VALUE ADDED DYNAMICS OF THE BULGARIAN MINING INDUSTRY

Borislava Galabova[1], Nedyalko Nestorov[2]

[1] University of Mining and Geology "St. Ivan Rilsky", 1700, Sofia, b.galabova_mgu@abv.bg
[2] Economic Research Institute, Bulgarian Academy of Sciences, 1000, Sofia, n_nestorov@abv.bg

ABSTRACT. This study is dedicated to the value added of the Bulgarian mining industry for the period 2000-2016. Using statistical methods, an analysis of this important macro indicator is made and some main trends are derived. On this methodological basis, by comparing the achieved status and dynamics, the value added is studied on a national and European level. The critical review of the results is a base for conclusions about the progress, potential and importance of the mining sector for the Bulgarian economy.

Key words: value added, mining industry, macroeconomic analysis, macroeconomic indicator

ДИНАМИКА НА ДОБАВЕНАТА СТОЙНОСТ НА БЪЛГАРСКАТА ДОБИВНА ПРОМИШЛЕНОСТ

Борислава Гълъбова[1], Недялко Несторов[2]

[1] Минно-геоложки университет „Св. Иван Рилски", 1700, София, b.galabova_mgu@abv.bg
[2] Институт за икономически изследвания - БАН, София, 1000, n_nestorov@abv.bg

РЕЗЮМЕ. Настоящото изследване е посветено на добавената стойност на българската добивна промишленост за периода 2000-2016 г. Чрез използване на статистически методи е направен анализ на този значим макроикономически показател и са изведени водещи тенденции. На тази методическа основа е извършена съпоставка на състоянието и постигнатата динамика на добавената стойност в национален и европейски контекст. Критичният анализ на резултатите дава основание за обобщения за напредъка и значимостта на сектора за икономиката на страната.

Ключови думи: добавена стойност, добивна промишленост, макроикономически анализ, макроикономически показател

Introduction

The latest data on the index of total mineral extraction, published by the Bulgarian Chamber of Mining and Geology, show that for Bulgaria it is 11 tons/person (Ministry of Economy, Energy and Tourism, 2012), which is above the average globally. This gives grounds to define Bulgaria as a "mining state". In recent years, the country ranks third in the mining of copper, fourth in the mining of gold and fifth in lignite mining in Europe (Bulgarian Chamber of Mining and Geology, 2017). With these key positions on the continent, Bulgaria is confirming as an important and promising market player. Indeed, the mining industry is of strategic importance for the development of the Bulgarian economy. Many other industries are directly or indirectly linked to the extraction of mineral resources, including metallurgy, chemical industry, electrical engineering, construction, transport, information and telecommunication technologies. The sector's contribution to the development of the economy should be sought in three directions: its added value, its role in providing basic resources for other sectors and in increasing value added along the supply chain. From a macroeconomic point of view, Bulgarian mining industry provides an average of 4-5% of GDP, which confirms its important role for the economy and the welfare of individual municipalities (Bulgarian Chamber of Mining and Geology, 2014). The sector occupies an important place in the export list of the country. Its products account for about 2.4 billion EUR of export revenue at national level, which justifies the substantial contribution to the country's total exports. In recent years, it provides direct employment to more than 23 000 people and induces employment to another 120 000 people in the sectors servicing the branch, forming 0.8% of national employment. According to the National Statistical Institute (NSI) data for 2015, 386 companies and organizations are engaged in prospecting, extracting and processing of mineral resources and related activities and services. Mining enterprises, in comparison to other industrial plants, are determined by the object of their activity – the mineral resources and the related requirements for organizing and realizing the production activity (Velev, 2011). An actual analysis of the Branch Chamber shows that compared to the European ones, they are predominantly profitable and competitive, providing quality and production convertible on the international markets (Bulgarian Chamber of Mining and Geology, 2017).

