

**Economic Activity Indicator in  
Bulgaria  
#1/2011**

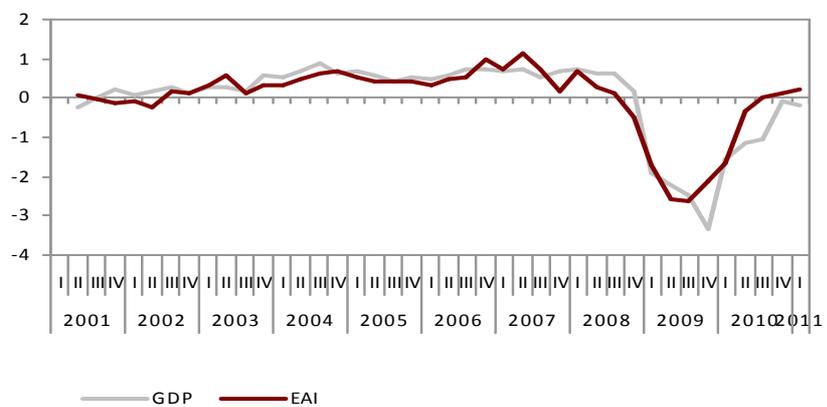
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The Economic Activity Indicator (EAI)<sup>1</sup> is aimed at giving an overall picture of the performance of the Bulgarian economy, as well as an account of its long-term and cyclical components. It has been constructed based on a dynamic factor model and has been recently recalculated as compared to previous issues, now consisting of fifteen variables, measuring changes in both the internal and external environment.<sup>2</sup> GDP is the most popular aggregate indicator of business activity and EAI and GDP have reported more or less the same pattern of dynamics over time. Nonetheless, as it can be inferred from Fig. 1, the two indicators have had variations in their dynamics both in terms of magnitude and even of direction of change.

Fig. 1: Economic Activity Indicator (EAI) and real GDP growth (normalized\*)<sup>3</sup>



Source: MF estimates

**Q1 2011 EAI continued on the path of cyclical improvement, being positive for a third quarter in a row.** EAI increase was strongly sustained by the favourable external developments. The pick up in foreign demand has enhanced industrial orders and those for exports in particular, thus encouraging enterprises to increase capacity utilization and production. Employment expectations also improved, supported by the positive industrial developments. Positive global

<sup>1</sup> For more information on the methodology of EAI construction, see appendix "Rationale and advantages of the Economic Activity Indicator. Methodological notes".

<sup>2</sup> The variables, making up EAI, are as follows, as some of them were taken with a one-period lag: GDP (0), industrial production index (0), construction index (0), retail trade turnover index (0), industrial business climate (-1), industrial orders (-1), industrial employment expectations (-1), industrial price expectations (-1), industrial capacity utilization (0), M1 (0), long-term loan interest rates in BGN (-1), VAT revenues (0), petrol price index (-1), non energy commodity price index (-1) and EU 27 GDP (-1).

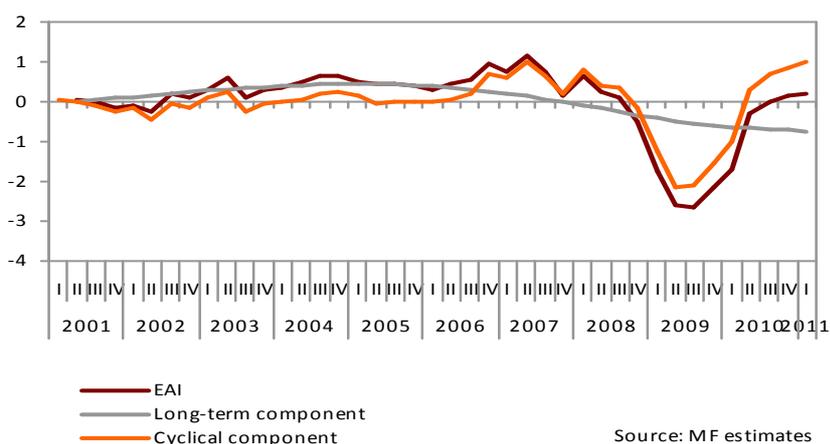
<sup>3</sup> To achieve better compatibility, real GDP growth data have been normalised, by subtracting the mean and dividing by the standard deviation of the series.

developments were also reflected in higher VAT revenues, pushed by higher imports volume coming from third (extra EU) countries and rising price of Brent. Concerning domestic environment declining y/y trend in long-term interest rate on loans in BGN also proved to be a strong driver of the Q1 EAI increase. The still weak domestic demand, however, subdued EAI improvement, as retail trade and construction developments had feeble and even negative influence on EAI dynamics.

