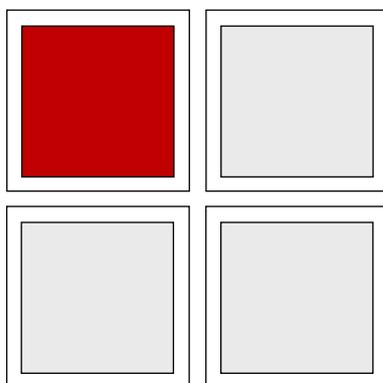
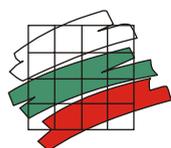


INDICATOR OF ECONOMIC ACTIVITY IN BULGARIA



1 | 2008



AGENCY FOR
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1000 Sofia, 31 Aksakov Str.; tel. 9859 56 01, 981 65 97; fax: 981 33 58; e-mail: aeaf@aeaf.minfin.bg; www.aeaf.minfin.bg

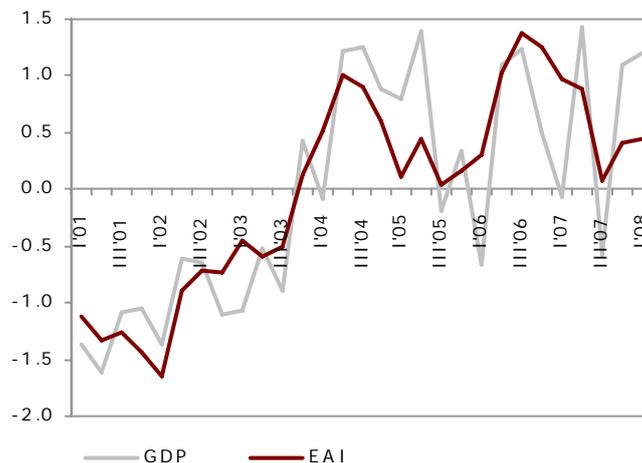
The Agency for Economic Analysis and Forecasting has started publishing a new survey series “Indicator of Economic Activity in Bulgaria” since July 2008. The surveys will be published on a quarterly basis and aim at giving an overall picture of the current state of affairs in the Bulgarian economy. They will also contain estimates of the long-term and cyclical components of the country’s economic performance.

The Economic Activity Indicator (EIA) has been constructed based on a dynamic factor model and consists of eight variables, gauging change in both the internal and external environment. Furthermore, the surveys lay special emphasis on those variables producing the strongest effect on EIA change in a given quarter.

The surveys also contain estimates of the degree of overlapping of the local business cycle with the cycle in the Euro area.

The Economic Activity Indicator (EAI)¹ is aimed at giving an overall picture of the current state of affairs in the Bulgarian economy as well as an account of its long-term and cyclical component. The indicator has been constructed based on a dynamic factor model and consists of eight variables, measuring change in both the internal and external environment.² As GDP is another aggregate indicator of business activity, both EAI and GDP have reported more or less the same pattern of dynamics in most periods of survey. This, however, does not imply that change in both indicators was identical³ because in given periods it may have differed not only in magnitude but direction as well.

Fig. 1: Economic Activity Indicator (EAI) and real GDP growth (normalised)



Source: AEAf estimates, NSI, Eurostat, BNB, World bank

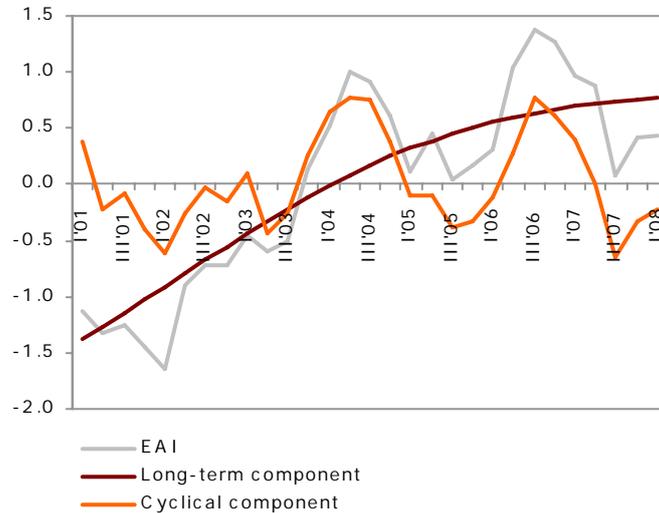
¹ For more information on the methodology of EAI construction, see appendix "Rationale and advantages of the Economic Activity Indicator. Some methodological notes".