At the same time, the Bulgarian mining industry brings a number of social benefits for various groups of stakeholders – state, local communities, employees, customers and suppliers. Mineral resources found in Bulgaria have great production importance, and consequently economic one, as raw materials from which end products are produced. By 2017, 1383 deposits of mineral resources have been identified. 218 of them are of metallic minerals, 225 – of industrial minerals, 21 – of oil and gas, 45 – of solid fuels, 688 – of building materials, 186 – of rock-lining materials [5]. As of 2017, a total of 520 concessions for extraction of mineral resources are active: 18 – of metallic minerals, 73 – of industrial minerals, 18 – of oil and gas, 16 – of solid fuels, 328 – of building materials, 69 – of rock-lining materials, and 1 – of mining waste (Bulgarian Chamber of Mining and Geology, 2017). Lignite, lead-zinc, copper and polymetallic ores, gypsum, limestone, bentonite, kaolin, quartz sands, refractory clay and marble are among the main raw materials extracted. As a result, according to the data of the NSI, total mineral extraction in 2016 was 97.68 million tons, and operating revenues were 1.3 billion EUR. In recent years, extraction of metallic minerals has the biggest contribution to the total value of production (53% of total extraction). There are permanent trends in the distribution of mineral extraction from 2010 to 2016: solid fuels and metallic minerals have a relatively constant production increase and the biggest share in mineral extraction. The companies with activities in ore mining continue to lead, with an income of 326 million EUR. The companies with activities in coal mining follow with 195 million EUR. Together they account for nearly 70% of the total revenues of the mining industry (Bulgarian Chamber of Mining and Geology, 2017).

Status and Dynamics of Value Added of the Mining and Quarrying Sector in Bulgaria

No indicator can give a complete picture of the state of the economy, at best, it can give a general idea of the conditions of a particular sector of the economy at a specified time (Маринов, 2013). Gross value added is a good measure of the contribution of a sector to the total production. It reflects the value of goods and services produced on a certain territory over a given period, and it represents the difference between the end value of the production and the value of the goods and services spent for its producing (i.e. intermediate consumption). It is believed that this indicator in a pure form characterizes the outcome of the economic activity and then measures it by the value added created during the production of goods and services by the resident units within the economic territory of the country (Стойкова-Къналиева и др., 2016). The dynamics of the value added of the Mining and Quarrying[1] sector during the period 2000-2016, which is a subject of research interest, is graphically presented on Figure 1.

As Figure 1 shows, at the beginning of the studied period – from 2000 to 2002, the sector's value added in absolute terms is around 200 million EUR per year (at current prices). With slight cyclical fluctuations of nearly seven years, it increases steadily in the next years. At the end of the period, it reached its highest values around 900 million EUR per year. The data presented here testify to a steady increase in value added, with positive trends. During the studied 17-year period, the highest value added is recorded in the last three years – 2014 (972.9 million EUR), 2015 (963.8 million EUR) and 2016 (952.9 million EUR). The prognoses are for even greater dynamics related to its gradual increase in perspective as a result of the significant potential of the sector.

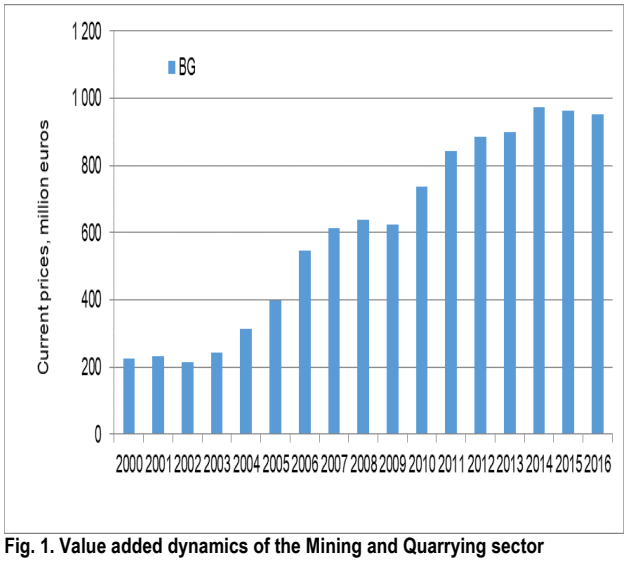

Fig. 1. Value added dynamics of the Mining and Quarrying sector
Source: Eurostat data.

To evaluate the benefits of the industry's functioning for the country's economy, it is necessary to present the value added in relative terms. Tracking the dynamics as share gives a realistic picture of the sector's contribution on the basis of a comparison. Such an approach reflects the importance of the sector in the overall economic picture at national level. The value added in a relative dimension of the Mining and Quarrying sector is presented on Figure 2.