**Q1 2011 real GDP growth was as high as 3.4% y/y<sup>4</sup> but still lagged behind the EAI pattern of advance.** On the demand side, exports of goods and services accelerated the pace of real growth to 20.1% y/y, while imports slightly decelerated to 8.6%. There were also signs of recovery on the domestic market with positive contribution of individual consumption (0.8% growth y/y) and gross fixed capital formation (1.6% growth y/y), however, domestic demand remained weak, explaining the feeble impact on the GDP development. As regarding the supply side, industrial sector slowed down the pace of real increase to 2.2% y/y as compared to Q4 2010, while the service sector accelerated to 3.6%. Agriculture sector reported a negative dynamics for a second quarter in a row (3.3%).

**Considered by main components, EAI showed a further increase in the cyclical ingredient,** the latter reaching one of the highest values over the entire period of EAI calculation, while the long-term component carried on decreasing.

Fig. 2: EAI by components



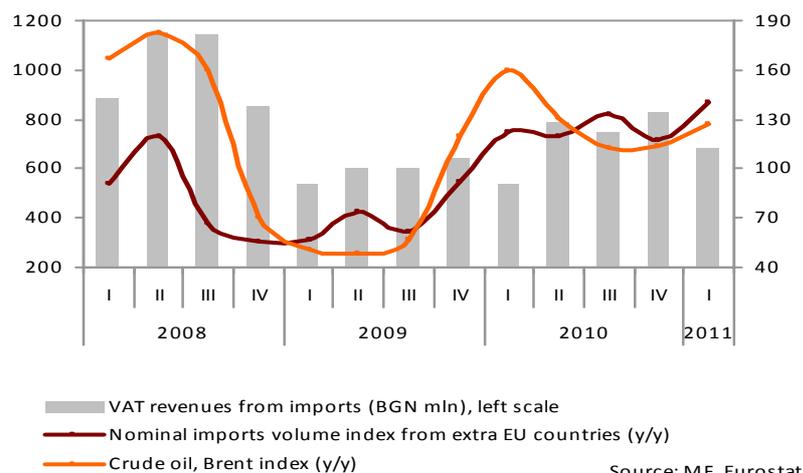
<sup>4</sup> According to seasonal adjusted data at 2000 prices

## Factors influencing on the EAI performance in Q1 2011

The increasing price of Brent, accompanied by higher import volume, coming from third countries pushed up VAT revenues. The latter is an important indicator of the ongoing economic activity revival.

Foreign activity upturn and global energy prices increase gave good grounds for Q1 EAI improvement, the latter being at the core of the large positive contribution of VAT revenues. The economic activity uprise in the Bulgarian main trading partners had a positive impact on the dynamics of external trade. In Q1 there was a higher proportion of imports, destined to extra EU countries. The high import volumes lied at the core of the VAT revenue growth y/y of 17.1% and 12.0%<sup>5</sup> in nominal and real terms, respectively. As of the end of March VAT revenues amounted to 1 165.3 mln BGN, accounting for 18% of the 2011 budget projections. The biggest contribution to the overall rise was made by VAT revenues from imports with a y/y nominal and real increase of 27.8% and 22.3%, respectively. Their performance accounted for 23% of the 2011 Budget Act projections. From the point of view of import structure by SITC<sup>6</sup> the strongest rise reported mineral fuels, oils and derivatives. The latter accounted for more than a half of the increase of VAT revenues from imports with a nominal-term growth of 70.1% on a year earlier. The positive import developments were influenced both by the higher intermediate consumption and prices. Within mineral fuels, oils and derivatives group the price of Brent grew by 27.6% y/y contributing significantly to the overall rise in VAT revenues form imports.

Fig. 3: VAT revenues from imports, import volume from extra EU countries and crude oil developments



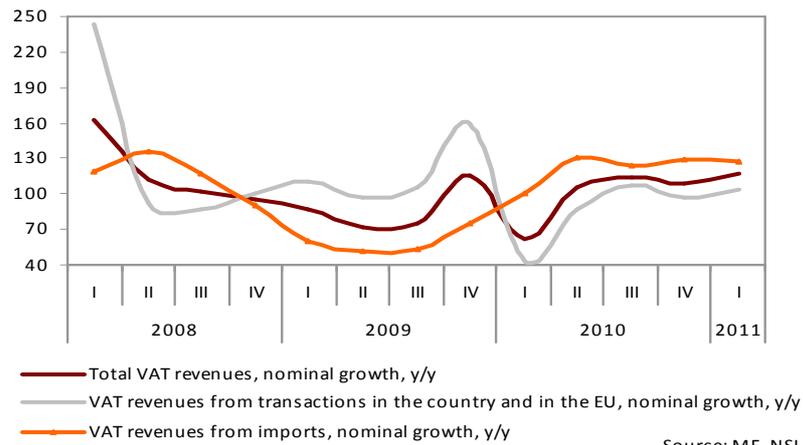
<sup>5</sup> Deflated by HICP.

