

## B Economic Cycle

Sources of tables and graphs: CNB, CZSO, EC, Eurostat, own calculations

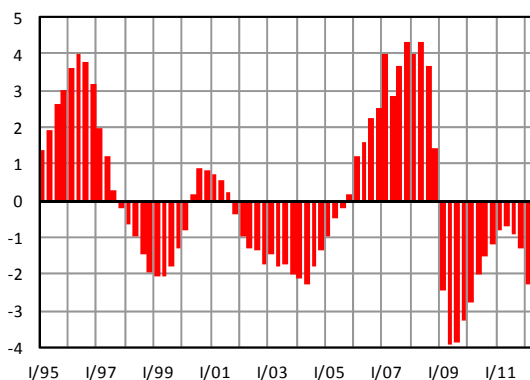
### B.1 Position within the Economic Cycle

Potential product (PP), specified on the basis of a calculation by means of the Cobb–Douglas production function, indicates the level of GDP to be achieved with average utilisation of production factors. Growth of PP expresses possibilities for long-term sustainable growth of the economy without giving rise to imbalances. It can be broken down into contributions from the labour force, capital stock, and total factor productivity. The output gap identifies the cyclical position of the economy and expresses the relationship between GDP and PP. The concepts of potential product and output gap are used to analyse economic development and to calculate the structural balance of public budgets.

Under current conditions, when abrupt changes in the level of economic output have occurred, it is very difficult to distinguish the influence from deepening of the negative output gap from a slowing in PP growth. The results of these calculations display high instability and should be treated with caution.

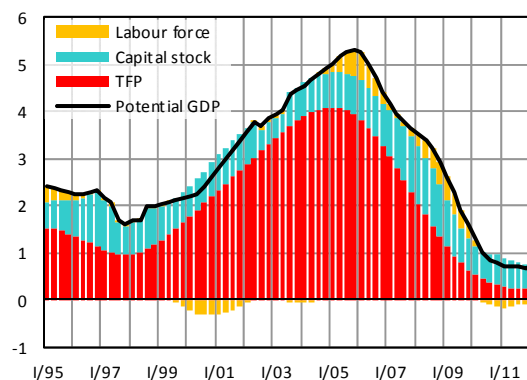
Graph B.1.1: Output Gap

in % of potential GDP



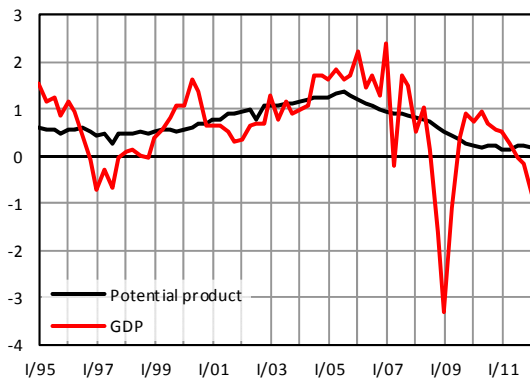
Graph B.1.2: Potential Product Growth

in %, contributions in percentage points



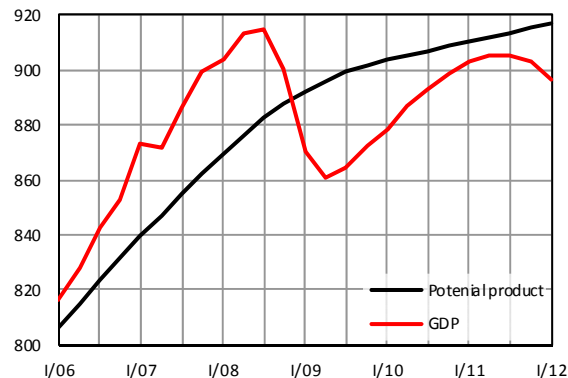
Graph B.1.3: Potential Product and GDP

QoQ growth in %



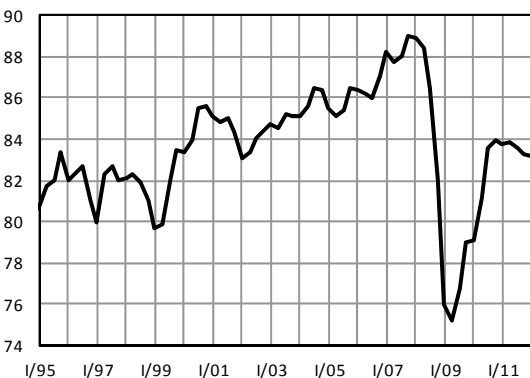
Graph B.1.4: Levels of Potential Product and GDP