² The variables, making up EAI, are as follows: GDP, value added in construction, employed numbers, EU-25 GDP, industrial sales, business climate in retailing, long-term loan interest rates in BGN and the metal and mineral raw material price index.

³ To achieve better comparability, real GDP growth data have been normalised, i.e. real GDP was subtracted by the average value and then divided by the standard deviation obtained in the period from the first quarter of 2001 to the first quarter of 2008.

In the three months to April'08, EAI held steady at its level on a quarter earlier, showing some signs of improvement due to the healthy impact of the global metal and mineral raw material price, industrial sales and the business climate in retailing.

Fig. 2: Economic Activity Indicator (EAI) by component



Source: AEAf estimates

Figure 2 gives an account of EAI performance by component. The dynamics of the cyclical component points to a distinct cyclical pattern of performance of the Bulgarian economy over the past few years, spanning over a period of 1.5 and 2 years. Local peaks were hit at the end of 2002, in mid-2004 and the end of 2006. In the first quarter of 2008 the cyclical component of EAI ran negative again while slightly improving compared to the preceding two quarters. Taking account of the negative value of the indicator's cyclical component in the previous three quarters, we can assume that the economy is going half-way through the current business cycle and is expected to improve its cyclical position in some of the following periods.

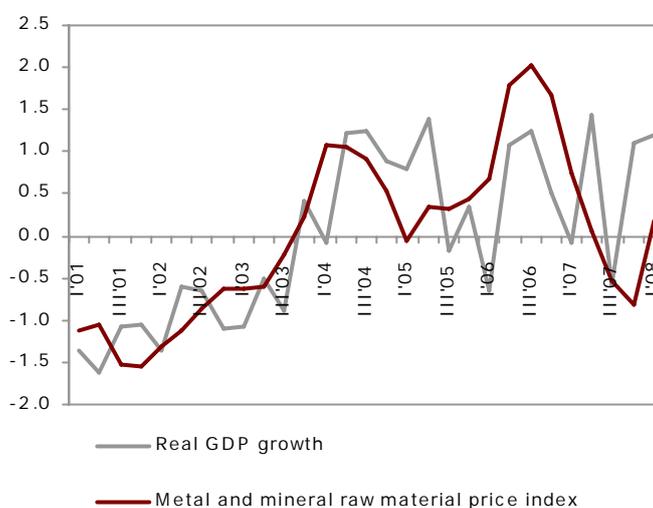
Growth in EAI long-term component has been slowing down ever since 2004, remaining, however, relatively unchanged in the last year, with late 2007 and early 2008 witnessing a slight increase.

FACTORS, INFLUENCING EAI PERFORMANCE IN THE FIRST QUARTER OF 2008

Global metal and mineral raw material prices

Q1 change in global metal and mineral raw material prices posted the strongest contribution to the steady performance of EAI. Having gone up at a slower pace since the second half of 2006, prices now picked up at a rather strong clip again and reported a year-on-year rise of 22.8% in the first quarter.

Fig. 3: Real GDP growth and the metal and mineral raw material price index



Note : Data are normalised.

Source: NSI, World bank

Main commodity prices went on the increase mainly under the impact of the boosted demand for precious and non-ferrous metals due mostly to the strong growth reported by some of the main emerging economies. In addition, the financial crisis of late 2007 and early 2008 made most investors turn from monetary instruments to commodity assets, diversifying their portfolios but exerting a further upward pressure on prices. However, the expectations are that metal prices will step down in the second half of the year with the slowdown in the world economy.

Industrial sales

Industrial sales made, too, a positive contribution to EAI dynamics. On an annual basis, they went up from 6.8% in the fourth quarter of 2007 to 8.1% in the first quarter of 2008. Data on the quarter-on-quarter change in the indicator show that export sales made a major contribution, posting a 13.1% increase on a year earlier. Export sales picked up spurred by and large by the higher metal prices worldwide. It should be also noted that price elasticity in the metal industry is high and a stronger pace of selling price increase may only boost its export performance. Furthermore, the high share of metal products within the export total leads to a heavy dependence of exports on the global market situation. *Machinery and equipment* was the other industry reporting a substantial contribution to EAI. On an annual basis, sales volumes remained almost unchanged on a quarter earlier, producing a strong healthy effect on the sales index in the period surveyed.