<sup>6</sup> According to Eurostat external trade data.

On the backbone of rising global demand, the price of Brent has been following an upward pace since August 2010. Some additional oil price proincreasing factor in Q4 2010 was also the unfavourable weather conditions over the winter period. 2010 ended with a price of Brent of 91.8\$/bbl as of December or about 23% higher as compared to mid-year levels. The continuing rise in global activity in the beginning of 2011, together with the geopolitical tension in the Middle East and North Africa pushed further the increase in oil prices, the latter expected to increase its positive contribution to the EAI dynamics in the forthcoming periods.

Q1 VAT revenues from transactions in the country and in the EU reported a nominal increase of 4.6% y/y and amounted to BGN 480.7 mln., accounting for 13.7% of the 2011 Budget Act projections. Recent developments for this type of revenues were mainly driven by the still narrowed domestic demand and moderate increase in HICP.

Fig. 4: VAT revenues dynamics



VAT revenues collection was further reinforced by the establishment of the programme for control based information through remote connection between the NRA information system and the fiscal devices of petrol filling stations. The latter influenced on more efficient current and preventative control and reduced the time necessary for physical observation of the objects of obligated persons and entities<sup>7</sup>.

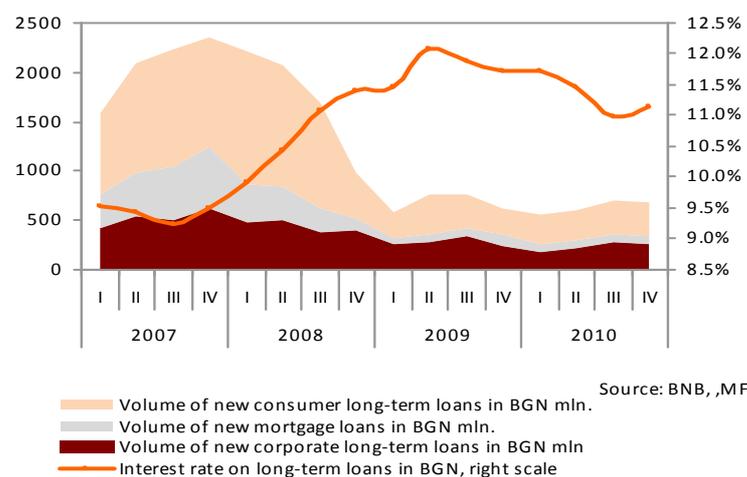
**Long-term loan interest rates stepped down for another quarter in a row, producing a stronger positive contribution on the EAI.** Q4 interest rate on new long-term loans in BGN averaged 11.1% being 11.7% on a year earlier and remained close to its Q3 level. Household sector, marking the largest share of all types of long-term loans got a lower interest rate of 12.4%

**Interest rate on new long-term loans in BGN stepped down y/y, pointing to liveliness in the newly granted long-term resources of both corporate and household sectors.**

<sup>7</sup> The programme was launched at the end of 2010.

being over 13.6% on a year earlier. The latter was accompanied by a significant increase in the volume of newly granted long-term resources, which stepped up by 27.1% y/y. Non-financial enterprises credits in BGN carried on improving y/y as well, with price going down to 10% and volume stepping up by 8.4%. Q4 BGN long-term loans developments confirmed the positive expectations, coming from the corporate sector. Recently observed liveliness in EUR long-term loans proved some investment activity revival. Even though their volume reported a decrease y/y it reached relatively high level as compared to its crisis years' developments. As regarding housing loans their price continued on decreasing by 1.2 p.p. to 8.6% in Q4. However the still high caution of all market players has reduced both demand and supply of loan resources. Housing loans volume decreased by 32.1% y/y to BGN 74.5 mln.

