picked up in both the EU and the euro area. The quarterly profile was however somewhat different in the two regions: while in the euro area services confidence was broadly flat in October and November and saw a marked increase in December, it increased in October and November in the EU and then registered a decline in the last month of the year. This decline in December was however almost exclusively due to developments in the UK, where services confidence saw an unusually large deterioration. In the euro area, the increase in the confidence indicator over the fourth quarter resulted from improvements in all the components (past and expected demand and past business situation); in the EU the assessment of past demand was at the same level in December as in September, while the other two components improved. Among the seven largest Member States, clear signs of a turnaround in services confidence in the fourth quarter are discernible in Germany and Poland. In France, Italy and the Netherlands, services confidence moved rather sideward. Spain saw a strong increase in October that was however partly reversed in November and December. In the UK, marked increases in October and November were neutralised by an extreme deterioration in the last month of 2012.

Graph 1.1: **Sectoral confidence indicators and reference series for the EU (January 2002 to December 2012 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 2002 to September 2012 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 **retail trade** confidence indicator increased over the fourth quarter compared to its September level in the EU and the euro area, driven by improvements in October and November. However, in a longer term perspective and taking into account its volatility, the indicator appears to continue to fluctuate around a basically flat trend since late 2011. In terms of its components, an upward trend is discernible in the assessment of the adequacy of the current level of stocks. While managers' appraisal of their company's past and expected business activity improved in October and November, the renewed decline in December casts some doubts on the robustness of these developments.

Sentiment in **construction** continued to deteriorate over the fourth quarter, driven by developments in both employment expectations and managers' appraisal of current order books. The slight pick-up of the confidence indicator in December was due to somewhat less negative views concerning the latter of its components. In terms of longer-term developments, construction confidence in France, Poland, Spain and the Netherlands has been on a downward trend, monotonous in the case of the former two, while subject to high volatility for the latter two. Germany and Italy have seen construction confidence broadly flat over the past year, while UK construction confidence has been mildly trending upwards.

Following its deterioration during the third quarter, confidence among EU **consumers** bottomed out during the fourth quarter. The euro area saw a renewed fall in November, but confidence picked up again in December. While consumer expectations about their financial situation and the general economic situation improved over the quarter in both the EU and the euro area, consumers' unemployment expectations continued to deteriorate. Savings expectations remained broadly stable. Concerning developments in the seven largest EU economies, consumer confidence bottomed out or increased in the fourth quarter in Germany, France, Italy, Poland and the UK. In Spain and the Netherlands, consumer confidence decreased over the fourth quarter.

Confidence in **financial services** – which is not included in the ESI – increased in the fourth quarter of 2012 in both the EU and the euro area. Particularly in the EU, thanks to the marked increases of October and December, the confidence indicator reversed the losses registered during the first three quarters of 2012. However, the recovery in confidence was due mainly to improved assessments of the past business situation and past demand since September, while managers' demand expectations remained more pessimistic.

The developments over the fourth quarter are illustrated and confirmed by the evolution of the turning point indicator and the climate tracers. The economic climate tracer for the EU has been slowly moving towards the border to the upswing quadrant (see Annex 1 and Annex 3 for further details). This movement is backed by the climate tracers for industry and, to some extent, services. Reflecting the fluctuation around a flat trend in retail trade throughout 2012, the retail trade climate tracer has been signalling a neutral position in the contraction quadrant bordering the upswing quadrant for several months in a row. The turning point indicator for the euro area (Annex 2) — which extracts the (positive or negative) surprises from new available survey data — moved into positive territory in December, driven by the recent bottoming out of survey results.

2. Recent developments in selected Member States

During 2012Q4, the ESI has been on an upward path in the seven largest EU Member States, the main exception being the Netherlands that saw a marked decline in November. However, with the exception of Germany and the UK, the headline sentiment index is still scoring well below its long-term average.

Economic sentiment in **Germany** saw a turnaround in November that was confirmed by the December results. At 96.6 points, the ESI is not very far from its long-term average of 100. The improvement over the fourth quarter was mainly due to developments in industry and services and, to some extent, retail trade. Confidence in construction and among consumers was broadly flat.

In **France,** the ESI saw a similar improvement over the last two months of 2012. In December, it stood at 88 points. While services confidence was broadly flat and building confidence continued to decline, the improvement in the headline index was mainly due to improved consumer and retail trade confidence. Confidence in industry recovered in November from its October drop in but saw a renewed slip in December.

In **the United Kingdom**, the ESI improved significantly in October. The further rise in November was however reversed by the December results. The indicator currently scores 96.7 points, close to its long-term average. The rise and subsequent fall in the ESI was mainly due to developments in the services confidence indicator that witnessed unusually large fluctuations towards the end of the year. Consumer and retail trade confidence appear to be on a mild upward trend and also construction confidence improved over the last two months of 2012. Industrial confidence has been see-sawing around a flat trend through most of 2012.

In **Italy,** the ESI had bottomed out already over the summer and started to mildly pick up in the course of the fourth quarter of 2012. At 81.4 points, the level of economic sentiment is still far from its long-term average. The increases in the ESI were due to developments in industry and services. While construction confidence has lost ground over the fourth quarter, confidence in retail trade and among consumers did not show a clear trend.

In **Spain**, the latest low point in economic sentiment was already reached in August. Over the fourth quarter, the ESI continued its recovery, albeit at a slow pace, reaching 86.7 points in December. The mild improvement over the fourth quarter was mainly due to a recovery of industry confidence and improvements in retail trade in October and November. While consumer confidence declined further towards the end of the year, services and construction confidence did not display a clear trend.

In **the Netherlands**, economic sentiment was broadly flat between May and October 2012. In November, the ESI declined markedly, remaining broadly flat in December, at 84.2 points. The decline in November was due to a massive fall in consumer sentiment (arguably related to the Dutch coalition agreement of late October). While industry and services confidence was broadly flat and retail trade confidence see-sawing during the fourth quarter, construction confidence continued to decline.

Economic sentiment in **Poland** picked up in November and remained broadly unchanged in the last month of the year, at 85.7 points. The improvement was mainly due to developments in industry and services. Consumer and retail trade confidence picked up in November as well, but fell back in December again. The monotonous fall in construction confidence since summer 2011 appears to have come to a halt in the fourth quarter of 2012.