Fig. 4: Global metal and mineral raw material prices and export sales

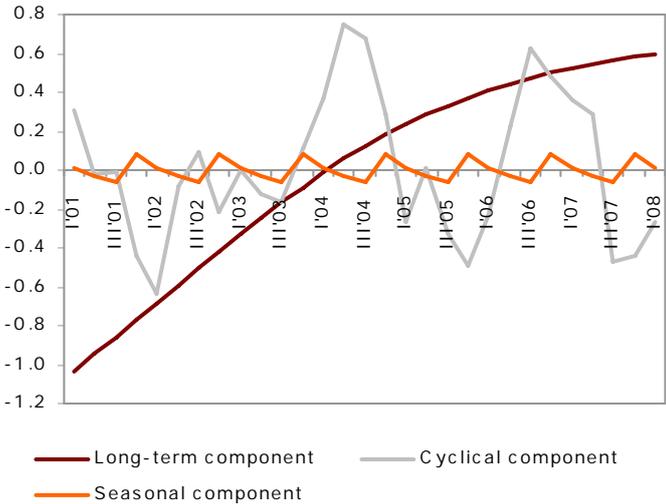


Source: NSI, World bank

Business climate in retailing

The business climate in the retailing sector was the other variable, making a strong positive contribution to EAI dynamics in the first quarter of 2008. This was mostly due to the increase in the variable's long-term component as well as its improved cyclical position on a quarter earlier. And yet, Q1 business surveys pointed to some quarter-on-quarter deterioration in the indicator triggered by seasonal factors and worsening current business situation assessments.

Fig. 5: Long-term, cyclical and seasonal components of the business climate in retailing

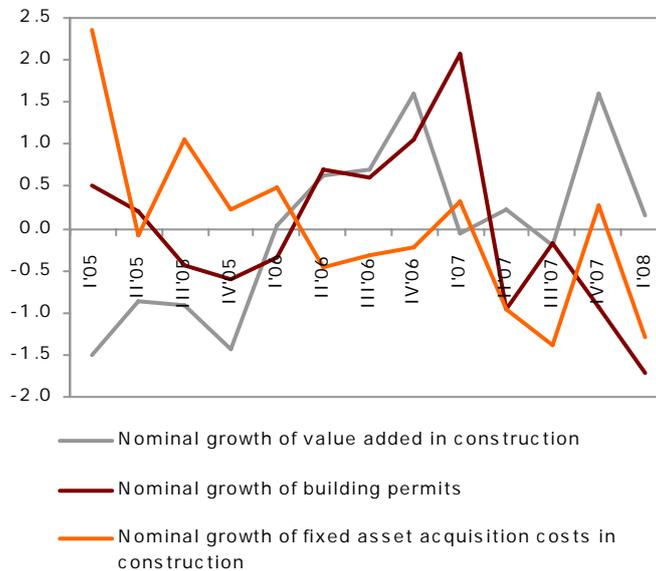


Source: A EAF estimates, NSI

On a quarter earlier, the business expectations of most respondents for the following half-year period went on the increase. Therefore, taking into account the variable's cyclical position in retailing in the first quarter of 2008, it can be assumed that the business climate will carry on improving in the next periods as well, making a positive contribution to EAI performance.

Construction *Construction* was the sector that had a curbing effect on Q1 EAI growth, making a distinctly negative contribution to the indicator's performance. Value added growth in the sector slowed down, fully matching data on lower investment and smaller number of building permits.

Fig. 6: Value added in construction, fixed asset acquisition costs and building permits



Note : Data are normalised.