Fig. 5: Interest rate on long-term loans and volumes of new corporate, housing and consumer long-term loans in BGN

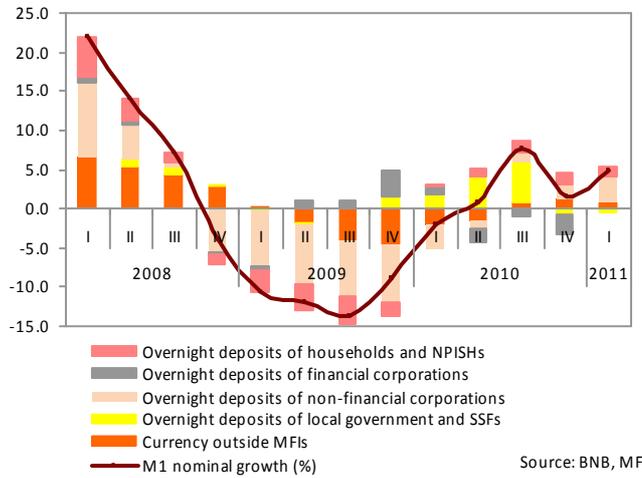


Nevertheless recent liveliness in new long-term BGN loans, Q4 overall private sector credit growth continued on decelerating to about 1.2% y/y. It was mainly due to households' sector developments, which reported a decrease of 0.8% y/y, following the still high unemployment rate and decelerating growth of labour incomes. In contrast, loans to corporate sector grew by 2.4% y/y, accelerating its rate as compared to the previous quarter. Q1 continued with further increase in corporate sector loans of 3.0%, which influenced on the private sector credit growth acceleration to 1.6%. The latter was in line with Q1 broad money growth of 4.9% y/y. On the component side, the gradual strengthening observed in annual M3 growth as compared to the previous quarter was due to M1 dynamics.

**The growth rate of M1 amounted to 4.6% y/y and had a favorable impact on EAI in Q1. The biggest contribution made**

the EUR overnight deposits of non-financial enterprises. They increased by 13.5% y/y following higher Q1 exports volume in Bulgarian economy.

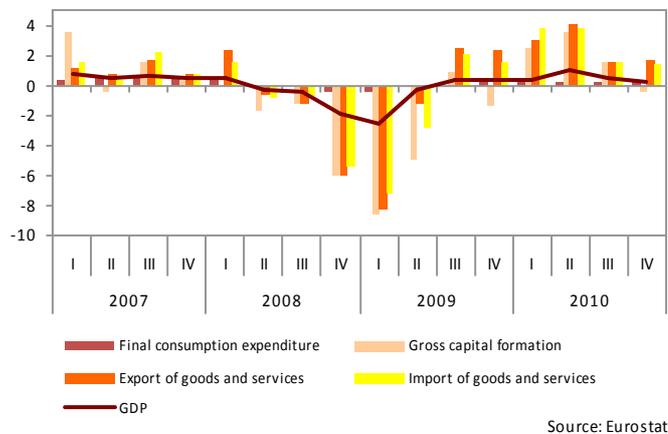
Fig. 6: Contribution to M1



**Foreign demand upturn, proved by the trade increase and domestic demand revival in EU 27 influenced positively on the local industrial orders.**

**In 2010 EU 27 economic growth has resumed to 1.8% y/y.** After the first year's half acceleration in GDP, gaining momentum in Q2 with a 1% increase, in the second half of the year the pace of increase decelerated to 0.2%<sup>8</sup> in Q4, partly owing to the global growth slowing down and lower foreign demand. However, the world economic growth made a somehow upraising pattern of development in Q4, sustained by the US and developing countries, thus supporting the EU exports expansion of 1.7%. Imports have been also following an expanding pace of 1.6% in Q4, stimulated by the foreign trade widening, but also grounded on the domestic demand revival.

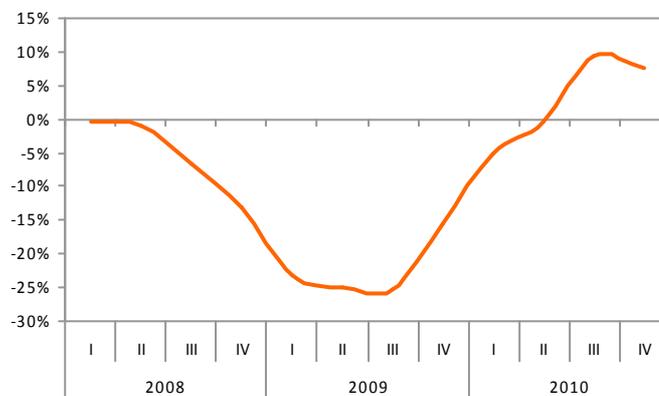
Fig. 7: EU 27 GDP by components of final demand, s.a., %, q/q



<sup>8</sup> The analysis of GDP data is based on seasonally adjusted data, q/q percentage changes.

