

## Comparison of Industrial Dynamics of Food and Beverage Industry in Bulgaria, Romania and Greece

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**Abstract:**

Industry dynamic is a key indicator for sustainable industry growth. It depends on variety of factors on international and regional level. One of the important driving forces on international level is seen in the face of economic and political alliances. Cultural and regional policies, and social behaviour are driving industry dynamics on a regional level though. Our hypothesis is that specific differences of industrial dynamics of the Balkan countries occurred based on economic and political alliances (EU membership; Euro zone, Black Sea Economic Cooperation). This hypothesis is verified with analysis of a traditional for the Balkans industrial sector like Food and Beverage. The paper aims to find out more evidence to verify a basic hypothesis. It includes a comparative analysis of some basic industrial dynamic's indicators for the European Union (EU 16), Greece, Romania and Bulgaria. The analysed period is 2000-2010. The conclusions are concentrated mostly on Bulgaria.

**Keywords**

*Food and Beverage Industry; Industrial dynamics, Industrial growth; Bulgaria, Greece, Romania, innovation practices in food and beverage.*

**1. Introduction**

A study of the industrial dynamic is an attractive way to understand the current economic development as a potential for future development. It is because industrial dynamic is defined as a result of the increasing ability to enforce the industry evolution [2, 4, 5]. Thus, the general concept of dynamics is a manifestation of industry growth [6].

The interest to study the dynamic changes is evolving from the content of the industrial development as a phenomenon. Thus, the industrial dynamic covers not just the current industrial production structure, but also some important market-driven factors that can change the production structures over time [6].

According to our understanding - industrial dynamics is a macroeconomic phenomenon that is driven on micro level by endogenous factors. Therefore, the study of industrial dynamic is based on the ability to be explored a link between the economic inputs and outputs. The analysis in the paper is focusing on production capacity's change, on one hand, and turnover changes, on the other.

To analyze the driving forces of industrial dynamics we focus our attention on "the systemic characteristics" of industrial development. It's based on the understanding that economic growth is not a result of single firm activities, but a result of market players' activities [3]. Therefore, we analyze basic determinants of industrial development as follows: R&D expenditures and innovation level [4, 5].

For this paper we use a methodology of industrial dynamic analysis to a certain industrial sector – Manufacture of food and beverage. The findings are based on the role and importance of the Manufacture of food and beverage for the development of economies of countries on the Balkans, and in narrow sense, for the development of the Bulgarian economy as the newest region in the European Union.

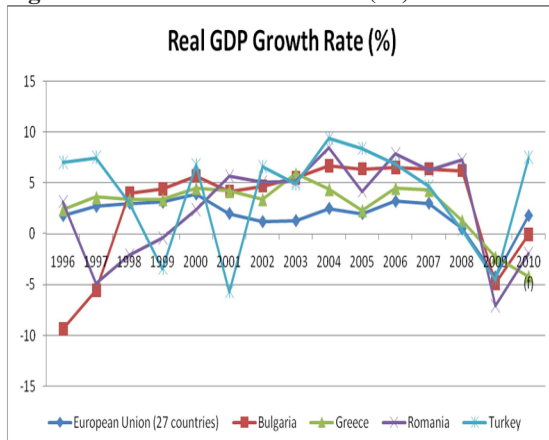
The paper has the following structure: it starts with Introduction as Section one. Section two gives a brief explanation of the role of Food and beverage industry for the regional development and industrial growth. Differences and similarities of growth prospects on the Balkans are described via some basic economic indicators in Section tree. The study ends with conclusions.

## 2. Current economic situation in Food and beverage industry

### 2.1 Macro-economic regional indicators

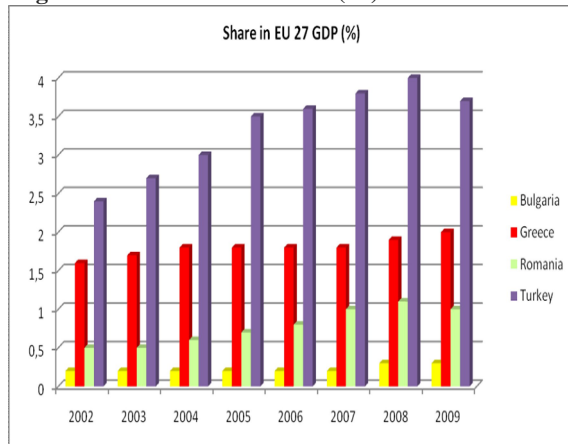
Macroeconomic analysis gives the framework within which economic sectors perform. Data analysis confirms the severe impact of the recent economic and financial crisis. Observed stable annual growth of GDP - about 2 % to 3 %, between 2002 and 2007 in the EU, was interrupted by the crisis. All member-states and candidate countries encounter significant decline in economic growth (Figure 1). The breakdown of GDP growth by its main aggregates confirms that more than 70 % of EU total value added originates from service industries. The economies that we analysed are fairly heterogeneous in terms of size, income levels and economic structure, but they perform similar economic performance. Two of analysed countries – Greece and Romania, belong to the group of so called medium sized member states with a GDP share in EU27 between 1% and 5 %. Turkey also could be assigned to that group with its share from 2,4 % (2002) to 4 % (2008). Bulgaria is in the group of small sized member states which generate less than 1%. (Figure 2).