in bill. CZK of 2005



Graph B.1.5: Capacity Utilisation in Industry

in %



Graph B.1.6: Total Factor Productivity

YoY growth in %

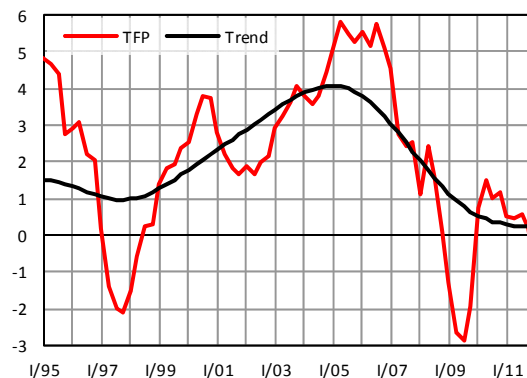


Table B.1: **Output Gap and Potential Product**

		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012 Q1
<b>Output gap</b>	<i>per cent</i>	<b>-1.8</b>	<b>-1.9</b>	<b>-0.4</b>	<b>1.9</b>	<b>3.7</b>	<b>3.3</b>	<b>-3.4</b>	<b>-1.9</b>	<b>-0.9</b>	<b>-2.3</b>
<b>Potential output</b>	<i>growth in %</i>	<b>4.2</b>	<b>4.7</b>	<b>5.2</b>	<b>4.8</b>	<b>3.9</b>	<b>3.3</b>	<b>2.1</b>	<b>1.0</b>	<b>0.7</b>	<b>0.8</b>
<b>Contributions:</b>											
<b>TFP</b>	<i>perc. points</i>	<b>3.6</b>	<b>4.0</b>	<b>4.0</b>	<b>3.6</b>	<b>2.7</b>	<b>1.7</b>	<b>0.9</b>	<b>0.4</b>	<b>0.3</b>	<b>0.2</b>
<b>Fixed assets</b>	<i>perc. points</i>	<b>0.5</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.1</b>	<b>1.2</b>	<b>0.8</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>
<b>Participation rate</b>	<i>perc. points</i>	<b>-0.2</b>	<b>-0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>-0.2</b>	<b>0.0</b>	<b>0.3</b>	<b>0.2</b>	<b>0.3</b>	<b>0.4</b>
<b>Demography<sup>1)</sup></b>	<i>perc. points</i>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.3</b>	<b>0.3</b>	<b>0.4</b>	<b>0.1</b>	<b>-0.2</b>	<b>-0.4</b>	<b>-0.5</b>

<sup>1)</sup> Contribution of growth of working-age population (15–64 years)

Economic recession at the turn of 2008 to 2009 gave rise to a deeply negative **output gap**. With the modest recovery after the end of the recession, the output gap was gradually reduced to –1% in Q2 2011. GDP's subsequent stagnation, however, caused the production gap to deepen once again to –2.3% in Q1 2012. These data are not entirely representative, however, due to deformation of the real GDP time series caused by the non-standard development of taxes on products (for more information, see Box C.1)

As a result of the Czech economy's lacklustre performance in the last period, YoY growth in **potential product** fell below 1% in 2011. We believe, however, that this estimate undervalues the reality.

The PP component most seriously affected is **total factor productivity** (TFP). In Q1 2012, TFP remained 2.2% lower than at the peak of the cycle in Q3 2008. Its trend component, derived using the HP filter,

grew by a mere 0.2% YoY. By comparison, peak growth of 4.0% had been reached in 2005.

A deep drop in investment activity led to a decline in **capital stock's** contribution from 1.2 p.p. in 2008 to 0.6 p.p. in 2010 and 2011.

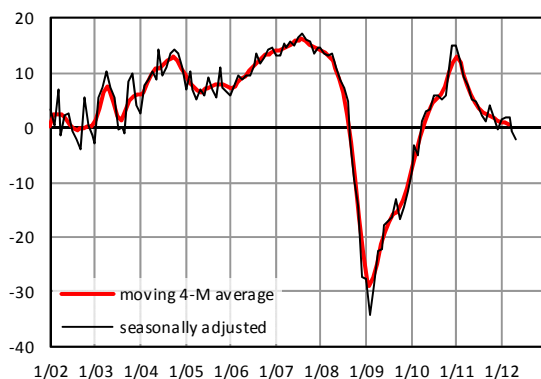
The **labour supply** has been markedly affected by decrease in the number of working-age inhabitants, which stems from the process of population ageing as well as from a significant drop in immigration versus the situation recorded during 2006–2008. In Q1 2012, the contribution of demographic development to potential GDP growth was significantly negative, at –0.5 p.p.<sup>2</sup> At the same time, however, the positive participation trend, measured as the ratio of labour force to the number of inhabitants aged 15–64, has accelerated and, with a contribution of 0.4 p.p., has become the second most significant factor in potential GDP growth.