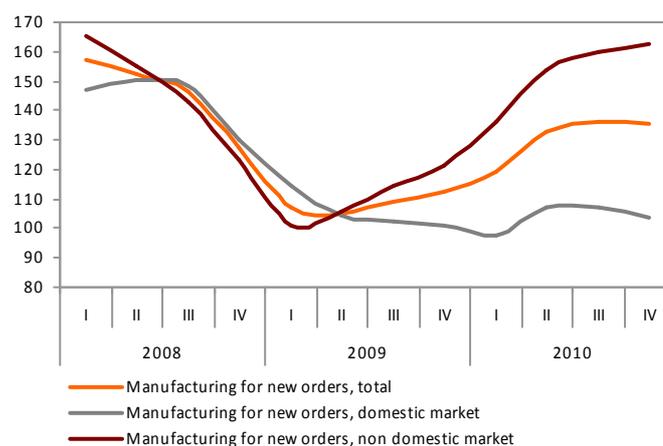
The stable rise in foreign demand has made a positive repercussion on local industrial orders and EAI developments. Q4 2010 business survey in industry pointed to employers having more optimistically appraised the order-book level situation. Industrial orders have been steadily increasing, led primarily by export-oriented demand, but the latter has transferred onto domestic market as well. The strongest rise made new orders for intermediate goods, as they feed the production for investment and consumption. Capital goods orders also increased but totally due to foreign ones, as domestic investment recovery has not been sustainable yet. Meanwhile, consumer goods orders stepped up for both domestic and foreign markets, giving good signals for an improvement in consumption developments.

Fig. 8: Balance of industrial order-books level, total, y/y change



Source: NSI

Fig. 9: Manufacturing new orders index, s.a., (2005=100)



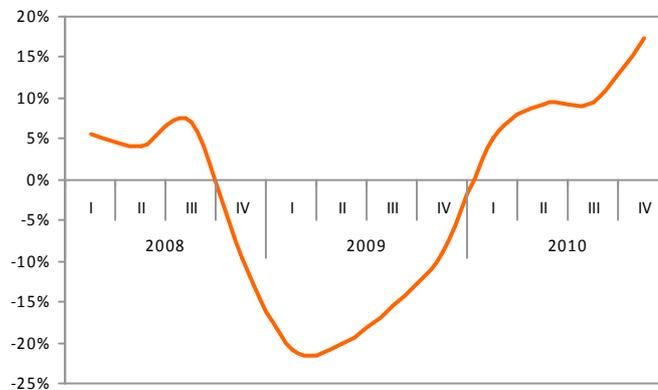
Source: Eurostat

**On the backbone of positive industrial developments, employment expectations improved, However, employment numbers have been still decreasing due to shifting from labour to capital intensive industries.**

**Employment expectations gradually improved**, following the positive industrial sector developments and production trend expectations, thus supporting the Q1 2011 EAI improvement. According to Q4 2010 business survey results the share of

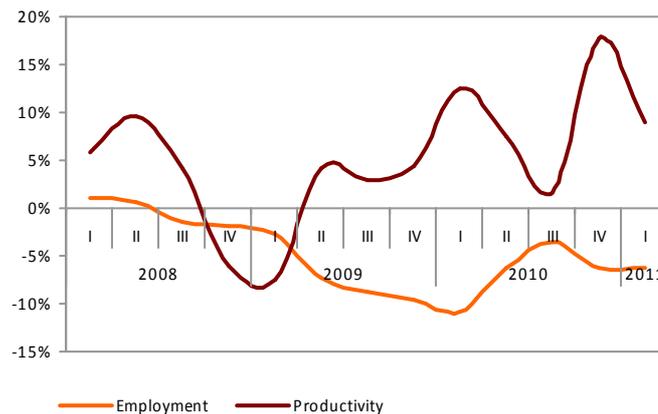
employers foreseeing a drop down in employment has considerably decreased y/y, at the expense of managers expecting employees' retention and even rise in employment numbers. Q1 2011 reported figures however hardly supported the above expectations. Industrial sector<sup>9</sup> sustained its pace of laying off workers in Q1, as employment decreased by 6.2%<sup>10</sup> y/y. The latter has to do with the current process of employment shifting from labour-intensive to capital-intensive industries. Some export-oriented processing industries (manufacturing of machines and equipment and of electrical appliances<sup>11</sup>) reported a rise in the labour demand in Q1 2011 y/y but their weight in the overall employment is too small to reverse the negative trend.

Fig. 10: Balance of industrial employment expectations, y/y change



Source: NSI

Fig. 11: Industrial employment and productivity, y/y



\*Refer to manufacturing industries, except construction

Source: NSI

<sup>9</sup> Encompassing manufacturing industries except construction.