Figure 2 shows that during the studied period the sector forms between 1.4% (2002) and 2.6% (2014) of the total value added in the Bulgarian economy. It is noteworthy that in the period 2009-2014 the share is growing steadily, and from 2014 slightly decreases. In 2016, this share is still significant (2.29%) despite the small number of companies and employees in the industry.

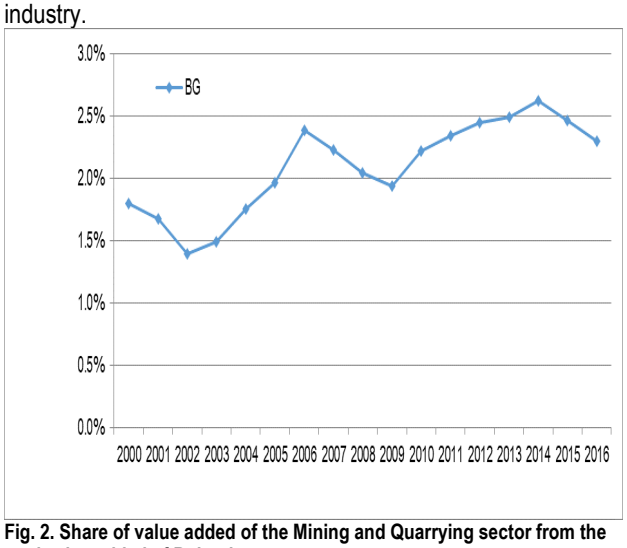

Fig. 2. Share of value added of the Mining and Quarrying sector from the total value added of Bulgaria
Source: Eurostat data.

[1] Mining and Quarrying refers to Sector B of NACE (KID2008 for Bulgaria).

The objectivity of the analysis requires tracking also the dynamics of the share of Mining and Quarrying industry in the whole Bulgarian industry, which is presented on Figure 3.

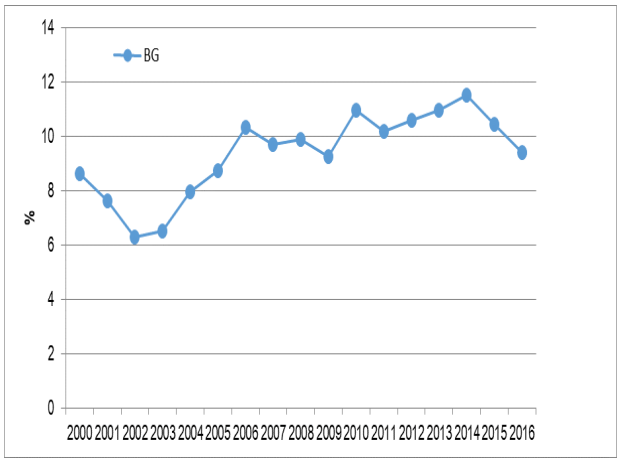

Fig. 3. Share of value added of the Mining and Quarrying sector in the total value added of the entire Bulgarian industry
Source: Eurostat data.

As Figure 3 shows, the share of value added of the extracting sector in the value added of the entire Bulgarian industry in the period 2000-2016 fluctuates between 6 and 12%. Value added should be considered together with the dynamics of the employees in the sector.

The number of employed people in the Mining and Quarrying sector is shown on Figure 4.

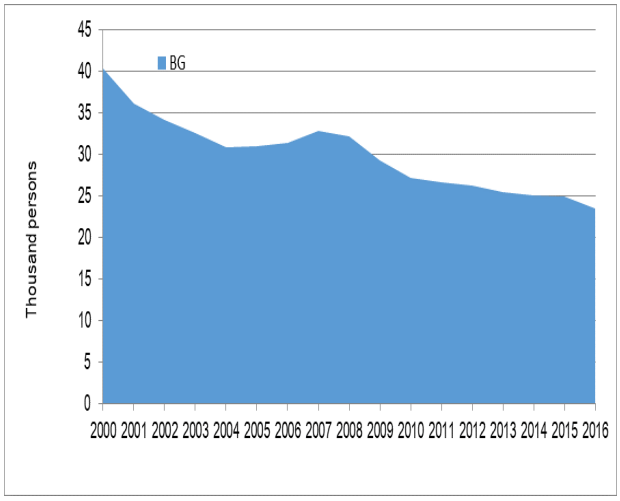

Fig. 4. Employed people in the Mining and Quarrying sector in Bulgaria
Source: Eurostat data.