<sup>2</sup> According to LFS, this figure does not yet take into account the census results. The total undercount (see Chapter A.6), however, will be evenly distributed across the period 2000–2011.

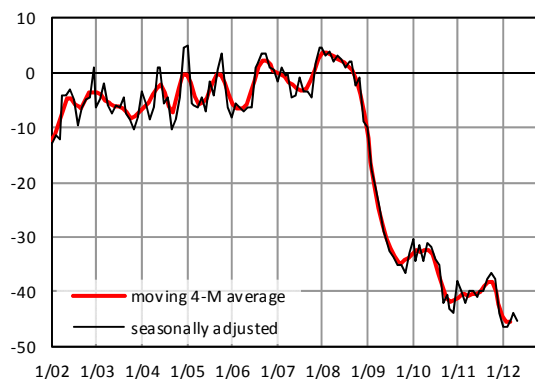
## B.2 Business Cycle Indicators

Business cycle indicators express respondents' views as to the current situation and short-term outlook and serve to identify in advance possible turning points in the economic cycle. Their main advantage lies in the quick availability of results reflecting a wide range of influences shaping the expectations of economic entities.<sup>3</sup>

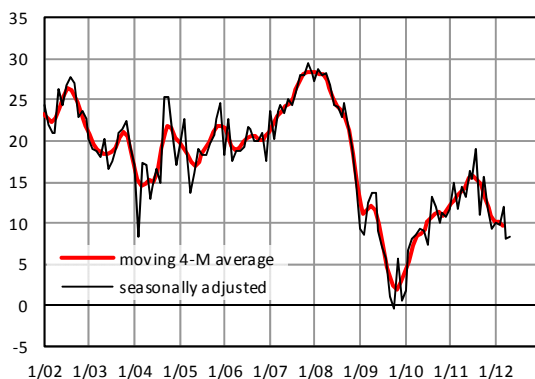
Graph B.2.1: Industrial Confidence Indicator



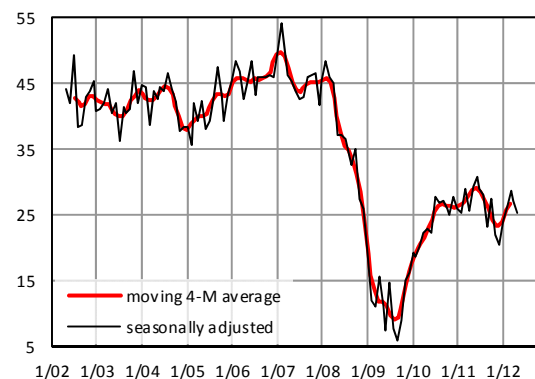
Graph B.2.2: Construction Confidence Indicator



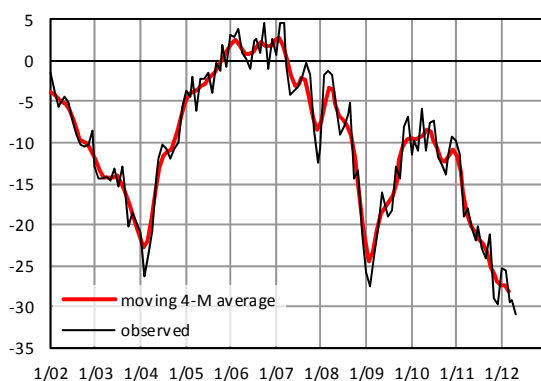
Graph B.2.3: Retail Trade Confidence Indicator



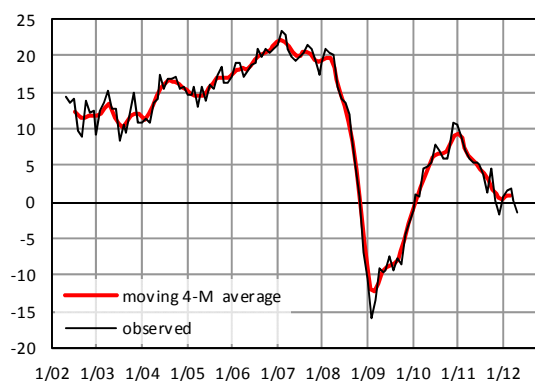
Graph B.2.4: Selected Services Confidence Indicator



Graph B.2.5: Consumer Confidence Indicator



Graph B.2.6: Aggregate Confidence Indicator



<sup>3</sup> For the business cycle research methodology, see CZSO: [http://www.czso.cz/eng/redakce.nsf/i/business\\_cycle\\_surveys](http://www.czso.cz/eng/redakce.nsf/i/business_cycle_surveys).