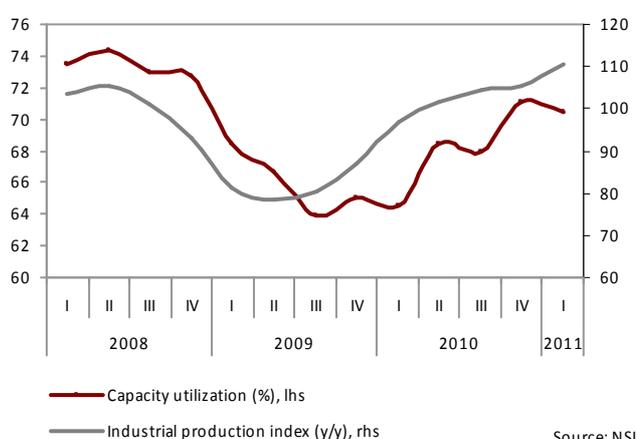
<sup>10</sup> SNA figures.

<sup>11</sup> Enterprises survey.

**Production and exports increased driven by demand and raw material prices growth. Energy goods and metals and metal products largely accounted for the positive developments.**

The pick-up in foreign demand and raw materials prices has pushed up capacity utilization and production, resulting in exports growth acceleration. Bulgaria is closely integrated within the EU market and the latter's positive pace of development usually materializes in an economic activity expansion in Bulgaria with a certain lag, estimated to be one quarter. Q1 2011 average industrial capacity utilization continued on increasing y/y to 70.5%. Alongside, productivity gains have further risen up (8.9% y/y), supporting the ongoing positive production developments.

Fig. 12: Average capacity utilization (%) and Industrial Production Index (y/y)



Q1 2011 production index stepped up by 10.6% on a year earlier. The production purpose disaggregation pointed to the biggest contribution being made by the intermediate consumption products, however energy goods have considerably increased their portion in the overall production growth as well.

The export of energy goods made among the highest rates of increase, mainly on the account of petroleum products. The latter expanded by 157.6%<sup>12</sup> in nominal terms, thus explaining about 1/5 of the overall export growth y/y. These positive developments were supported by the rising prices of petroleum products but volumes revealed to be the leading driver of growth<sup>13</sup>.

<sup>12</sup> According to BNB Balance of payments statistics.

<sup>13</sup> Based on the Eurostat data on external trade by SITC.

Fig. 13: Nominal growth, output and price indices of petroleum products exports to intra EU 27, y/y

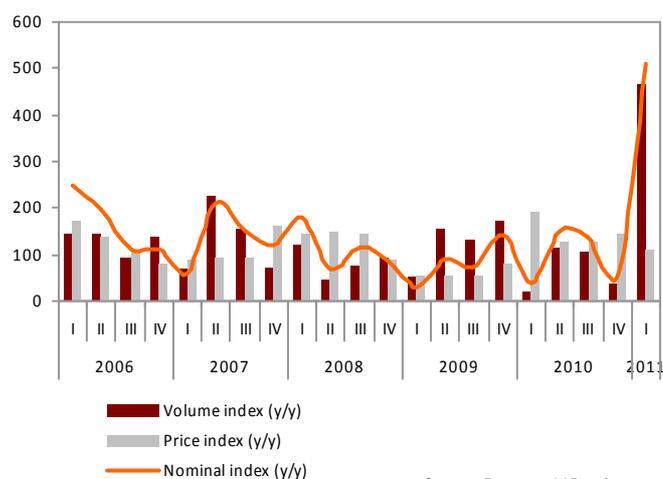
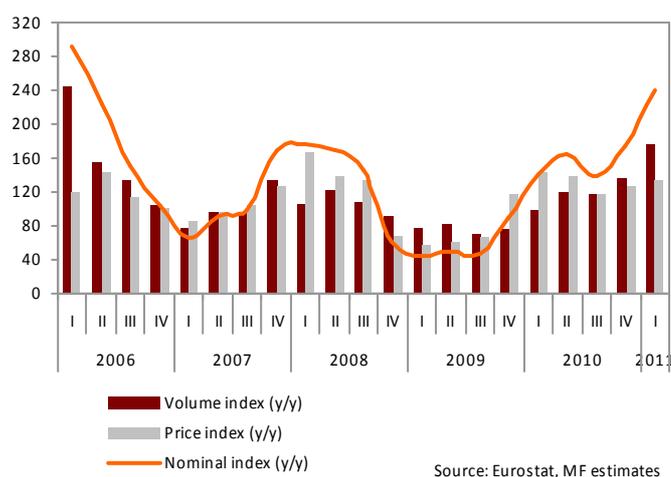
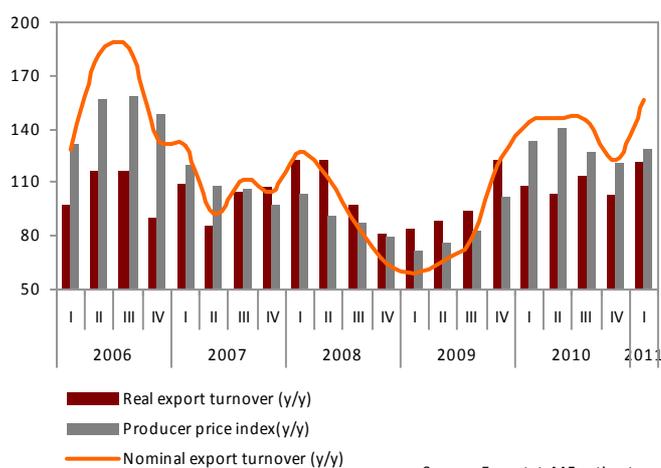