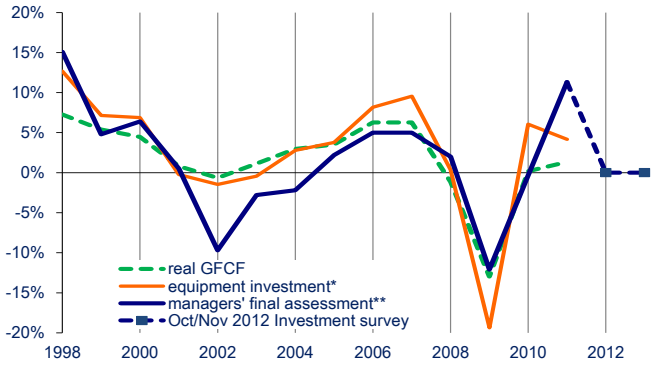
3. Results of the autumn 2012 EU Investment Survey in the manufacturing sector

Developments in overall investment

According to the latest Investment Survey, real investment in the EU manufacturing sector is expected to have remained unchanged in 2012. This is a marked deterioration compared to 2011, when real manufacturing investment was reported to have increased by 11.3% according to the previous survey conducted in March/April 2012. Then, managers had expected real investment growth in 2012 at some 3%. Also in 2013, EU manufacturing managers expect real investment to remain unchanged. Results for the euro area are somewhat more pessimistic. Managers anticipate a decrease of 2.2% in real investment for 2012 and expect a further decrease of 1.4% in 2013.

For 2012, the Investment Survey is more optimistic than the European Commission's autumn forecast, according to which gross fixed capital formation (GFCF) in the EU should contract by 2.2% in real terms. For 2013, the Investment Survey is broadly in line with the Commission's autumn forecasts, which foresees an increase of 0.1%. When comparing these results, it is important to bear in mind that the Investment Survey covers only investment by manufacturing companies and therefore only roughly 40% of total GFCF in the economy. There is no official (Eurostat) data on GFCF in manufacturing (or any other branch-specific breakdown). However, there is a breakdown by 6 asset types. One option is to use equipment investment (transport equipment and other machinery and equipment) in an attempt to approximate investment activity in the manufacturing sector. Compared to total GFCF, equipment investment typically reacts stronger to the business cycle, a feature that is likely also for manufacturing investment. Nevertheless, there is no full congruency with the investment growth estimate derived by the Investment Survey.

Graph 1: **Growth in real gross fixed capital formation (GFCF) and surveyed change of investments in the EU (annual changes in %)**

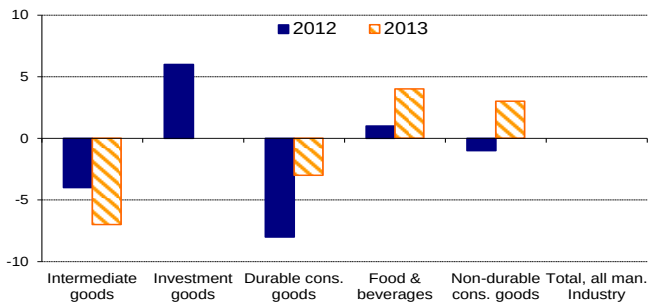


*Real GFCF in transport equipment and other machinery and equipment.
**Mar/Apr year t surveys, managers' assessment of investment in year t-1.
Source: Commission services.

Graph 1 presents manufacturing managers' estimates of investment growth over the years 1998-2011 (surveyed in March/April of each subsequent year) along with Eurostat figures for the two (imperfect) benchmark series. For 2011, the results from the Investment Survey are significantly above the Eurostat figures of 1.3% growth in total GFCF and 4.2% growth in equipment investment.

Investment dynamics by sectors

Graph 2: **Surveyed change of investments in the EU by sectors (annual changes in %)**



Source: Commission services.

Looking at the sectoral breakdown of the survey (see Graph 2), only the investment goods sector and the food and beverage industry (which is part of the non-durable consumer goods sector) report increases in real investment in 2012. Decreases are reported in the non-durable consumer goods sector as a whole and, more significantly so, in the intermediate goods and durable consumer goods sectors.

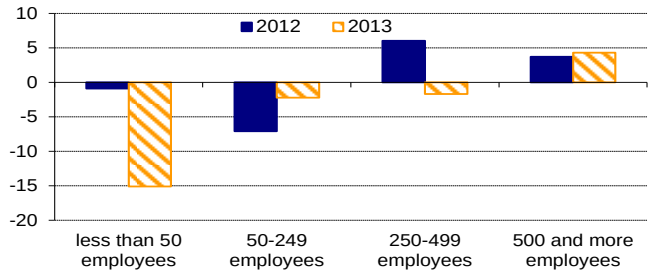
For 2013, managers in the food and beverage and overall non-durable consumer goods sector are more optimistic, foreseeing increases of around 3 to 4%. By contrast, managers in the intermediate and durable consumer goods sectors expect to decrease their investments in 2013 by 7% and 3% respectively. Investment volumes in the investment goods sector are forecast to remain stable in 2013.

Investment by size of enterprises

According to the survey, small and medium-sized enterprises (employing, respectively, less than 50 people and between 50 and 249) should have experienced contractions in investment volumes in 2012 (by around 1% and 7%, see Graph 3). By contrast, among the large and very large enterprises (those employing between 250 and 499 and more than 500 people), real investment should have increased by around 6% and 4% respectively.

In 2013 only very large enterprises project to further lift their investment volumes by 4%, while small, medium-sized and large enterprises expect to decrease their investment volumes by around 15%, 2% and 2% that year, respectively.

Graph 3: **Surveyed change of investments in the EU by company size (annual changes in %)**

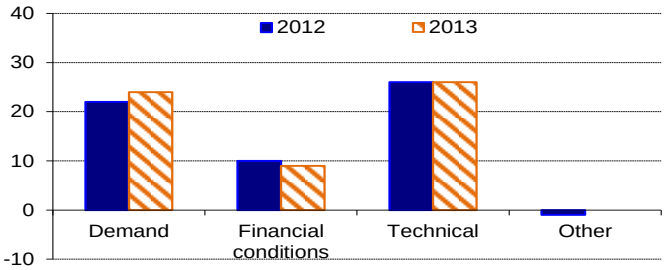


Source: Commission services.

Factors influencing investments

The autumn Investment Survey also provides information on the factors influencing investment, namely: demand, financial conditions (availability and cost of financing, opportunity costs of investment, etc.), technical (e.g. technological factors and the availability of labour) and other factors (e.g. taxation and the possibility of moving production abroad). For both 2012 and 2013 technical factors are reported as the main drivers of investment in the EU, followed by demand (see Chart 4). Demand is estimated to be slightly more supportive in 2013 than 2012, while financial conditions are expected to become slightly less supportive.

Graph 4: Factors influencing investment (balance statistic*)



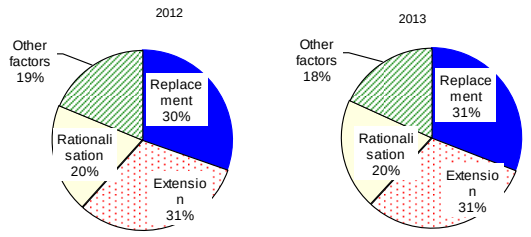
*Balances are the weighted averages of the percentages of answers describing each factor as 'very stimulating' (coefficient 1), 'stimulating' (0.5), 'limiting' (-0.5) and 'very limiting' (-1).
Source: Commission services.