Business cycle indicators developed almost exclusively in a negative manner during April and May 2012.

In **industry**, the assessment of current total and foreign demand declined, as did the three-month outlook for these indicators. The current economic situation and its three-month and six-month outlooks worsened more appreciably. Prospects for employment over a three-month horizon also worsened.

Assessments as to the outlook for total demand in **construction** have stagnated, albeit at a lower level than that in Q1 2012.

According to respondents in **retail trade**, the assessment of the current economic situation slightly worsened. Its six-month outlook, on the other hand, significantly improved in May 2012. In no case, however, is the latest value of the time series indicative of a change in its trend.

The assessment of the current economic situation in selected **services** sectors improved moderately, while evaluation of the economic situation on a six-month horizon worsened. The expected development for the number of employees in the coming three months also declined appreciably.

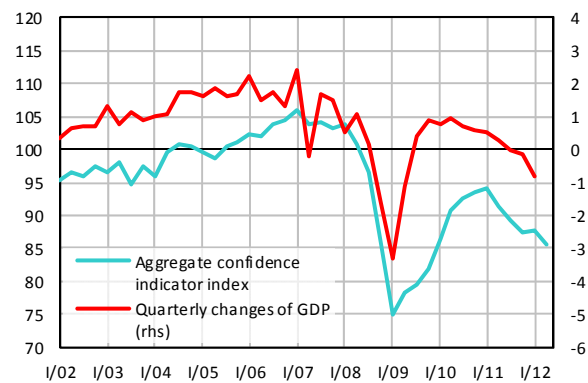
The **consumer** confidence indicator worsened.

As a result, the **composite confidence indicator** fell in April and May 2012, reaching slightly negative values (Graph B.2.6).

The relationship between development of the composite confidence indicator and lagged QoQ growth in real GDP, quantified using regression analysis, is quite a loose one and cannot be used to make a short-term forecast of the cycle. Without the lag, the correlation between these two time series is ca 60%. This correlation allows using at least the existing composite indicator published in advance of the quarterly national accounts. Below, we present only a qualitative graphical appraisal. Because the values for June 2012 were not yet available at the time of preparing the new Macroeconomic Forecast, the same value reached in May was assumed for June. It is clear that for Q2 2012 the composite confidence indicator has signalled further QoQ decline in GDP.<sup>4</sup>

Graph B.2.7: **Aggregate confidence indicator and QoQ GDP growth**

2005=100 (lhs), QoQ GDP growth in % (rhs)

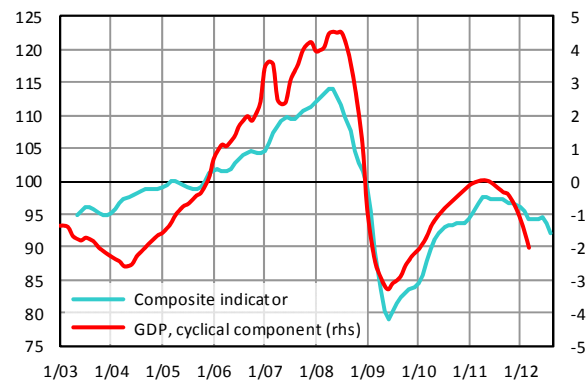


For Q1 2012, the composite leading indicator signalled a drop in the relative cyclical component of GDP, which was then confirmed by data from the quarterly national accounts published in June 2012. For Q2 2012, the indicator showed stagnation of the relative cyclical component of GDP. Since the trend dynamics can reasonably be regarded as constant in the short term, the conclusion for QoQ GDP dynamics in Q2 2012 is thus for its slight growth, which is inconsistent with the analysis resulting from the comparison of QoQ changes in GDP and the composite confidence indicator.