In 2000, more than 40 300 people were employed in the sector. A serious decline started after 2007. Gradually, the number of employed people declined, and in 2016 it reached 23 400 people, or almost 40% reduction was registered. This decline can be explained by two significant circumstances. First, the release of workers in the coal mining sub-sector, given the bankruptcy of "Mina Cherno More" and the closure of "Babino" mine of "Vagledobiv Bobov Dol", is one of the reasons for the reported decrease. Second, it can be argued that the significant dynamics of the number of employees reflects the ongoing processes of mechanization and automation related to the introduction of modern technologies. As a direct consequence, the number of employed people, especially in low-skilled labor activities, is limited. Employment trends in the sector show a long and sustained decline. However, the Bulgarian Mining and Quarrying industry remains one of the largest employers at national level, an with annual salary of employees higher than the average. According to NSI data, in 2016 it was 8 454 EUR, compared to the average of 5 900 EUR.

Despite the decrease of the number of employed people in recent years, during the studied period there is an exceptional increase in the value added per employee, as shown on Figure 5.

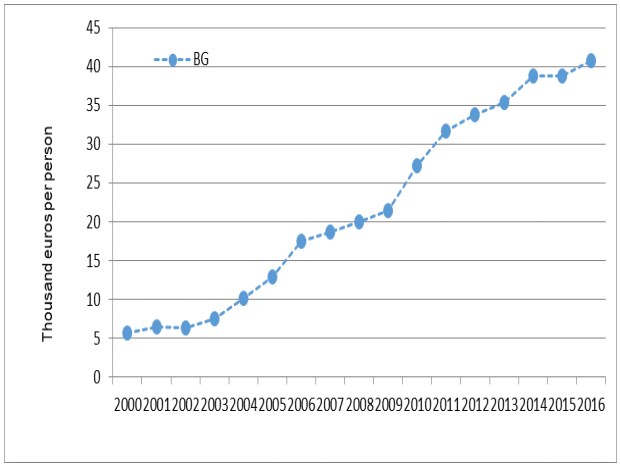

Fig. 5. Value added per employee in Mining and Quarrying sector
Source: Eurostat data.

Contemporary economics is characterized by new techniques and technology, permanent changes in normative basis, worsening labor market, negative demographic trend and fast growing old knowledge and skills of job applicants (Trifonova, 2017). While the number of employees in the Mining and Quarrying sector decreases steadily, the value added per employee rises sharply. For the whole studied period, the value added per employee has increased from nearly 5000 EUR to over 40 000 EUR, or almost 8 times in 17 years. The values obtained show a significant contribution to the value added per employee compared with the contribution of the employed people in other sectors of the economy. At the same time, the production per employee increases, with labor productivity in the sector continuing to be more than 2.5 times higher than the industry average. This is due to the introduction of a number of innovations. The achieved high results are related to the significant capital investments in modern technologies and the investments in increasing the employees' qualification. These findings support the hypothesis of the Branch Chamber that the sector is characterized by a favorable environment for innovation and unused capacity for the introduction of high-tech productions, as well as relatively high efficiency of the used resources. The data confirm that Mining and Quarrying industry accounts for one of the highest labor productivity, exceeding the other sub-sectors in the industry sector and twice as high as the average for the

country. It is defined as a long-term activity, given that the full potential hasnot been completely used. It is therefore important to thoroughly analyze the value added from the mining activity and to determine the place of the Bulgarian Mining industry in the country's economy and the comparison with the other countries in Europe.

Bulgaria and Other Countries in 2015

Figure 6 shows the share of value added of the Extracting sector as part of the total value added in the EU countries in 2015.