Investment structure

In the context of the autumn Investment Survey, firms are also asked to assign their investments to four categories: replacement of worn-out plant or equipment, extension of production capacity,

investment designed to streamline production (rationalisation), and other investment objectives (pollution control safety, etc.). The structure of investment remains broadly the same in 2012 and 2013: the largest share of investments goes to replacement and extension purposes. The shares of investment earmarked to streamline production and for other reasons are expected to be at around 20% each in both 2012 and 2013.

Graph 5: Investment structure (percentage of total investment)

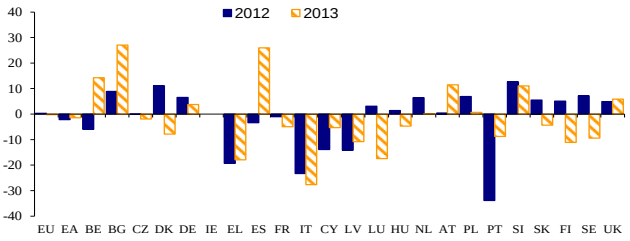


Source: Commission services.

Developments by country

The picture at country level is rather mixed. While a slight majority of the EU Member States expect positive (albeit small) real investment growth in 2012, most of the Member States foresee a decrease for 2013 (see Graph 6).

Graph 6: Surveyed change of investments in the EU Member States (annual changes in %)(1)



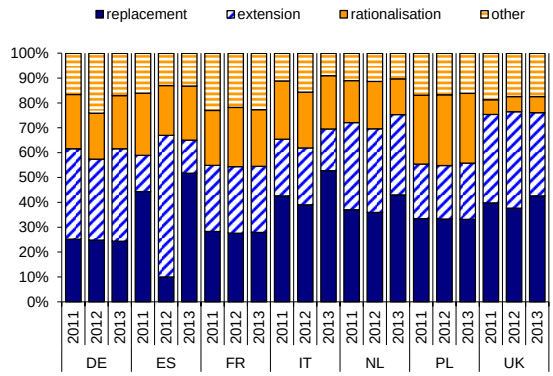
(1) Estonia, Latvia and Romania are missing, as the corresponding data are still under verification.
Source: Commission services.

In the largest Member States, managers assessed their real investments in 2012 to have increased by 6.9% in Poland, by 6.5% in Germany, by 6.4% in the Netherlands and by 4.9% in the UK. By contrast, investments are estimated to have decreased by 1.0% in France, 3.4% in Spain and 23.3% in Italy. For 2013, managers in the largest Member States expect their investments to increase by 26% in Spain, 5.9% in the UK, 3.8% in Germany and 0.7% in Poland, while they reported a contraction in Italy (-27.6%) and France (-4.9%). In the Netherlands investments are expected to stay stable at 2012 levels.

The structure of investment in 2012 varies across countries (see Chart 7). Amongst the largest Member States, investment mainly serves replacement needs in Italy and Poland, while in Germany and Spain investments should be mainly driven by extension needs, which is the second driver of investment in Italy and Poland. In France, the Netherlands and the UK, investments are equally driven by replacement and extensions needs. In 2013, the structure of investment in Germany, France and Poland is expected to remain broadly unchanged, while in the other large Member States a shift of investment from capacity extension towards replacement needs can be observed.

It should be noted that such differences may be due to countries being in different phases of their investment cycle or due to differences in the structure of the economies.

Graph 7: Structure of investments in the big Member States in 2011, 2012 and 2013 (share in %)

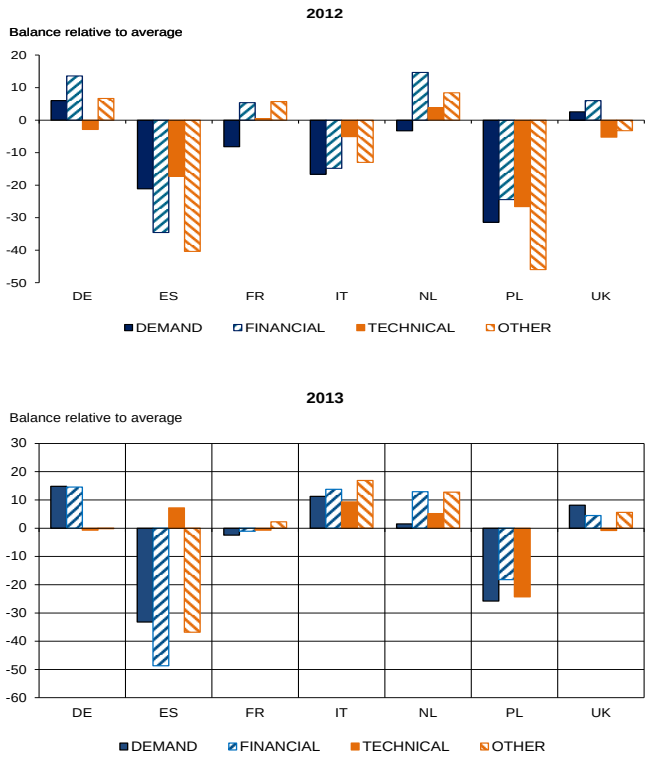


Source: Commission services.

Chart 8 shows which factors are stimulating or limiting investment in the largest Member States in 2012 and 2013. In 2012, demand is considered as stimulating investments only in Germany and in the UK, while managers in Spain, France, Italy, the Netherlands and Poland consider it as a limiting factor. Financial conditions are positively assessed in Germany, France, the Netherlands and the UK, while they are assessed as a limiting factor in Spain, Italy and Poland. Technical factors seem to be limiting investment in Germany, Spain, Italy, Poland and the UK, while they are stimulating in the Netherlands and neutral in France. Finally, other factors (e.g. taxation and the possibility of moving production abroad) are seen as limiting in Spain, Italy, Poland and the UK and as stimulating in Germany, France and the Netherlands. These patterns change very little for 2013 with the exception of Italy, where managers

expect all factors to be supportive of investment in 2013. However, this is somewhat at odds with the fact that investment in Italy is expected to decrease substantially in 2013.