Graph B.2.8: **Composite Leading Indicator**

average 2005=100 (lhs), in % of GDP (rhs)

synchronized with cyclical component of GDP based on statistical methods (Hodrick-Prescott filter)



<sup>4</sup> Considering the unusual development of GDP in Q1 (see Box C.1), however, this analysis is not very informative.

### Box B.2: Business Cycle Indicators for the European Union

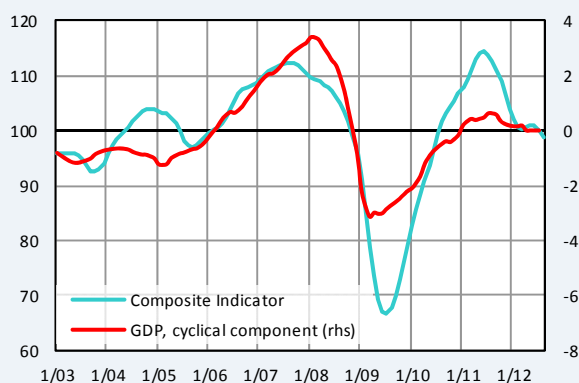
The European Commission publishes surveys on business and consumer confidence of EU member states on a monthly basis. The Ministry of Finance of the Czech Republic regularly monitors and analyses the data and uses it to formulate short-term estimates of GDP development for the Czech Republic's main trading partner countries.

The Ministry's method, which is based on dividing real GDP into trend and cyclical components, follows a procedure similar to that used by the OECD. To estimate the relative cyclical component of GDP, we construct our own composite leading indicators compiled from questions within a business survey that are significantly correlated with the cyclical component of GDP. A composite leading indicator is constructed in a monthly variant using monthly business cycle surveys and in a quarterly variant using quarterly data. Time series are seasonally adjusted. The cyclical component is calculated filtering (Hodrick–Prescott filter) real GDP data and dividing by trend values. The indicators published herein are constructed for the EU as a whole and for Germany. The correlation between the relative cyclical component and the monthly composite leading indicator is 78% (71% quarterly) for the EU and 71% (63%) for Germany.

The composite leading indicator signals further decline in the relative cyclical component of GDP in the approaching months both in the EU and in Germany. Given the nature of the survey questions, monthly data are more optimistic than are those from quarterly questions, which focus more on the longer-term expectations of economic entities. The trend in both cases is negative. Considering the stable dynamics of potential product development in the short term, the signalled substantial decrease in the relative cyclical component can be attributed to the QoQ decline in GDP.

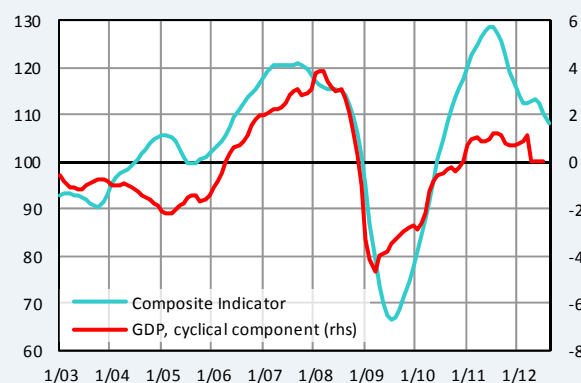
**Graph 1: EU Composite Leading Indicator**

monthly data, 2005=100 (lhs), in % of GDP trend (rhs)



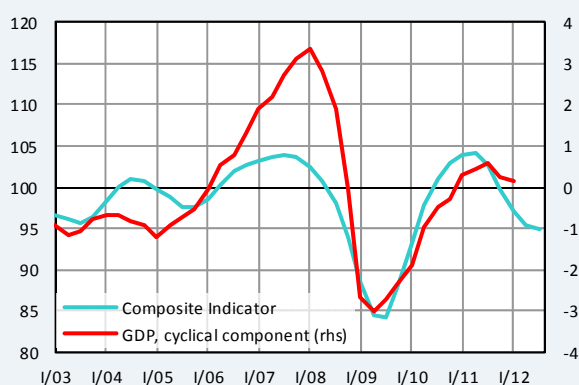
**Graph 2: Germany Composite Leading Indicator**

monthly data, 2005=100 (lhs), in % of GDP trend (rhs)