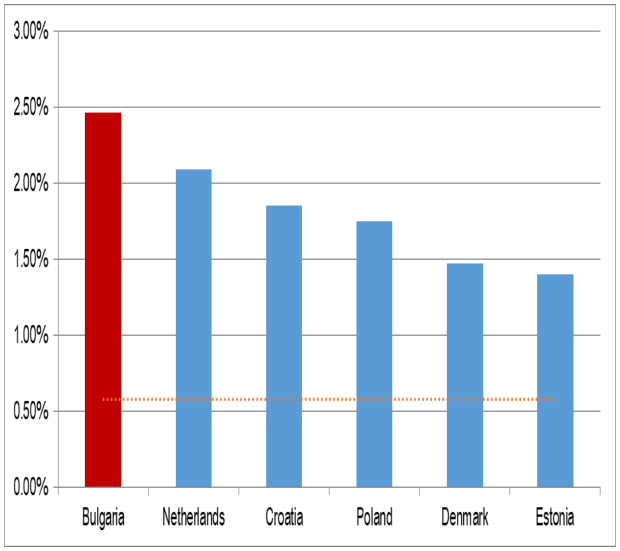

Fig. 6. Share of value added of Mining and Quarrying sector in EU countries
Source: Eurostat data.

It is clear that Bulgaria ranks first in the European Union in terms of the value added share of the Extracting sector in the total value added of the country – 2.5%, which confirms the importance of the sector. The next places are held by the Netherlands (2.10%), Croatia (1.85%), Poland (1.75%), Denmark (1.48%) and Estonia (1.40%). It is noteworthy to mention that Bulgaria has a 5 times higher share of the value added of the Mining and Quarrying sector compared to the average for the EU countries (0.58%).

At the same time, the country ranks third in the share of the value added of the Mining and Quarrying sector from all European countries, observed by Eurostat[2] (see Figure 7).

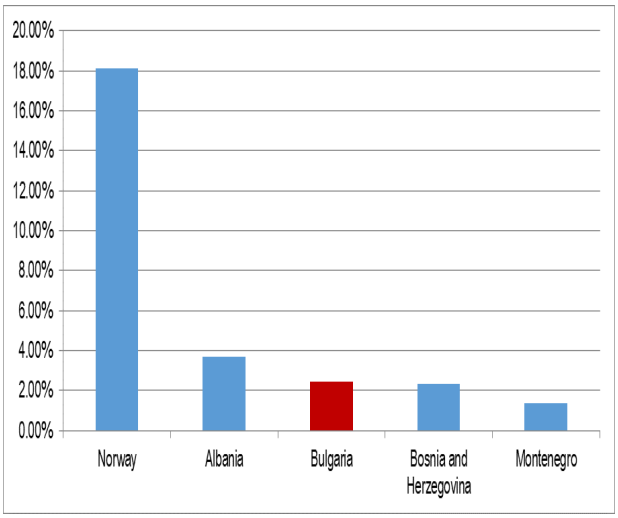

Fig. 7. Share of value added of Mining and Quarrying sector in European countries
Source: Eurostat data.

Only Norway (18.15%) and Albania (3.71%) are before Bulgaria. It is followed by Bosnia and Herzegovina (2.33%) and Montenegro (1.37%).

Conclusion

The presented data show that over the past 17 years the value added of the Mining and Quarrying industry has steadily increased: from 200 million EUR (2000) to 900 million EUR (2016). In relative terms, in 2016 the sector formed 2.29% of the total value added of the Bulgarian economy. The share of the value added of the Mining and Quarrying industry from the total value added of the Bulgarian industry was 9.4%. in 2016 Though the number of employed people in the sector has slowly decreased over the studied period, there is significantly higher labor productivity and higher value added. In 2016, the sector provided 2% of the production and 2.29% of the value added, accounting for only 0.8% of all employees nationwide. At European level, the comparison with the other EU member states shows that Bulgaria is the leader concerning the share of the value added of the Mining and Quarrying sector. Bulgaria occupies also top positions compared to all European countries. Thus, the analyzed data show the great importance and the confirmed role of the Bulgarian Mining and Quarrying industry as a sector with a significant contribution to the economy. It confirms the hypothesis, raised by the Chamber, that the sector could be characterized by innovation potential and investment attractiveness.

[2] Data include EU-28 countries and Iceland, Liechtenstein, Norway, Switzerland, Montenegro, Albania, Serbia, Turkey, Bosnia and Herzegovina.

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