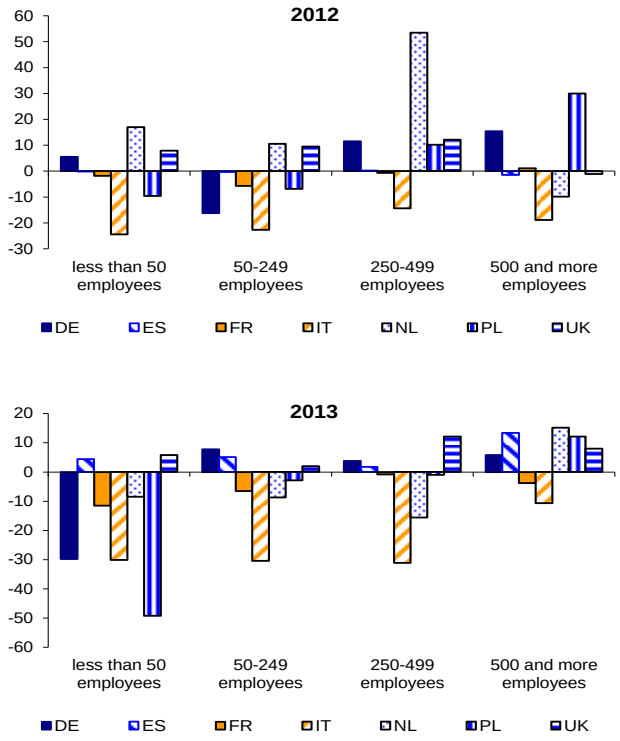
Graph 8: Factors influencing investment decisions in 2012 and 2013 (balance statistic)



Source: Commission services.

Looking at the breakdown by size of enterprises across countries, the picture for 2012 is rather mixed (see Graph 9). Very large and large German and Polish firms and large Dutch and UK enterprises expect positive developments in investment while, among medium-sized enterprises, only Dutch and UK firms foresee an increase in investment in 2012. Also German managers of small enterprises assessed their investment positively in 2012. In 2013, the situation is expected to be more negative across the small, medium and large enterprises, while managers in very large firms foresee a rise in investment in all large EU Member States, except France and Italy. In 2013, cuts in investment are expected to be particularly severe among small firms in Germany, Italy and Poland.

Graph 9: Surveyed change of investments in large EU Member States by size (annual changes in %)



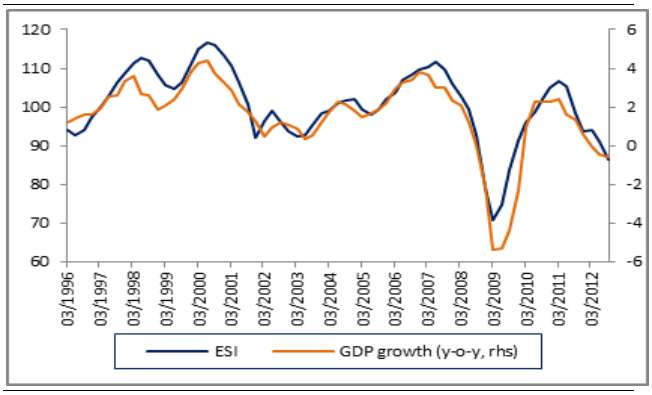
Source: Commission services.

All in all, results from the autumn Investment Survey in the manufacturing sector indicate a continuously slow momentum in investment activity in the near future: real investment in the EU is expected to have remained broadly stable in 2012 and is expected to remain stable in 2013 again. Results for the euro area are somewhat more pessimistic, with managers anticipating a small decrease in both 2012 and 2013. At sector and size levels, the outlook is more mixed. For 2012, contracting real investment is expected in the intermediate and consumer goods sectors, and across small and medium-sized enterprises. In 2013, a reduction in real investment is expected in the intermediate and durable consumer goods sectors, and across small, medium and large enterprises. Even though investment projections appear to be more volatile for small companies than for larger ones, the autumn investment survey seems to confirm the existence of structural differences in the shape of the recovery across company sizes.

4. Highlight: Using BCS data for tracking q-o-q GDP growth

The principal aim of the Joint Harmonised EU Programme of Business and Consumer Surveys (BCS) is to provide political decision-makers, economists and economic agents with information about the current state of the economy. The survey results also regularly feed into models that aim to now- and forecast economic growth in the short-term. The relevance of BCS data is mainly due to their timeliness compared to official statistics (so-called hard-data), which are usually published with significant delays. The EU BCS programme covers five sectors of the economy (industry, services, construction, retail trade and consumers) and dedicates to each of them a specific "confidence indicator", which summarises sector-specific tendencies in a single number. To provide a summary measure of confidence throughout the entire economy, all survey questions used for the construction of the sector-specific confidence indicators are aggregated into a single measure – the Economic Sentiment Indicator (ESI). The ESI is a very reliable tool for tracking year-on-year GDP growth in the euro area.[1]

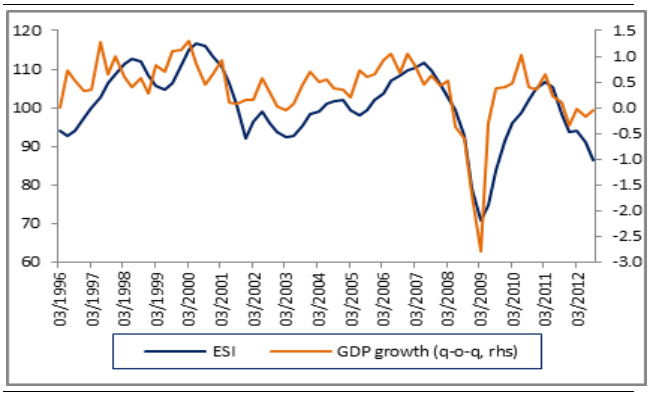
Graph 10: **ESI and GDP growth; euro-area (1996Q1 - 2012Q3)**



Note: monthly BCS data are converted into quarterly by averaging the balances over 3 months. GDP figures refer to y-o-y changes (%). Source: Commission services.

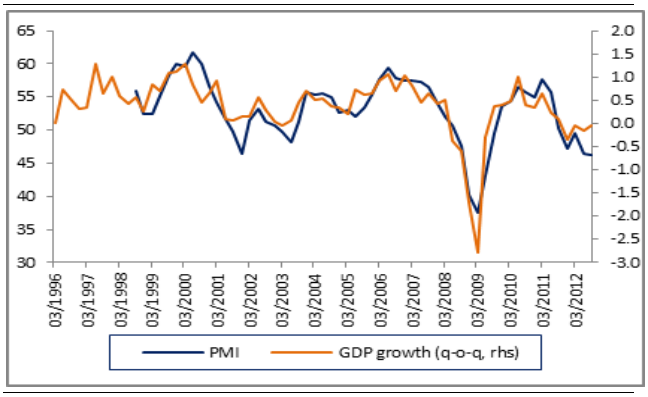
As is readily apparent from Graph 10, the ESI evolves smoothly and mimics the up- and downswings of GDP growth with high precision, which is also reflected in a coincident correlation of 0.92 over 1996Q1 to 2012Q3. However, the ESI's performance is comparatively weaker with respect to quarter-on-quarter GDP growth.[2] This observation holds in particular in comparison with Markit Economic's Purchasing Managers' Index (PMI).[3] Graphs 11 and 12 display, respectively, the ESI and the PMI in comparison with quarter-on-quarter euro-area GDP growth.