Figure 1. Real GDP Growth Rate (%)



Source :EUROSTAT,2010

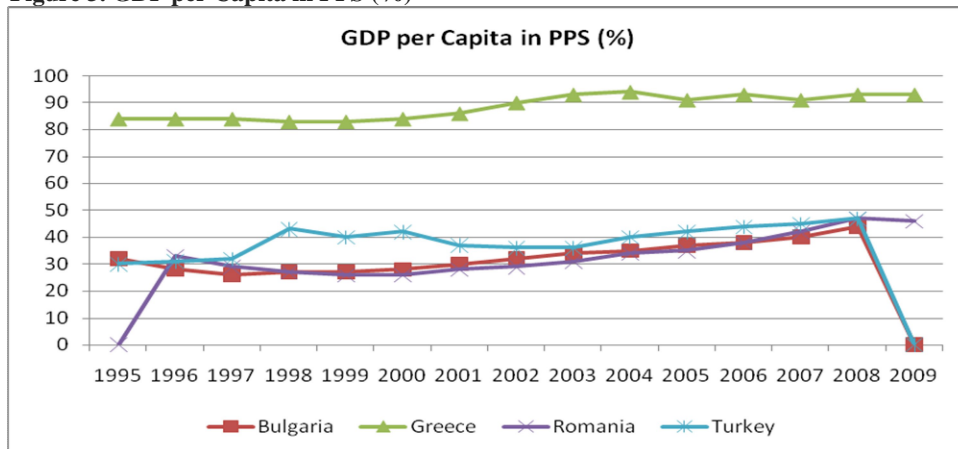
Figure 2. Share in EU27 GDP (%)



Source :EUROSTAT,2010

Divergences between GDP per inhabitant among the EU regions are still very high, but have been narrowing over recent years. Bulgaria, Romania and Turkey have similar level of GDP per capita in PPS, while this indicator in Greece is twice higher.

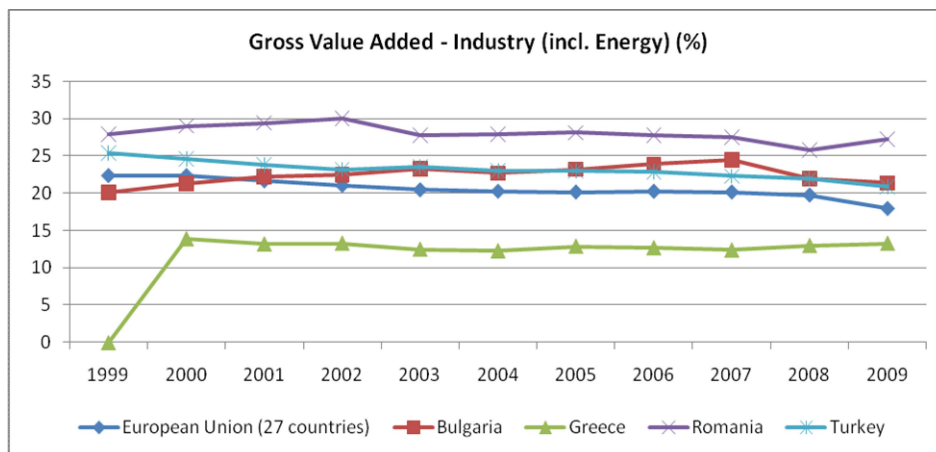
Figure 3. GDP per Capita in PPS (%)



Source :EUROSTAT, 2010

The main effects of the recent crisis were a decline in manufacturing output, investments and profits, while government services, private consumption and ‘compensation of employees’ (i.e. pay) remained relatively resilient. The overall structure of the EU GVA was fairly stable over earlier years, some effects of the economic and financial crisis can be seen in the decline in GVA generated by total industry, which is dominated by manufacturing, and an expansion of other services, which includes public administration and defence, education and health. GVA generated in industry in Bulgaria, Romania and Turkey are similar to the trend in EU27. Greece performs at a relatively lower level of GVA in industry than the other three countries. (Figure 4).

