ISSN Print 2414-0287
ISSN Online 2707-8426

UDC 338.45:669(477)

DOI https://doi.org/10.26661/2414-0287-2021-4-52-06

PROBLEMS OF DEVELOPMENT OF METALLURGICAL INDUSTRY OF UKRAINE AND WAYS OF THEIR SOLUTION

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Key words:
metallurgical industry, export, competitiveness, fixed assets, modernization

The article is devoted to the research of the main problems of metallurgical industry of Ukraine. The article substantiates that the metallurgical industry of Ukraine faces both external factors that affect competitiveness of domestic metallurgical products, as well as internal factors that hinder effective development of the industry. It was determined that in 2020 the volume of metallurgical products exports accounted for one-fifth of total Ukrainian exports of goods and services. The structure and dynamics of exports of metallurgical products in 2012–2020 have been analyzed. It was determined that the metallurgical industry of Ukraine is mainly focused on the export of crude products – ferrous metals. It was revealed that low level of domestic metal products consumption has being observed in Ukraine during recent years. It was investigated that obsolete production assets and inefficient production technology are used at domestic industrial enterprises. It has been proved that the main directions of solving of the metallurgical industry problems are the following: increase of domestic consumption of metallurgical products and modernization of the fixed production assets of metallurgical enterprises.

ПРОБЛЕМИ РОЗВИТКУ МЕТАЛУРГІЙНОЇ ПРОМИСЛОВОСТІ УКРАЇНИ І ШЛЯХИ ЇХ ВИРІШЕННЯ

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Ключові слова:
металургійна галузь, експорт, конкурентоспроможність, основні виробничі фонди, модернізація

Стаття присвячена дослідженню основних проблем металургійної галузі України. У статті обгрунтовано, що металургійна галузь України стикається як з зовнішніми факторами, що впливають на конкурентоспроможність вітчизняної металургійної продукції, так і внутрішніми чинниками, що стримують ефективний розвиток галузі. Визначено, що у 2020 році обсяги експорту металургійної продукції склали п’яту частину загального експорту товарів і послуг України. Проаналізовано структуру та динаміку експорту металургійної продукції за 2012–2020 роки. Встановлено, що металургійна галузь України більше зорієнтована на експорт сировинної продукції – чорних металів. Виявлено, що останні роки в Україні має місце низький рівень внутрішнього споживання металопродукції. Досліджено, що на вітчизняних промислових підприємствах використовуються застарілі виробничі фонди та неефективна технологія виробництва. Доведено, що основними напрямками вирішення проблем металургійної галузі є збільшення внутрішнього споживання металургійної продукції і модернізація основних виробничих фондів металургійних підприємств.

Introduction

The Ukrainian metallurgical industry has known to be one of the largest in terms of production and exports since Soviet times. The metallurgical industry is strategically important for the development of domestic economy. However, despite the fact that the metallurgy is still one of the most powerful sectors of the Ukrainian economy and accounts for almost a one-fifth of its merchandise exports, the volume of metal production is decreasing from year to year. Therefore, substantiation and solution of development problems of the metallurgical industry of Ukraine is important and urgent task.

Analysis of recent researches

The problems and prospects of metallurgy in Ukraine have been studied in recent years by many domestic researchers, including: V. Bolshakov, V. Mazur, S. Kulitsky, O. Klenin, O. Andriichenko, A. Amosha, A. Pivovarsky and others. At the same time, there is a lack of research on the current state peculiarities, problems and prospects for the development of metallurgical enterprises in Ukraine in modern conditions.

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Objective

To determine problems of development of metallurgical enterprises of Ukraine and work out recommendations to increase their competitiveness.

Presentation of the main research material

The first reason for the decline in exports of metallurgical products is the excessive metal production in the world and tough competition. Almost every country has its own metallurgical facilities today.

The situation is aggravated by the crisis of the world economy, which is accompanied by decrease in the production of finished metal products and low steel prices. Ukraine was also affected by the necessity to reduce metal products prices, while the price on iron ore, which is a raw material for metallurgical production, remains quite high.