Graph 11: **ESI and GDP growth; euro-area (1996Q1 - 2012Q3)**



Note: monthly BCS data are converted into quarterly by averaging the balances over 3 months. GDP figures refer to q-o-q changes (%). Source: Commission services.

Graph 12: **PMI and GDP growth; euro-area (1996Q1 - 2012Q3)**



Note: monthly PMI data are converted into quarterly by averaging the balances over 3 months. GDP figures refer to q-o-q changes (%). Source: Commission services, Markit Economics.

The better tracking performance of the PMI with respect to quarter-on-quarter growth is among others revealed by its behaviour at cyclical turning points: For example, the ESI signals the downturn starting in 2007Q1 with a two-quarter delay, whereas

[1] See highlight section of European Business Cycle Indicators, 3rd quarter 2012.

[2] See e.g. The UniCredit Research Toolbox of 13 June 2012

[3] Throughout the analysis, Markit Economic's Final Eurozone Composite Output Index has been used.

the PMI signals a drop already one quarter after its onset. By the same token, the PMI mimics the sharpness of the upswing starting in 2009Q2 almost perfectly, while the ESI underestimates its pace.

When making such comparisons, it should be borne in mind that tracking q-o-q GDP growth is not an explicit aim of the ESI and its construction has not been trimmed to produce particularly high correlations with that reference series. Furthermore, the q-o-q and y-o-y GDP growth series obviously differ in terms of their volatility and amplitude, so that a time-series very highly correlated with y-o-y growth can hardly perform equally well with respect to q-o-q growth.[4]

Against this background, the aim of this highlight section is to investigate whether EU BCS data can be combined in such a way that it allows a better tracking of quarter on quarter developments in euro-area GDP. For ease of calculation and demonstration, the proposed indicator is constructed as a quarterly measure, i.e. quarterly averages of the underlying monthly balance series of survey questions are used for its computation. The results presented are of preliminary nature and refer to the euro-area aggregate only.

Given that the reference series to be tracked is a wide measure encompassing overall economic activity, the construction of the new experimental indicator sticks to the fundamental principles on which the ESI is based: i) the indicator shall be an average of several EU BCS questions, ii) the questions shall stem from all five sectors surveyed, iii) each sector shall be allocated a weight, broadly reflecting the relative importance of the economic sector in GDP as well as the degree to which the sectoral questions are correlated with GDP growth. In order to be able to attribute possible improvements in the tracking of q-o-q GDP growth to the modifications detailed below, the weighting scheme is unchanged compared to the ESI.[5]

The major changes in calculating the new indicator compared to the ESI are the following: i) the selection of survey questions underlying the indicator is tuned to track q-o-q developments in GDP (pre-selection) and ii) under certain conditions, the quarterly changes in the indicator are amplified through multiplication with a constant, the logic of which will be explained below.

Step 1 – choosing the right set of survey questions

The selection of questions to be included in the indicator starts with a fresh look at the correlations of all euro-area BCS questions with q-o-q growth in i) GDP and ii) the respective sectoral reference series.[6] Subsequently, for each sector, three new confidence indicators are constructed: A first one is based on the two questions with the highest correlation with the reference series/GDP, a second one on the three questions best correlated with the reference series/GDP[7] and a third one based on all forward-looking questions of the sector. In a subsequent step, for each sector, the confidence indicator yielding the highest correlation with the sectoral reference series and GDP is selected. The questions making up these confidence indicators are the ones to be used for the computation of the new indicator. Compared to the ESI, questions change in every sector. Industry, retail trade and consumers see, respectively, two of the questions currently used for the ESI discarded and a new question added. In case of both services and construction, one of the questions currently used fails the selection procedure and an additional one is added to construction, while none to services. The questions finally selected are the following:

- production expectations in industry
- past production in industry *
- past demand in services
- expected demand in services
- consumers' expected financial position
- consumers' expected general economic situation
- consumers' expected level of major purchases *
- expected sales in retail trade
- expected orders placed with suppliers in retail trade *
- current order books in construction
- past building activity in construction *

Compared to the ESI, four of the questions, marked with an asterisk, are new. Combining the results (balance statistics) of these eleven questions in a new indicator[8], results in slight improvements in tracking q-o-q GDP growth compared to the ESI (Table 1).

[4] Note that the PMI has a lower coincident correlation with y-o-y GDP growth than the ESI (0.83 vs. 0.93 for the period 1998Q3 to 2012Q3).

[5] Industry is weighted with 40%, services with 30%, consumers with 20%, construction with 5% and retail trade with 5%.

[6] For industry: Gross Value Added (GVA) in manufacturing; for services: GVA in services, for construction: GVA in construction; for consumers and retail trade: household and non-profit institutions serving households (NPISH) final consumption expenditure.

[7] Note that the ranking of questions is identical, no matter if correlation with the reference series or with q-o-q GDP growth is used as a ranking criterion.

[8] At this stage of the analysis, the construction method does not differ from the ESI, except that a different set of survey questions is used and quarterly averages of the questions' balance series are used as input.

Table 1: **Correlations of ESI and new indicator with GDP growth (q-o-q)**

	ESI	New indicator	improvement
Coincident correlation	0.72	0.77	7%
Leading correlation	0.47	0.52	12%

Note: correlation coefficients are computed over the period 1996Q1 – 2012Q3; coincident correlation is computed using current quarter values for both survey and hard data while for the leading correlation the hard data is shifted one quarter ahead.

Step 2 – amplifying changes reflected by many survey questions

To understand the rationale of the second step of the indicator construction, some theoretical explanations are warranted. The motivation for step 2 of the construction rests on the following considerations: i) there is an infinite number of possible combinations of q-o-q changes in the survey questions making up the indicator which all result in the same q-o-q change of the composite indicator; ii) if the composite indicator reports a positive q-o-q change, this can be the result of all underlying survey questions moving up, of just one survey question moving up (obviously, sharply to outweigh the losses in the other questions), or of a few questions moving up and a few ones moving down; iii) the extent to which a given positive q-o-q change in the composite indicator translates into GDP growth can be assumed to be higher if the increase in the indicator is reflected by moderate increases in a large amount of underlying survey questions rather than massive increases, which are confined to just a few survey questions. Obviously, the above considerations hold analogously for downward shifts in the composite indicator.

These considerations suggest that changes in the composite indicator should be taken more "seriously", when reflected by many underlying survey questions. Practically, it is suggested that the q-o-q changes of the composite indicator (positive or negative) are multiplied by a constant larger 1 (i.e. amplified), if a critical amount of questions changes in the same direction as the composite indicator does. As regards the critical amount of questions, the threshold should be chosen such that it is sufficiently restrictive (e.g. it would be conceptually hard to defend that if 6 out of 11 questions move in the same direction as the indicator, the movement is so broad-based that amplification is justified). At the same time, the value should be low enough to trigger amplification of the cyclical signal in a sufficient number of quarters. Based on these criteria, a threshold of 8 questions has been chosen, leading to amplification in 64% of cases[9]. The value by which the changes in the indicator are multiplied is set at 3, being the integer which maximises the correlation of the new indicator with q-o-q GDP growth over the analysed sample (1996Q1 to 2012Q3).