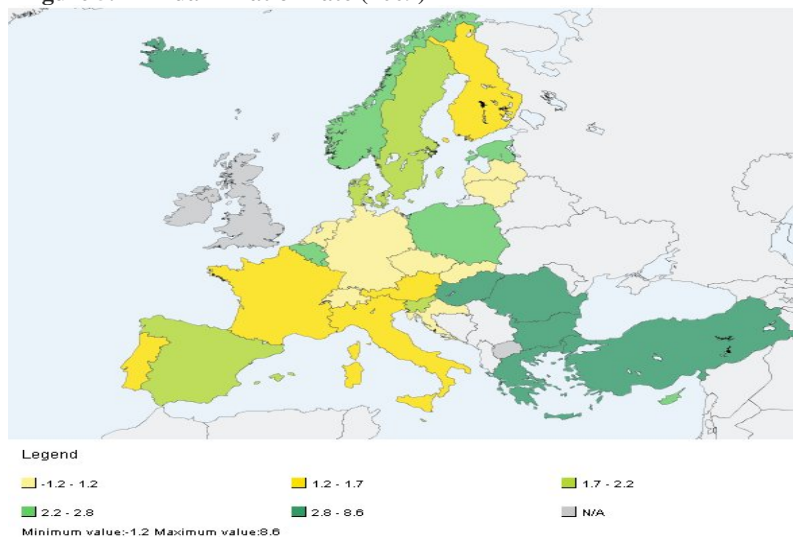
**Figure 4. GVA – Industry (incl. Energy) (%)**



Source: Eurostat

The annual average inflation rate in the euro area fell to a low of 0.3 % in 2009, after several years of relative stability at around 2.2 % and substantial increases in 2008 (EU trends followed a broadly similar pattern). Balkan countries and Hungary formed the group with the highest inflation from 2.8 to 8.6 % (Figure 5).

**Figure 5. Annual inflation rate (2009)**



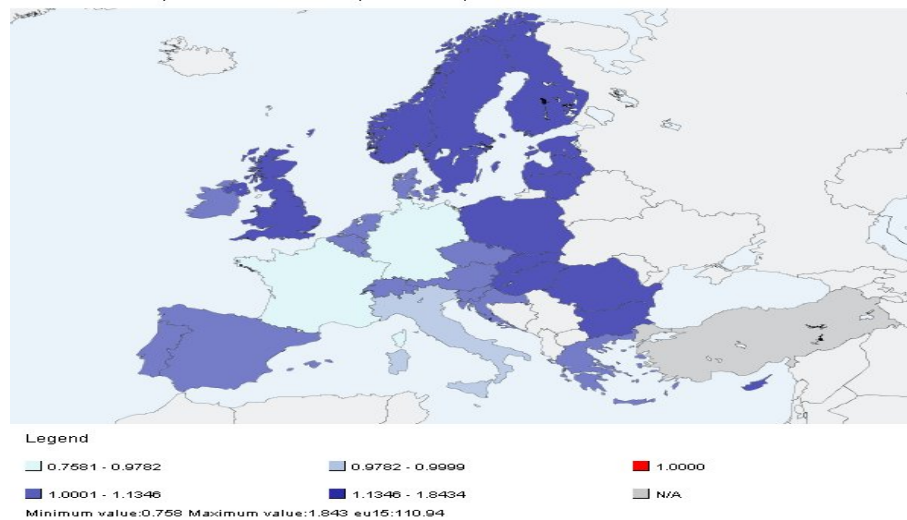
Source: EUROSTAT, 2010

## 2.2. State of Food and beverage industry

Food and beverage industry is one of the most important sectors on the Balkans. More than half million employees are hired in this sector. This state is a result of industry development of the Balkans' Region: Bulgaria and Romania had had a highly developed industrial agriculture till the middle 1990's.

Even though the food production in the region is far away from the value in the beginning of 1990's, the sector in Bulgaria and Romania gives more production than the average in Euro Area (EU 16 countries) (Figure 6.)