The above mentioned has triggered a process of protectionist measures in a number of countries trying to protect their producers and metals market. The United States, for example, in 2018 introduced customs tariffs on imports of steel and aluminum and EU imposed import quotas on metallurgical products [1].

In general, due to the global crisis, companies in all countries have reduced manufacturing of metallurgical products, so the decline of production in Ukraine is a consequence of external trends.

However, another problem of Ukraine is that domestic consumption of metallurgical products does not keep up with production volumes. The average surplus was about 80% in recent years [2]. As a result, it is necessary to sell surplus metal products in the foreign market and the metallurgical industry is therefore becoming even more vulnerable to global fluctuations. Despite the fact that most of the products are exported, the supply of metal products on the world market exceeds demand and competition intensifies. This will lead to the «survival» of the world's most efficient metallurgical enterprises.

As for the internal problems of production, the metallurgical enterprises of Ukraine face the problem of obsolete equipment and fixed assets. Since the days of Soviet rule Ukrainian metallurgy has been characterized by high energy consumption due to use of open-hearth furnaces and inefficient technology of molten steel teeming into ingot molds at many enterprises. The use of open-hearth furnaces is the result of iron ore rich deposits in Ukraine, which is a raw material for two stage steel smelting, while modernized electric furnaces require more expensive and scarce scrap metal as a raw material. In general, open-hearth furnaces are still used only in Ukraine and Russia, but in Russia open-hearth steel accounts for about 3% of production, and in Ukraine it reaches one-fifth of steel production. This negatively affects the competitiveness of Ukrainian metal products [3].

The viability of Ukrainian metallurgical enterprises has also deteriorated significantly since 2014, when the conflict with Russia began, leading to the loss of the south-eastern regions, where metallurgical production facilities were concentrated. And businesses have become uncontrolled as a result of blockade of supplies from these areas. It is obvious that enterprises were forced to reduce their staff simultaneously with the reduction of production volumes.

Some companies are forced to reduce investment programs, which leads to complete stagnation of the industry. However, the reduction of specialists to date affects mainly administrative staff while investment projects envisaged by technological strategy and related to impact on the environment are in progress.

In the world market Ukraine is perceived as a country capable of producing mainly crude products. This position is due to inability to produce quality goods with high added value as a result of low competitiveness of Ukrainian enterprises with their outdated equipment and inefficient production technology.

Figure 1 shows the types of goods and services that account for the largest shares in Ukrainian exports in 2020.

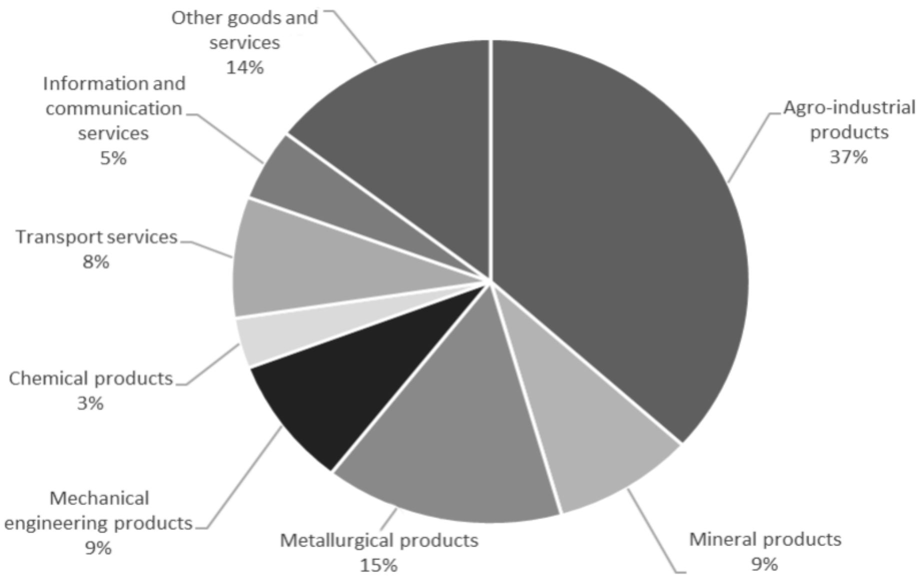

Fig. 1 – The structure of exports of goods and services of Ukraine in 2020

Source: compiled by the authors on the basis of [2]

Metallurgical products account for 15% of exports of goods and services in 2020 as depicted in Figure 1 and ferrous metallurgy is the second largest industry in terms of exports. Contemporary exports of metallurgical products account for almost one-fifth of total exports of goods. However, as already mentioned, the volume of exports of metal products in recent years has being declining. Figure 2 represents the dynamics of the volume and structure of exports of domestic metallurgical products.