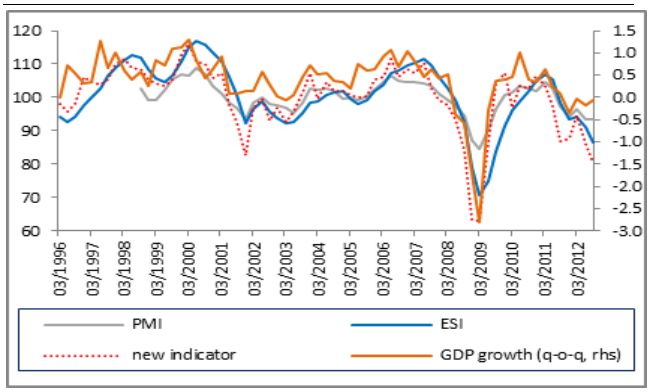
Based on these parameter settings, the new indicator can be constructed. In a first step, for each quarter, the standardised weighted questions are summed up. In a second step, the q-o-q change of this aggregate measure is calculated. Subsequently, a "trigger variable" is calculated, which takes the value 1 if the respective quarter reports 8 or more survey questions changing in the same direction as the aggregate compared to the previous quarter. In a fourth step, the q-o-q change of the sum of standardised weighted questions is multiplied by 3 if the trigger variable for the respective quarter is 1; otherwise it is left un-altered. The respective new q-o-q change of quarter t is then added to the original (i.e. un-altered) sum of standardised weighted questions of quarter t-1. The result is a new composite indicator, which either simply takes the value of the sum of the 11 standardised weighted questions, in case the respective quarter saw less than 8 questions moving in the same direction as the aggregate, or is artificially increased / decreased otherwise. For presentational ease, the new indicator is standardised and re-scaled to have a long-term average of 100 and a standard deviation of 10 (as the ESI).

The performance of the new indicator

Graph 13 presents the new experimental indicator (indicated by a dotted line) along with the ESI, the PMI and the reference series, i.e. q-o-q GDP growth. Compared to the ESI, the new indicator is characterised by a higher q-o-q volatility, which in most instances is more in line with the reference series. A first example is the temporary recovery of GDP growth during its downswing from 2000Q2 to 2001Q2, which is not captured by the ESI, but well-reflected in the new indicator. Other examples include the downturn starting in 2007Q1, which both the ESI and the new indicator report only in the third quarter of 2007.

[9] If the threshold was set at 9, 10 or 11 questions, it would be triggered in 50%, 32% or 15% of cases.

Graph 13: **ESI, PMI, new indicator and GDP growth; euro-area (1996Q1 - 2012Q3)**



Note: monthly BCS data and PMI (rescaled to mean 100) are converted into quarterly data by averaging the balances over 3 months. GDP figures refer to q-o-q changes (%). Source: Commission services, Markit Economics.

The new indicator, however, drops significantly sharper, which is more in line with the behaviour of GDP after the intensification of its drop from 2008Q2 onwards. Finally, the new indicator perfectly mimics the pace (i.e. slope) of the recovery starting in 2009Q2, while the ESI underestimates its intensity. When comparing the new indicator's performance to the PMI, the added value is less evident, since the PMI is already highly correlated with q-o-q growth. Nevertheless, there are some instances, where the new indicator outperforms the PMI. One example is the see-sawing of GDP (up-down-up-down) in the period 2006Q1 to 2007Q2. The PMI just reports an increase, followed by a downturn, after which the series follows a horizontal path. The new indicator, by contrast, perfectly mimics the see-sawing movement. The downswings of 2010Q3 and 2011Q2 are further illustrations of the new indicator's superiour performance – notably of its leading properties. In fact, both downswings are signalled by the new indicator two and one quarters before they actually materialise. The PMI just achieves a coincident reporting of these downturns.

The assessment can be formalised by taking a look at Table 2, which reports the coincident and leading correlations of the PMI and the new indicator with q-o-q GDP growth, as well as the improvements of the new indicator compared to the PMI in terms of percentage increase in correlation. To make the analysis more robust, the observation period is split into several sub-periods. It turns out that the new indicator is on the same level as the PMI in terms of coincident correlation. To put these results into perspective, it should be recalled that the ESI achieves a coincident correlation of 0.75 with q-o-q GDP growth over the period 1998Q3 to 2012Q3. When correlating GDP growth of quarter t with the respective indicator of quarter t-1 (leading correlation), the new indicator clearly outperforms the PMI.

Table 2: **Correlations (leading correlations) of PMI and new indicator with GDP growth (q-o-q)**

time-period	PMI	New indicator	improvement
98Q3-02Q1	0.73(0.54)	0.76(0.52)	4%(-4%)
02Q2-07Q1	0.85(0.63)	0.85(0.69)	0% (9%)
07Q2 – 12Q3	0.88(0.60)	0.89(0.72)	1%(21%)
98Q3 – 07Q1	0.79(0.58)	0.79(0.58)	1%(1%)
98Q3 – 12Q3	0.86(0.64)	0.89(0.74)	3%(15%)

Note: coincident correlation is computed using current quarter values for both survey and hard data while for the leading correlation the hard data is shifted one quarter ahead.

Conclusion

The point of departure for the analysis was that the ESI is an almost perfect measure for tracking year-on-year GDP growth in the euro area. However, when GDP is expressed in quarter-on-quarter growth, the performance is weaker – especially in comparison to the PMI. An attempt has therefore been made to test whether EU BCS data can be exploited in a different way with the explicit objective of achieving a good tracking of q-o-q GDP growth. The analysis shows that this is possible, if i) only the survey questions which are best correlated with the reference series are used (pre-selection) and ii) information on the pervasiveness of changes in the survey data is used to amplify the cyclical signal. The latter approach follows the logic that changes in the average score of the survey questions should be taken more "seriously" if they are broad-based, i.e. reflected by many questions. This amplification of pervasive short-term changes in the component survey series appears to adequately mimic developments in quarter-on-quarter GDP growth. While the approach thus appears promising, it should be stressed that it is still in an experimental phase and needs further robustness checks.