**Figure 6. Turnover of Food, beverages and tobacco manufacture comparison with EU 16 (2005=100)**



Source: EUROSTAT

This picture verifies our basic hypothesis and gives a first point of differentiation. We can identify three types of industrial development of Food and beverage industry on the Balkans: first, European Area and Greece; second, Bulgaria and Romania; third, Turkey. Regional differences could be explained with a specific country path of economic and social development in the last 20-25 years:

- As part of the Old EU member-states, Greek economy is very close to the European one.
- Bulgaria and Romania have better performance in their agricultural development till the end of the 1980's. Ongoing political, social and economic changes from the last decade of XX century, like privatization and liquidation, took down the sector till the beginning of 21<sup>st</sup> century.
- Turkey has been a fast-developing economy in the region for the last decade. It has the biggest potential for development according to the presence of vast undeveloped regions in the country.

This picture is confirmed by the labour productivity (Table 1.)

**Table 1.Apparent labour productivity by average personnel costs (%)**

	2007	2006	2005	2004	2003	2002	2001	2000
<b>European Union (27 countries)</b>	163,64	160,53	164,34	166,35	n.a.	n.a.	n.a.	n.a.
<b>Bulgaria</b>	236,10	n.a.	208,20	190,0	175,60	164,90	171,20	n.a.:
<b>Greece</b>	146,00	151,10	152,20	163,1	168,30	n.a.	n.a.	n.a.
<b>Romania</b>	210,50	213,20	214,30	205,9	213,70	215,90	207,70	213,70

Source: EUROSTAT

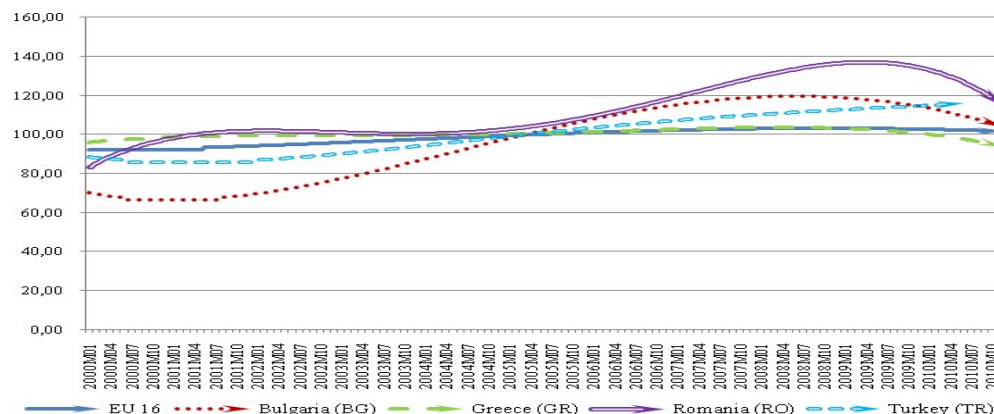
In summary, we could expect different growth opportunities of Food and beverage development in the above-mentioned three types of countries.

### 2.3 Industrial growth indicators of Food and beverage

Three basic indicators of industrial development could be found: production indices; turnover indices and price indices.

**First**, the analysis covers the change of production indices (Figure 7).

**Figure 7. Production Indices of Manufacture of food products and beverages**



Source: EUROSTAT and own calculations

The picture shows that we could verify our basic hypothesis:

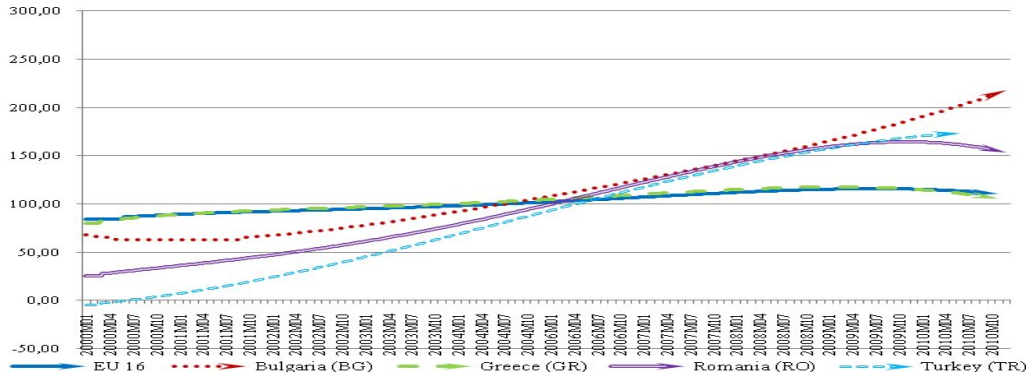
- European Union and Greece have the smallest change in their production indices. They are very close to the 100 % graph. So, there is a very small change in the food production in the Euro area.
- Bulgaria and Romania demonstrate the highest increase in their food production growth – two times between the lowest and the highest point of production which is an increase of 70 %.
- Turkey has a steady, sustainable and continuous food production growth for the whole period between 2000 and 2010.