Fig. 14: Nominal growth, output and price indices of petroleum products exports to extra EU 27, y/y



Following the rise in foreign demand, export-oriented manufacturing industries producing non-energy raw materials also continued on the path of robust production and exports developments. The real output growth in the manufacturing of wood and paper materials (25.4% y/y), of chemical products (35.2% y/y), of rubber and plastics (19% y/y), and of basic metals and metal products (7% y/y) accounted for almost 40% of the overall industrial growth and about 34% of the nominal export rise on a year earlier. These industries were influenced on the positive side by the international raw material prices' upward pace, but only in the manufacturing of basic metals and metal products the price index increase has formed slightly above the half of the Q1 nominal export turnover growth y/y.

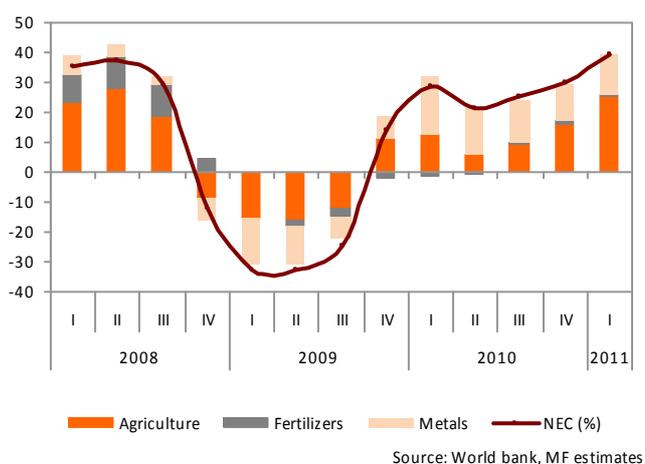
Fig. 15: Export turnover (s.a.), producer price and volume indices in the manufacturing of basic metals and metal products industry, %, y/y



After already having surged over the whole 2010, the overall metal price index further stepped up by 8.1% q/q and 40.5% y/y in Q1 2011. The group of non-ferrous metals, in particular aluminum, copper, nickel and tin kept the highest rises of prices, of respectively 15.6%, 33.3%, 34.6% and 73.5% y/y. Furthermore, non-ferrous metals were the biggest export driver, contributing by over 22% to the overall export growth y/y. The prices of the other main for the Bulgarian industry raw materials such as iron and steel also kept on moving upwards.

The overall NEC price index growth has been also strongly influenced by the subindex of agricultural products, led by the rising prices of food, in particular fats and oils and grains, partly determined by supply scarcity.

Fig. 16: Contributions to NEC price index (pps, y/y)



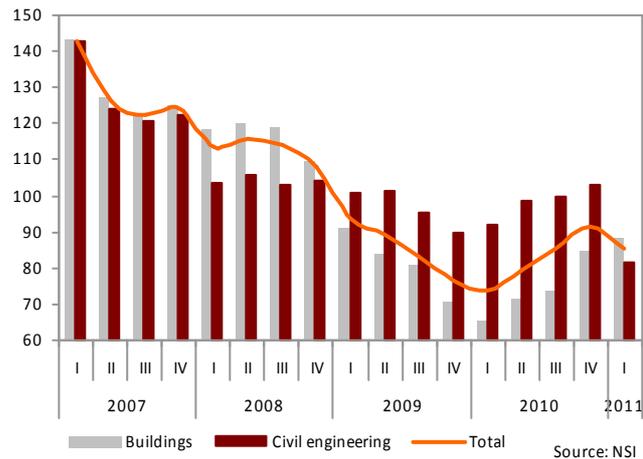
**Retail trade and construction developments subdued the EAI improvement.**