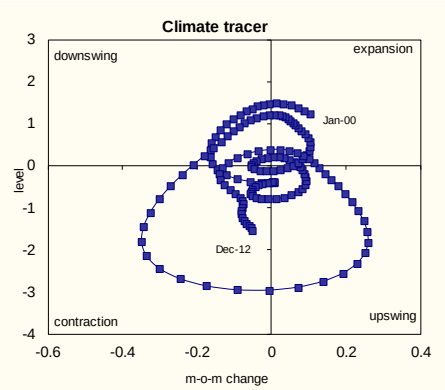
Annex 1: The Economic Climate Tracer

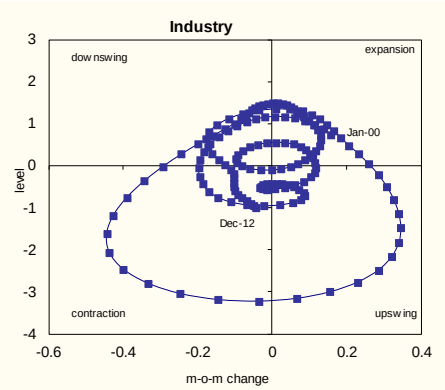
The graphs below show the economic climate tracer for the EU (including sectoral components), the euro area and the seven largest EU Member States.
The series levels are plotted against their first differences (m-o-m changes), so that each chart depicts — at the same time — the current stance of the sector/country and its most recent dynamics. Series are smoothed to eliminate short-term fluctuations.
The four quadrants of the graphs enable four phases of the business cycle to be distinguished:

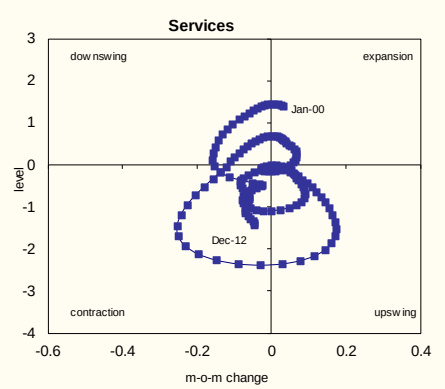
- "expansion" (top right quadrant),
- "downswing" (top left),
- "contraction" (bottom left), and
- "upswing" (bottom right).

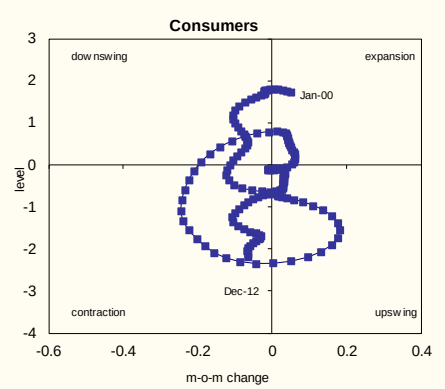
Cyclical peaks are positioned in the top centre of the graph, and troughs in the bottom centre.

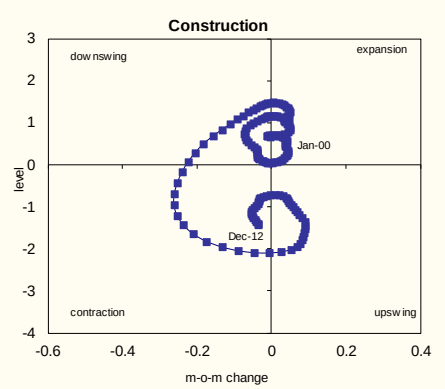
Economic climate tracer across sectors, EU

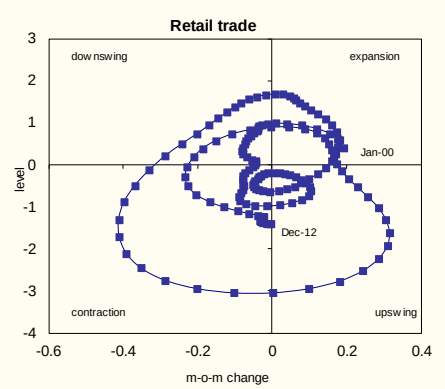




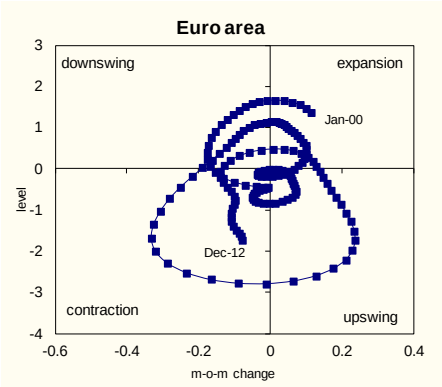


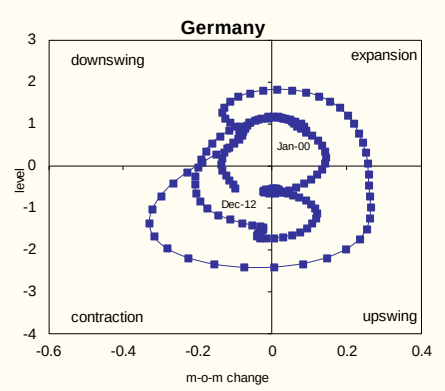


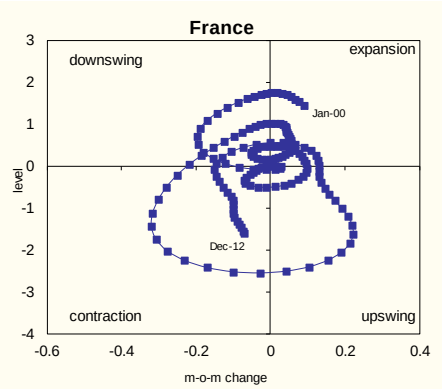


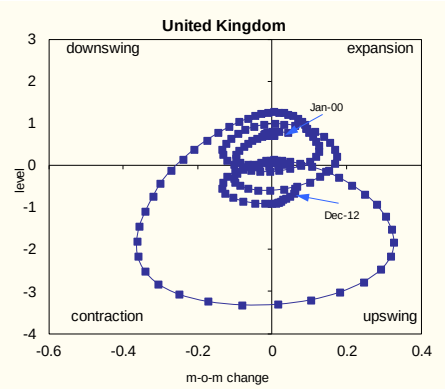


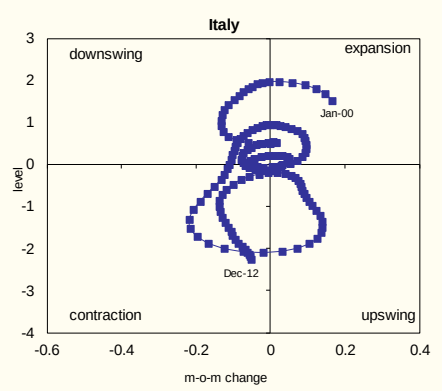
Economic climate, largest EU Member States