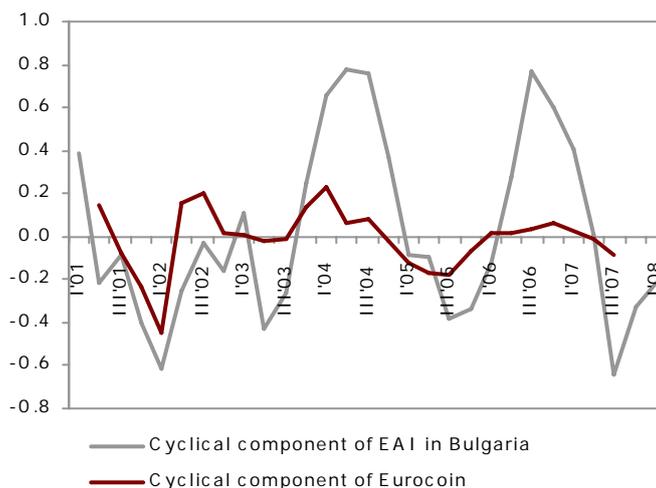
Source: NSI, A EAF estimates

Long-term loan interest rates in BGN Long-term loan interest in BGN was the other variable having a rather unhealthy effect on the country's business activity. For the first time in the past few years the indicator has posted an year-on-year rise (0.4 percentage points), with the mid-2007 worldwide slump in the financial markets, higher inflation and likely effect of the increased minimum required reserves being the main factors at work.

DEGREE OF OVERLAPPING OF THE LOCAL BUSINESS CYCLE WITH THE CYCLE IN THE EURO AREA

Fig. 7: Estimated cyclical fluctuations in the Euro area and Bulgaria

Note: For more detailed data and methodological notes on the Euro area cyclical indicator EuroCoin, visit <http://www.cepr.org/data/eurocoin/>. As this is a monthly indicator, data have been averaged to make comparison with the quarterly EAI possible. In addition, since EuroCoin excludes only short-term (seasonal) fluctuations in Euro area business activity, it was also necessary to eliminate the long-term trend in the time series, using the Hodrick-Prescott filter.



Source: AEAf estimates, CERP, NSI, BNB, World bank

Figure 7 shows the correlations between the cyclical fluctuations in the Euro area and the Bulgarian economy. Any change in the Euro area market situation is passed onto the local economy with a lag of a time period or two; a correlation with a lag of only one time period amounts to 0.59; accordingly, a correlation with a lag of two time periods is estimated at 0.60. The Bulgarian economy displays stronger volatility than the Euro area economies due mainly to the fact that it is a small and open economy where the structure of exports is heavily dependent on the global market situation.

A comparison with the main commodity price indices, which are indicative of the business cycle worldwide, shows that local cyclical fluctuations follow shortly (with a lag of 1 to 2 quarters) the movements in the world economy.

In representing the degree of similarity between the business cycles in the two regions it is also important to estimate the magnitude of effect of an indicator's previous values on its current performance. The autocorrelation lagged one time period of the cyclical component of EAI (0.74) is higher than that of the cyclical

component of EuroCoin (0.41), implying that external shocks tend to have a more lasting effect on the Bulgarian economy than the Euro area.

The dynamics of the local EAI is also sensitive to fluctuations in EU-25. The correlation between EAI and GDP in EU-25 is rather strong. It follows that fluctuations in EU-25 tend to affect the Bulgarian economy slightly earlier than the Euro area economies, either at the same time or with a lag of one time period as a result of the high level of integration of the local economy into the single European market.

Rationale and advantages of the Economic Activity Indicator. Some methodological notes

The Economic Activity Indicator (EAI), constructed at AEEF, is aimed at assessing the current state of affairs in the Bulgarian economy. Being a composite indicator it enjoys a number of advantages:

If the data on the variables, making up EAI are revised, the composite indicator's change will run significantly lower than the revisions made to GDP data.

GDP dynamics is sometimes susceptible to sector-specific factors that are often discrete or temporary by nature, and should therefore not be treated as factors affecting the overall economic situation. The breakdown of every time series into a common and specific component allows for the elimination of the impact of temporary and specific factors as well as for adjustments of likely errors in gauging a variable.

EAI has been calculated based on a dynamic factor model applied to quarterly data sets of 63 macroeconomic time series for both Bulgaria and the world business situation. Subsequently, the number of variables making up the indicator has been reduced to eight, with each variable being exploited with its real change in a given quarter on a year earlier. The variables, making up EAI are as follows: GDP, value added in construction, employed numbers, EU-25 GDP, industrial sales, business climate in retailing, long-term loan interest in BGN, and the metal and mineral raw material price index of the World Bank.

Estimates of the cyclical component of EAI have been made by eliminating: (1) the long-term component calculated using the Hodrick-Prescott filter with a multiplier $\lambda = 1600$. Although the HP filter has been in the limelight of much controversy, it remains the most widely used technique of detrending economic series; (2) the short-term component, accounting for fluctuations within a year that has been estimated using a moving average with 4 lags.