But we can find some regional similarities:

- All Balkan countries show a decrease of the food and beverage production in the last two years. This could be explained by the economic crisis of the EU from the beginning of 2008 and respectively with the importance of intra-union trade of food and beverage. So, the food industry growth in the analyzed countries is limited by the overall European food consumption.
- The decrease of food production in Bulgaria, Romania and Greece is more suspicious in comparison to the stability of food production in Turkey. One possible explanation is that the biggest fall of production is a result of consumption reduction of low-quality food products' in the EU. So, the high amount of production of cheap and low-quality products from the beginning of 2005 is transferred to a smaller amount of demand of not so cheap but of good quality food and beverage products in the beginning of 2008.

**Second**, the analysis covers the turnover indices trend (Figure 8.).

**Figure 8. Total turnover indices of Manufacture of food products and beverages**

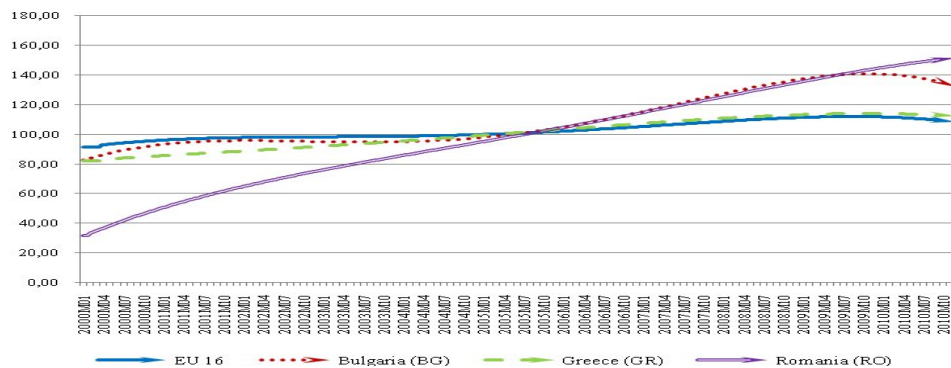


Source: EUROSTAT and own calculations

As the figure shows, we could make the following conclusions:

- It's easy to find two different turnover types of development of food sales: Euro Area and Greece, on one hand, and Bulgaria, Romania and Turkey, on the other. The trend of total turnover indices in the first group had slightly increased since 2009 and then has slowed down. This turnover change could be explained with price changes (Figure 4.) and a slight food demand in these countries. On the other side are Bulgaria, Romania and Turkey: we observed a very fast and big increase of turnover during the whole period. This state is a result of the increase of selling prices in these countries. Another factor is the increase of import of food and beverages in these countries.
- Although similar turnover trend in Balkan countries (excluding Greece) is observed, only Bulgaria has had a stable increasing trend of turnover for the period of the economic crisis (since 2008). We can conclude that due to the low quality of food production of Bulgarian enterprises we find a dramatic import increase (from other EU countries) of food and beverage. (Figure 9.)

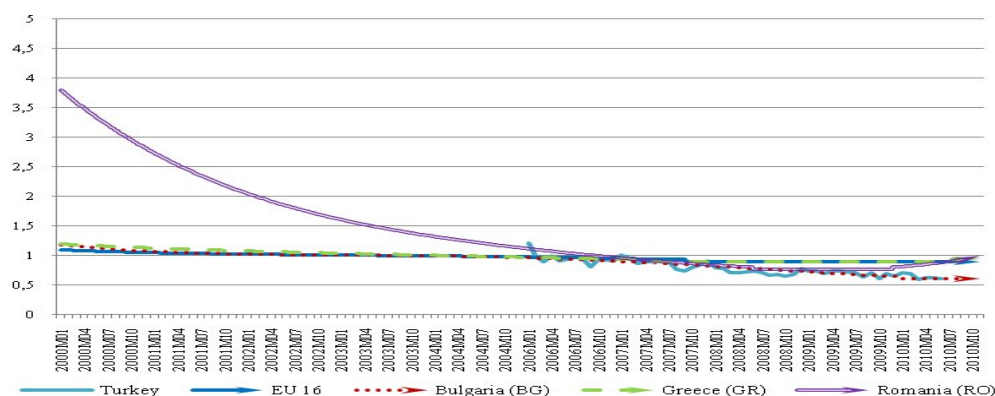
**Figure 9. Industry producer price indices of Manufacture of food products and beverages**



Source: EUROSTAT and own calculations

At last, the potential for industry growth could be found in the analysis of Production/Turnover indices (Figure 10.).