**Retail trade turnover made a slight increase in Q1 2011 but still too feeble to support the EAI improvement.** After having reduced the drop down in the retail trade volume in the first two

months of 2011 to a minimum of 0.1%, in March it came upwards by 1.4%, thus contributing to a small average Q1 growth of 0.4% y/y. Some signs of consumption revival could be recognized in the reported increase in retail sales in non-specialized stores (9.1% y/y), motor fuels and lubricants (4.9% y/y) and pharmacy goods and cosmetics (1.6% y/y). However, retail sales of durable goods, which are generally more elastic to income, continued on decreasing.

**Following the still weak domestic demand construction sector developments hampered the EAI improvement.** Q1 construction production index continued to decline by 14.8% y/y in nominal terms and contributed negatively to EAI dynamics. Recent developments were mainly influenced by the significant decline in civil engineering works of 18.8%, being positive (3.1%) in the previous quarter. The construction of buildings decreased as well, however at a slower pace (11.9% as compared to 15.3% in Q4).

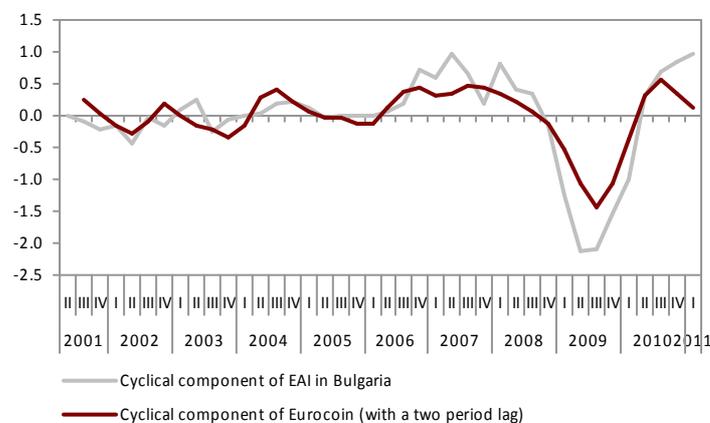
Fig. 17: Production index in construction, y/y



## Degree of overlapping of the local business cycle with the cycle in the Euro area

The pace of cyclical developments in the Euro area and Bulgarian economy reveals that **changes in the foreign business situation make a repercussion on local economy with a two - quarter lag at the most.** Furthermore, the local business cycle fluctuations from the long-term average are stronger as compared to the Euro area's cycle, having to do with the high dependency of the Bulgarian cycle on foreign environment developments.

Fig. 18: Estimated cyclical fluctuations in the Euro area<sup>14</sup> and Bulgaria



Source: MF estimates, CERP, NSI, BNB, World Bank

Q1 2011 €-coin continued on improving to an average of 0.54% being 0.45% in q4 2010. After being rather stable in January (0.48%) as compared to December (0.49%), in February it moved upwards to 0.57% and sustained the level in March as well. The Euro area economic activity expansion was supported by the foreign trade and production uprise, as well as the business surveys positive results. The latter is expected to support the Bulgarian economic activity in the upcoming quarters.

<sup>14</sup> For more detailed data and methodological notes on the Euro area cyclical indicator '€-coin', visit <http://eurocoin.cepr.org/>. 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 Hordrick-Prescott filter.

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

The Economic Activity Indicator (EAI) has been constructed at the Agency for economic analysis and forecasting in an attempt to assess more fully the current performance of the Bulgarian economy. With the shutdown of the agency, the construction and interpretation of the indicator will be done at the Ministry of Finance.

Being a composite indicator, the EAI 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 for likely errors in gauging a variable.

EAI has been calculated based on a dynamic factor model applied to quarterly data sets of 67 macroeconomic time series for both Bulgaria and the world business situation. Subsequently, the number of variables making up the indicator has been reduced to 15, with each variable being exploited with its real change in a given quarter on a year earlier. The variables, making up EAI, have been taken at the current period or with a one-period lag, as follows: GDP (0), industrial production index (0), construction index (0), retail trade turnover index (0), industrial business climate (-1), industrial orders (-1), industrial employment expectations (-1), industrial price expectations (-1), industrial capacity utilization (0), M1 (0), long-term loan interest rates in BGN (-1), VAT revenues (0), petrol price index (-1), non energy commodity price index (-1) and EU 27 GDP (-1).

Estimates of the cyclical component of EAI have been made by evaluating: (1) the long-term component using the Hordrick-Prescott filter. 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 have been estimated using a moving average with 4 lags.