The Ukrainian metallurgical industry is represented in foreign markets by ferrous metals. Crude metallurgical products and raw materials dominate in the structure of exports, finished ferrous metal products account for a much smaller share of production than unprocessed ferrous metals. This again causes the problem of raw material orientation of Ukraine. In addition, Figure 2 shows that the volume of ferrous metal products decreased by 5.2 percentage points during the period 2012–2020, from 14.9% to 9.7% respectively. The share of ferrous metals in total exports of metals, in contrast with above digit, increased by 3.8 percentage points during the same period of time. The problem, as well as for the agro-industrial sector, is partly due to obsolete production assets, the depreciation of which in the metallurgical industry in 2020 amounted to 55.8%.

The exports decline in 2016 is due to reduction in metallurgical enterprises manufacturing as a result of conflict aggravation in the south-eastern Ukraine.

As have been already mentioned, the primary problem of the metallurgical industry in Ukraine is not the reduction of exports and not even the dominance of raw and crude materials in its structure, but the lack of domestic consumption of metal products. Figure 3 depicts the ratio of domestic consumption of metal products to steel output for 2013–2018.

The volume of domestic steel consumption is only about 20% of production, which means the dependence of the metallurgical industry on exports. Currently, Ukraine is a net exporter of metallurgical products. But in recent years, the share of Ukrainian metallurgical products in the world production has declined significantly, while China and India have come to the dominant positions at the same time, which are quite competitive. This situation requires from Ukrainian

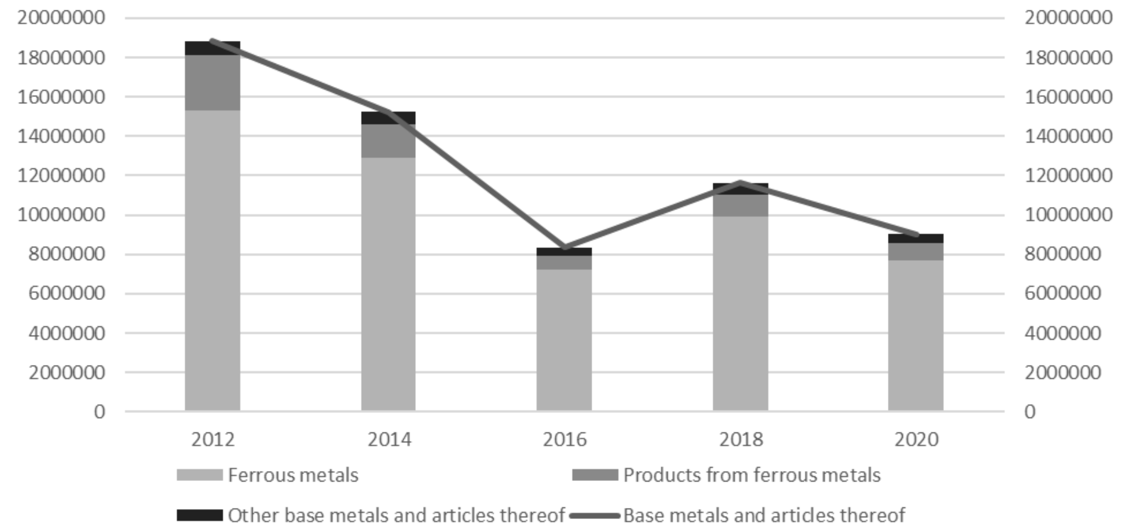

Fig. 2 – Dynamics of exports and the structure of the metallurgical industry of Ukraine in 2012–2020
Source: compiled by the authors on the basis of [2]