**Figure 10. Production/Turnover indices of Manufacture of food products and beverages**



Source: EUROSTAT and own calculations

The figure allows us to confirm the basic hypothesis that we could divide all Balkan countries in three groups. But verification is with some restrictions:

- As it is expected, Greece has similar trend of production/turnover indices as the Euro Area countries. This trend is very close to 1.00. Therefore, these countries sell at the same level what they had produced.
- In the second group we locate Romania – with a huge equalized sales and production, even though the production has exceeded the sales four times since the beginning of 2000. Even more, we identify a slight increase of indices in the last few months. So, in this group we find countries with huge share of food and beverage export. And the food industry development depends on EU food consumption enlargement.
- Surprisingly Bulgaria and Turkey are in the last group. Although the production/turnover indices are close to the first group's, in the beginning of the 21<sup>st</sup> century, we have a big difference in recent days. This is a situation of a decrease of industrial growth potential. The state is based on increased import of high - quality food products and decreased export of low - quality food products.

In conclusion, we found some differences and some similarities of food and beverage industry growth in the Balkan countries.

### 3. Analysis of basic determinants of industrial growth in Food and beverage industry

In recent years, innovation has become a key factor in improving the competitiveness of national economies and established themselves as one of the cornerstones for building knowledge-based economy. They proved a successful tool to overcome the negative effects of the global economic crisis, and achieve dynamic growth of national economies. It could be said that countries with high levels of innovation costs can generate growth and reduce the negative effects of global economic crisis.

In the years of transition, Bulgaria has repeatedly changed its position on this, who or what should be the priority sectors of national economy. Sectors, on which to focus efforts for their development. From construction and tourism to agriculture and transport, to various governments, priorities were different sectors and there was no consensus on the development of the country's economy.

Retrospective analysis of the most highly developed and significant sectors of the economy shows that in the years before the transition, one of the most developed sectors of the national



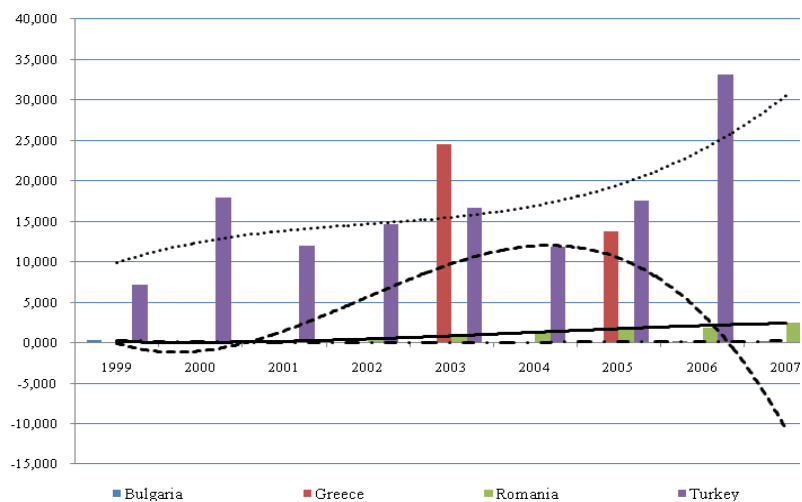
economy was the sector of the food and beverage industry. This sector was heavily export-oriented and a large share of GDP. In the years of transition, it loses ground, (like many other economic sectors) under the pressure of entering the Bulgarian market companies, which are world leaders in the food industry, leaders who rely heavily on innovative products and technologies.

Today, one way to restore the positions of the food industry of Bulgaria on world markets is through the development of innovations of all kinds.