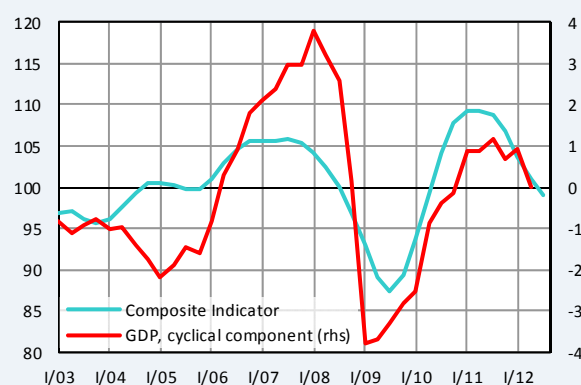
**Graph 3: EU Composite Leading Indicator**

quarterly data, 2005=100 (lhs), in % of GDP trend (rhs)



**Graph 4: Germany Composite Leading Indicator**

quarterly data, 2005=100 (lhs), in % of GDP trend (rhs)

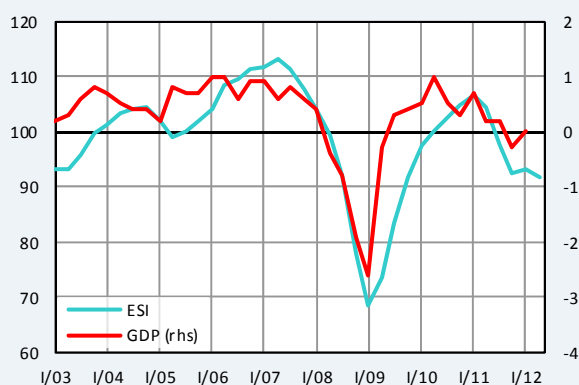


The European Commission constructs its own composite confidence indicator called the Economic Sentiment Indicator (ESI), which is compiled from five partial indicators for industry (weight: 40%), services (30%), consumers (20%), retail (5%) and construction (5%). As is the case for the Czech Republic, the correlation between lagged ESI values and QoQ increases in GDP for the entire EU27 is very weak. ESI cannot therefore be used as a leading indicator. Without the lag, however, the correlation is a respectable 74%, which allows us to use at least the ESI published in advance of the quarterly national accounts. Quarterly ESI values are calculated by averaging the monthly values. In view of the publication dates, the most recent quarterly figure is an average of the most recent two months recorded.

The ESI for the EU27 fell from 93.3 to 91.9 points in Q2 2012. The calculated regression relationship indicates QoQ GDP growth of 0.1%, which rather corresponds to the monthly composite leading indicator.

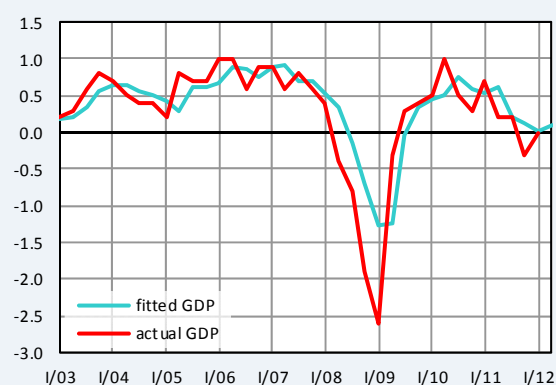
**Graph 5: ESI and QoQ GDP Growth in EU27**

quarterly average (lhs), QoQ growth in % (rhs)



**Graph 6: ESI a QoQ GDP Growth in EU27 – regression**

QoQ growth in %



An illustration of ESI's applicability and information value is presented in Table 1, which summarises the results of estimates of QoQ GDP growth for the Czech Republic's main trading partners for Q1 2012 (in column "ESI"). The estimate is compared with the European Commission's forecast and the recorded reality. Table 2 presents current estimates for Q2 2012.

**Table 1: GDP Estimate for Q1 2012**

QoQ growth in %

	ESI	EC	Outcome
EU	0.06	-0.1	0.0
Germany	0.61	0.1	0.5
Slovakia	0.42	-0.3	0.7
Poland	0.81	0.5	0.8
France	0.16	-0.1	0.0
UK	0.20	0.1	-0.3
Austria	-0.05	0.0	0.3
Italy	-0.31	-0.7	-0.8

**Table 2: GDP Estimate for Q2 2012**

QoQ growth in %

	ESI	EC
EU	0.09	0.0
Germany	0.48	0.3
Slovakia	0.51	0.2
Poland	0.80	0.4
France	0.11	0.0
UK	0.09	0.4
Austria	0.21	0.1
Italy	-0.29	-0.4

The European Commission's business cycle surveys provide a useful additional tool for macroeconomic analyses and estimating near-term economic development. As such, these will be used by the Ministry of Finance as one of the factors for formulating short-term forecasts.