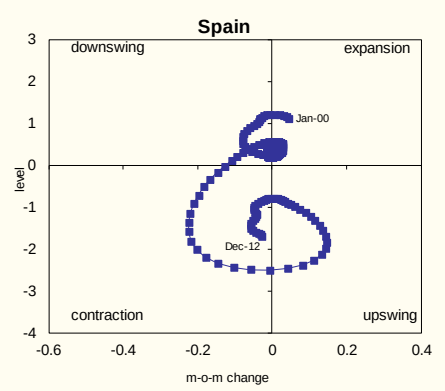


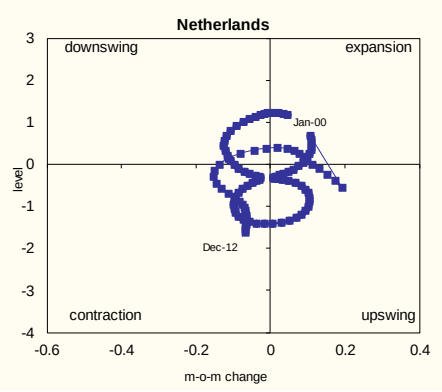


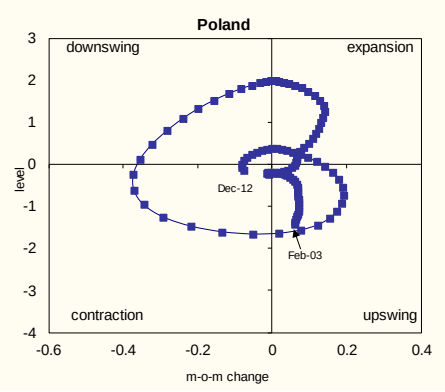








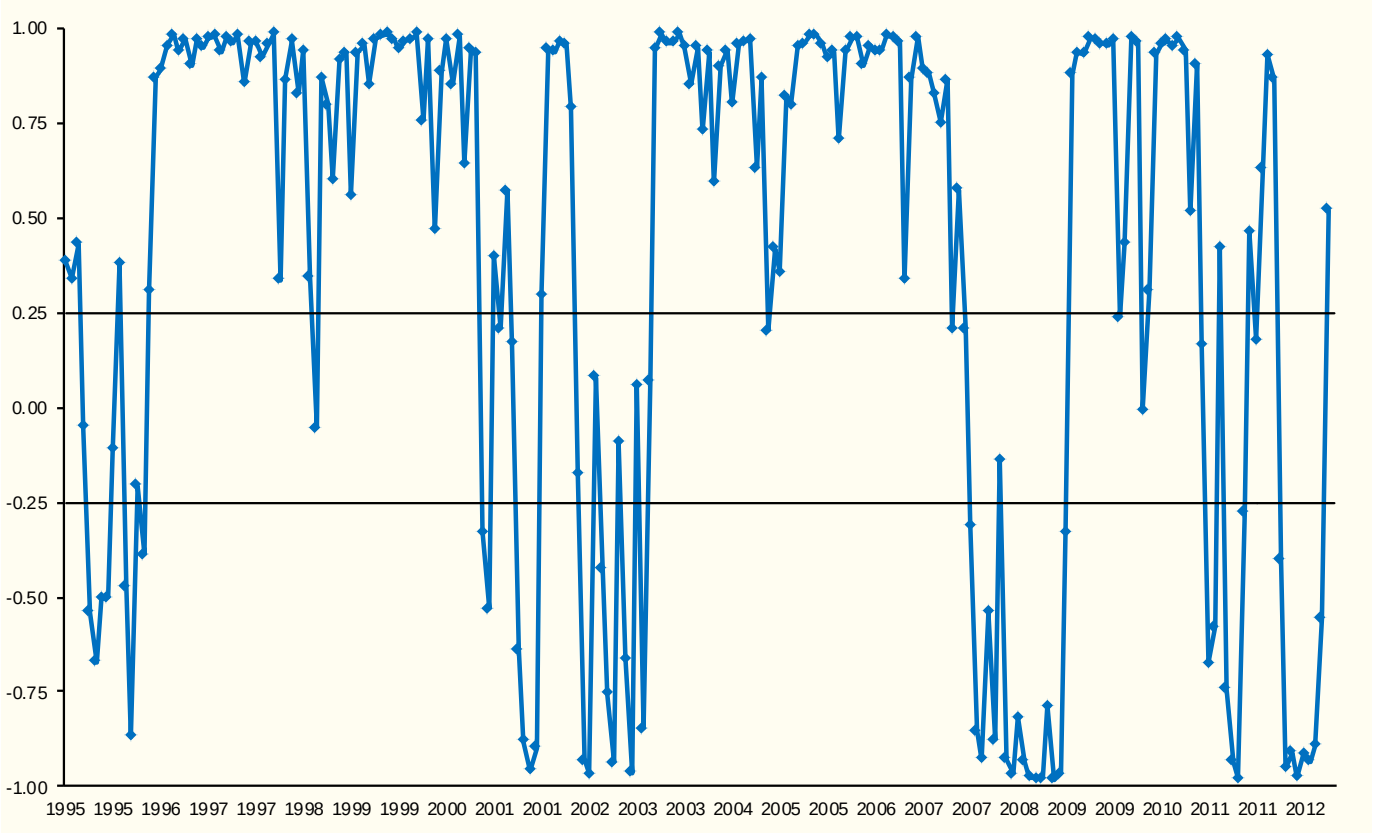




Annex 2: Euro-area turning point index

The turning point index — based on a Markov switching model — estimates the difference between high- and low-regime probabilities.
On the basis of the latest survey data for the euro area, the turning point index (TPI) was at 0.52 in Decembe 2012, after remaining close to -1 until October and improving to -0.56 in November.
By design, the computation of the turning point aims to extract the surprises — positive or negative — from new information in the surveys. In the beginning of the fourth quarter of 2012, confidence declined but the decline was less important than during the previous two quarters and improvements were recorded in November and December. Therefore, the innovations within the framework of the AR modelling method are interpreted as positive.

Turning point index for the euro area



Annex 3: Reference series

The reference series are from Eurostat, via Ecowin:

Confidence indicators	Reference series (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. 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.

Markov Switching Turning Point Index

The purpose of the turning point index model, based on the work of Grégoir and Lenglart (2000)[10], is to identify economic growth trends in the euro area, using all the confidence indicators derived from the surveys of industry, services, building, and consumers as input. This model is symmetric in signalling turning points. TPI values within the ± 0.25 range imply stabilisation, when the pace of activity is around its potential (the signals received are very varied and indicate no clear-cut upward or downward movement). The economy is performing a soft landing or soft take-off, depending on whether the previous period was marked by acceleration or deceleration. By contrast, the signal is very consistent when TPI values are very close to or reach ± 1: the cyclical phase is deemed to be clearly favourable or unfavourable; economic activity is in a period of sharp acceleration (or sharp deceleration or even contraction).

[10] Grégoir, S. and Lenglart, F. (2000), 'Measuring the probability of a business cycle turning point by using a multivariate qualitative hidden Markov model', *Journal of Forecasting*, 19.