***How things stand right now with innovative level of the food processing industry in Bulgaria?***

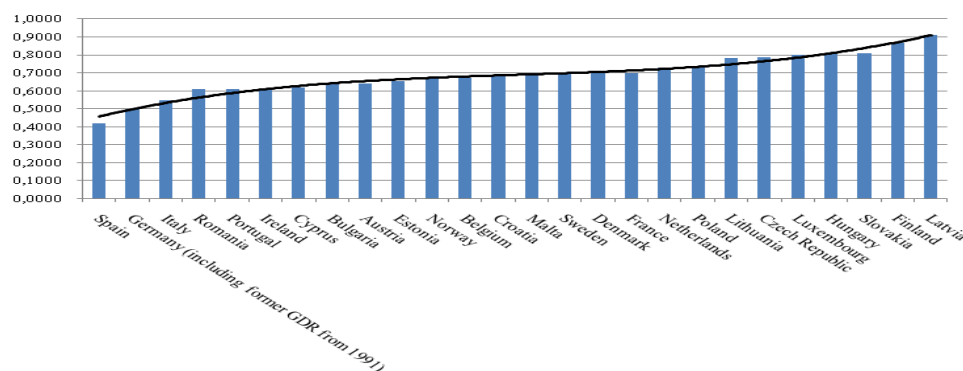
Cost of innovation of enterprises from the countries of the Balkan region (EU countries and those under negotiation) (Figure 6.) indicates that over the last decade all countries reported rising growth rate. This rate, however, with varying intensity. There is a lagging rate of growth of spending on innovation in "Food and beverage industry" in Bulgaria, and the investments made in Euros for R&D are from 20 to 30 times lower than those in leading countries (Greece and Turkey) in the region. Huge disparity exists in this indicator between countries with the highest potential for innovation (the old EU member states), such as Germany, France and new EU countries (Bulgaria and Romania). Under the influence of global economic crisis, all EU countries experienced different types of economic shock but their expenditures on innovation activities are many times higher than those of countries like Bulgaria. Based on this indicator, it can be concluded that the economies of these countries (with low innovativeness) would be a high-level brake on the European economy. This could be avoided only if in the following years the growth rate of these costs and their effectiveness is outstripping the average pace. Thus, they will overcome the huge gaps that have the economies of countries like Bulgaria.

**Figure 11 Enterprise R&D expenditure in Food and Beverage industry (million of Euro)**



Source: EUROSTAT

**Figure 12. Enterprises from Food and Beverage industry with technological innovation (product, process, marketing innovation).**



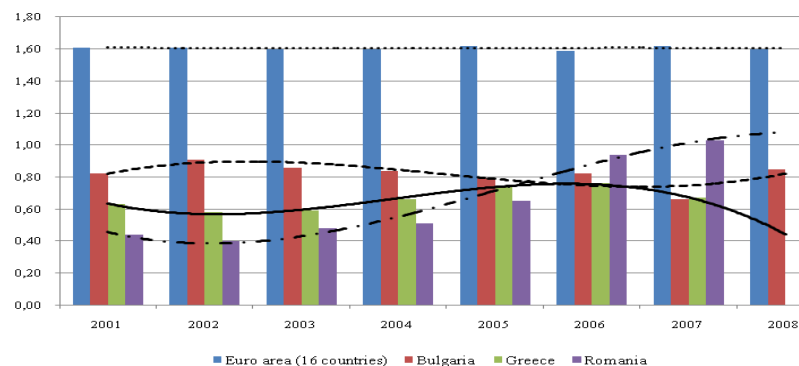
Source: EUROSTAT

In countries with the highest innovative economies, spending on innovation in the "Food and beverage industry" is made by the companies. This is the result of the conscious needs of companies to produce and offer products, services and technologies with high added value. Thus, they generate growth and higher profitability levels.

Interesting is the fact that by data on innovation (product, technology, marketing) embedded in the enterprises of food industry, the country does not stand bad at all against the Pan-European trends. Although the country is not on one of the leading positions in the EU, it is arranged to such proven leaders in innovation countries such as Germany, Italy, Spain (Figure 12). This may be the result of a significantly smaller number of food processing enterprises in Bulgaria. Or that the reported innovative developments are well-known to the European market. Their target market is national and innovations are only for it. There is a large discrepancy between the small innovation costs and the relatively large number of innovative enterprises in food processing sector.

The Bulgarian economy relies primarily on public funds for R&D activities. Innovations are made in scientific organizations outside companies. In the EU, companies make a lot more investment to develop new products, services and technologies, than the state (government). According to this indicator Bulgaria has again lagging position. It ranks among the last places in the EU. In the country, R&D expenditure as % of total government expenditure has a relatively low rate (Figure 13). This indicates that companies from food and beverage sector have not adopted the innovation as a necessity and a factor for growth.

**Figure 13. Total R&D expenditure as % of total general government expenditure**

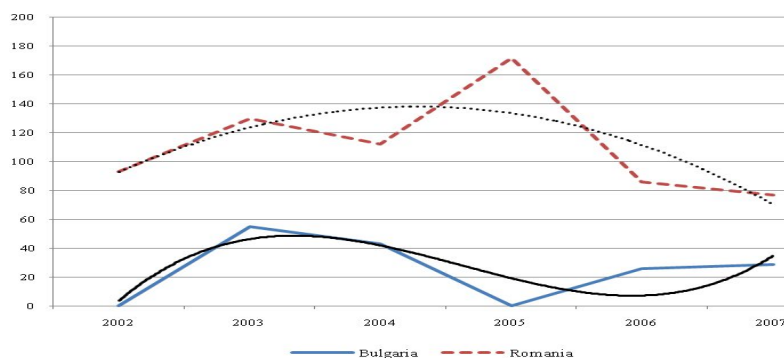


Source: EUROSTAT

Overall, the picture in the innovative development of the country is not very optimistic. The Bulgarian economy and the food industry sector have very low potential for innovation. Production is mainly low value added. The competitive advantages of firms are very limited. Backwardness of the sector is significant. If you do not take real action to stimulate and motivate the innovation, the sector will fail to recover its leading position in the national economy.