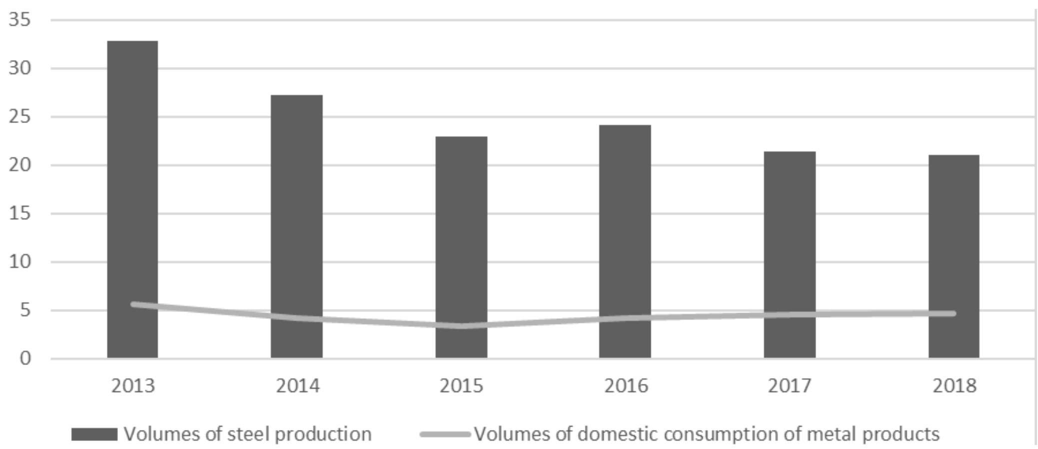

Fig. 3 – Dynamics of the ratio of domestic consumption of steel products to steel output in 2013–2018, million tons
Source: compiled by the authors on the basis of [2]

enterprises either to improve the quality of metal products up to the world standards, or to reduce imports of metallurgical products by expanding domestic consumption.

According to the World Steel Association: «The technological process of steel smelting in Ukraine is inefficient compared to world figures, and due to the use of open-hearth furnaces and technology of molten steel teeming into ingot molds is excessively energy-intensive» [4]. However, as have been mentioned earlier, although open-hearth furnaces require high energy consumption, they need cast iron made of iron ore as a raw material, which Ukraine has in large quantities. Whereas electric furnaces require more expensive and scarce charge materials – scrap, although scrap recycling is less energy consuming.

Last but not least is the problem of fixed assets modernization at metallurgical enterprises. The development of our own production facilities is the ultimate goal of modernization and innovation, but this process is long-term and will take at least a decade. Even complete equipping of Ukrainian enterprises with new means of production will not be possible in 7–10 years, if only the own funds of companies are assumed to be used as is observed today. Based on the fact that the development and commissioning of upgraded production facilities takes at least 10 years, it would be more appropriate to use other opportunities to borrow technologies. This modernization trend, surely, is already used by Ukrainian manufacturers and the most prevalent is import of machinery and equipment [5].

However, borrowing can also take other forms, such as:

1) copying and reproduction of samples of equipment;

2) creation of joint ventures with foreign owners of technologies;

3) joining technological alliances;

4) acquisition of production assets under the leasing scheme.

Conclusions

Thus, in the context of the crisis of the world economy, lack of domestic consumption of metallurgical products, high energy intensity of production and low level of metal products competitiveness compared to world analogues, Ukraine should take measures to develop its metallurgical industry. First of all, Ukraine should promote sales of metallurgical products in the domestic market reducing the dependence of production on global fluctuations. Implementation of innovations at metallurgical enterprises would reduce the energy intensity of products and their cost. New technological solutions would also facilitate manufacturing improvement and diversify the product range, reduce ecological pressure on the environment. The state, in turn, could improve the relationship between investors and enterprises, scientific cooperation between science and manufacturing, as well as determine the scope and priorities in financing scientific and technical activities aimed at the development of the metallurgical industry.

It is essential to modernize production facilities in order ensure compliance of domestic metal products with requirements of both foreign and domestic markets, reduce production energy intensity and, as a consequence, increase the efficiency of the manufacturing process. The reduction in exports will lead to less dependence of the metallurgical industry on global fluctuations as in the case of the export-oriented agricultural sector.

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