Today there are researchers (Figure 14) that are highly motivated to work towards increasing the innovation potential of companies in the sector, despite the lack of sufficient funding. This is a bright spot for R&D and innovation in food processing sector.

**Figure 14. R&D personnel and researchers in enterprises from Food product and Beverage industry in Bulgaria and Romania**



Source: EUROSTAT

From analyzed data on innovation activities of the food processing sector in the country (which in turn is a precondition for creating highly innovative economy based on knowledge) it can be concluded that food processing sector enterprises have low innovation costs. If this trend continues, it will have limited impact on the development of the sector and will be very difficult to recover its leading position. The Food and beverage industry will become difficult again priority, export-oriented and with major contributor in shaping the country's GDP.

#### 4. Conclusions

Industrial dynamic is a good indicator for development opportunities of one country. It gives not just current situation but the gap between what we want and what we can!

Analyzing industrial growth of a sector like manufacturing of food and beverage is a good point of view how one country pays attention to the consumers. We can see that in highly developed regions, the industrial dynamic of this sector moves slowly at a high level of food and beverage expenditures and quality. Developing countries are at an opposite side – undefined fast moving dynamic of growth that is oriented to low level of food and beverage expenditures and poor food quality.

The Balkans is a fast moving region when we talk about politics and economics. The Balkan countries have changed their priorities and alliances (politic and economic ones) many times over the last century. This point gives our expectations to define a basic hypothesis as follows: we can divide countries in three groups by their industrial dynamics and growth potential of food, and beverage manufacturing.

Analyzing statistical data we confirmed our basic hypothesis. But we did it with some objections:

- We find that there is an objective reason for grouping the Balkan countries in three divisions: first group – Greece; second group – Romania; third group – Bulgaria and Turkey.
- As it looks reasonable for the first two groups, it is a surprise to put Bulgarian dynamic in the last division. This means that Bulgarian food and beverage industry has lost its competitive advantage of low-cost products and has no good perspectives for growth at this point.

What we can recommend:

- First of all, Bulgaria needs to prioritize the importance of the food industry. This is a traditional industrial sector but has no opportunities for growth at this point of development.
- Second, the plants need to be involved in priority projects of research and development in the food industry. Its look very dangerous for sector growth to rely on its old glory. Products must be changed with modern ones by investing in research projects.
- Third, the level of innovations in manufacturing of food and beverage is at very low pitch. This state is a result of the use of morally and physically obsolete technologies, mechanics and products for manufacturing food and beverage.
- Last but not least, the Bulgarian government must help the plants to create and develop different technological and trade alliances. This will help to divide the whole risk of investments in innovations and market efforts.

As a conclusion, all recommendations will give a chance to move the Bulgarian food and beverage industry dynamic at a more attractive curve of growth. But they need the Bulgarian government and food producing plants to have enough willingness to take part in the food and beverage manufacturing evolution.

## REFERENCES

1. **Eurostat**, Industrial database, <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/>
2. **Forrester 1961**, Industrial Dynamics. Portland, Oregon: Productivity Press.
3. **Jiandong Ju, J.Liny, Y.Wang 2010**, Endowment Structure, Industrial Dynamics, and Economic Growth, <http://ihome.ust.hk/.../Endowment%20Structure,%20Industrial%20Dynamics%20and%20Economic%20Growth.pdf>
4. **Kopeva et al. 2010 (a)**, Basic determinants of Bulgarian industrial growth after the EU accession, ACTA TECHNICA CORVINIENSIS, 4/2010, pp. 83-90
5. **Kopeva et al. 2010 (b)**, Factor Limitations on Industrial Dynamics in Bulgaria in Conditions of European Integration, Economic Alternatives Journal, 2EN/2010, pp. 40-59
6. **Krafft 2006**, Introduction: what do we know about industrial dynamics?, Revue OFCE, June 2006, <http://www.ofce.sciences-po.fr/pdf/revue/hs-06-06/rhs-06-06-intro2.pdf>
7. **NSI**, Industrial statistic, <http://www.nsi.bg>