

# “Metallurgical complex of Ukraine: dynamics and development prospects”

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# METALLURGICAL COMPLEX OF UKRAINE: DYNAMICS AND DEVELOPMENT PROSPECTS

## Abstract

The conducted research reveals the role of the metallurgical complex of Ukraine in world production and export of steel. Its development indicates inertia and is in a pre-crisis condition. But, at the same time, there are prospects for the development of the enterprises of the metallurgical complex of Ukraine, which appears to be the purpose of the study along with an assessment of the dynamics of the development of the metallurgical complex of Ukraine regarding the internal and external factors of influence on it. Therefore, the object of the research is the current state of development of the metallurgical complex of Ukraine. For this purpose, the main methods of steel processing and fuel consumption for their melting are determined, which, thus, emphasizes the extraordinary energy intensity and cost structure of steel production in Ukraine due to 21.4% of processing in open-hearth furnaces. As a result, on the basis of the comparative analysis, the structure of production was characterized by the degree of steel processing, which indicated the inertia of the development of the industry on the principle of total exploitation of available resources. Through systematic structural analysis, the types of economic activity, the results of the enterprises, which were taken into account in the research of the development of the metallurgical complex of Ukraine and identified their implementation under the imperative incremental destructive factors of the internal and external environment, were identified. With the help of empirical research, in the institutional environment instability of normative legal provision, regulatory restrictions on FDI inflow and investment protectionism in metallurgy were revealed. The critical dependence of the industry on demand in foreign markets based on the export orientation of raw materials is established. For example, it has been determined that at the expense of products below the average technological capacity, almost a quarter of the export basket of Ukraine was formed. It was found that metallurgical production is a zone of interests of powerful industrial and banking private business groups of residents and non-residents. The absence of a state-owned joint-stock company or a holding company in Ukraine with a main type of activity in the investigated industries is emphasized.

## Keywords

business groups, metallurgical enterprises, metallurgical products

## JEL Classification

L13, L25, L61

## INTRODUCTION

At the present stage of development in the structure of industry in Ukraine, the metallurgical complex forms almost one fifth of the realized industrial output and is characterized as export-oriented. At the same time, the development of its enterprises is inertial and with the annual decline in value added. A retrospective survey shows that Ukraine was one of the five leaders in the export of metallurgical products. Unfortunately, Ukraine did not maintain these positions and in the results of the period 2014–2016, it ranked 10th in the ranking of the main producers of metallurgical products. This was due to the incremental effect of a number of factors that predetermine the extension of the “effect of the track” and the inertia of institutional transformations. Therefore, the study of modern dynamics and prospects for the development of the enterprises of the metallurgical complex in Ukraine is an extremely urgent task.

## 1. LITERATURE REVIEW

Among the scholars, a number of works are devoted to various aspects of the study of the metallurgical complex of Ukraine. In particular, in the work of But (2016), a system of criteria and indicators for the diagnosis of the development of the metallurgical complex was formed.

In their study, Kapituli and Capitulus (2016) carried out an analysis of specifics of the mining and metallurgical complex of Ukraine in terms of categories of “uncertainty” and “risk”.

Lipisienko and Tchaikovsky (2016) conducted a comparative analysis of the state of the metallurgical industry in the countries of the world, determined the main problems hindering the development of the metallurgical industry in Ukraine and possible prospects of industry development in the context of world trends.

In the paper by Vlasyuk (2016), the consequences of the conclusion of the Association Agreement between Ukraine and the EU for the metallurgical industry were considered, and the priorities of the state economic policy regarding the development of the metallurgical industry, strengthening its export potential and strengthening foreign economic security were determined.

Gromova (2012) analyzes the state and main prospects of the development of innovations and modernization of production capacities of the metallurgical complex of Ukraine, taking into account export potential, competitiveness in world markets, product range, pricing policy, etc.

Kaut (2015) explores volumes of metal production by manufacturers, problems, risk factors and measures to modernize the activity of metallurgical enterprises in Ukraine, and the specifics of technical risks at metallurgical enterprises during the period 2005–2012.

Scientists of the National Institute for Strategic Studies (2014), analyzing the internal and external environment Ukraine, identified the current trends in the development of the metallurgical complex and noted that, during 2016, there existed the most actual threats to the Ukrainian metallurgical in-

dustry and that there was a loss of strategic assets. However, the authors analyze the issue more from the point of view of internal rather than external problems and perspectives of industry development.

Sukhorukov, Sobkevich, and Vorobyov (2012) analyze the state of the metallurgical industry of Ukraine in the context of post-crisis recovery of the domestic economy. The authors propose measures for reforming the domestic metallurgical industry aimed at reducing energy intensity production, increasing the demand on the domestic market for domestic products of the metallurgical industry, stimulating the export, and ensuring the competitiveness of metallurgical products.

The results of modern research are characterized by ambivalence regarding the role of metallurgical products in the commodity structure of Ukraine's production and exports. Due to the divergence of research results, difficulties arise in determining Ukraine's competitiveness in the global market for metallurgy goods, in identifying qualitative trends in export flows, and in carrying out objective comparative analysis with other countries. However, the presence of a number of works on the identified problem highlights the retrospective of the development of metallurgical industry of Ukraine, leaving out the attention to dynamic processes at the present stage of its development, the study of which is a prerequisite for critical analysis and accountability management decisions about the leveling of destructive-incremental influence of factors of the internal and external environment.

## 2. OBJECTIVE

It is a matter of researching the current dynamics and prospects of the development of the metallurgical complex of Ukraine on the basis of identification of stimulating and destructive factors of the internal and external environment.

## 3. DATA AND METHODS

Methods of economic and comparative analysis were used to monitor the results of activity of the metallurgical complex of Ukraine and to study the trends of their development in the time interval

of 2011-2017. To study the institutional provision of the development of metallurgical enterprises, a systematic and structural analysis and empirical methods are used. Sources of information in the study were the resources of Business Monitor International Company Fitch Group, Comtrade United Nations Statistics Division, State Statistics Service of Ukraine, and the Statistical Yearbook of Steel, issued by the World Steel Association. Indicative base forms the cost and quantity indicators of volumes of production, consumption and export of metallurgy products in Ukraine and in the world. The basis for the selection of indicators is the principles of validity, selectivity, diagnostic power, reliability, representativeness and systematicity.

## 4. RESULTS

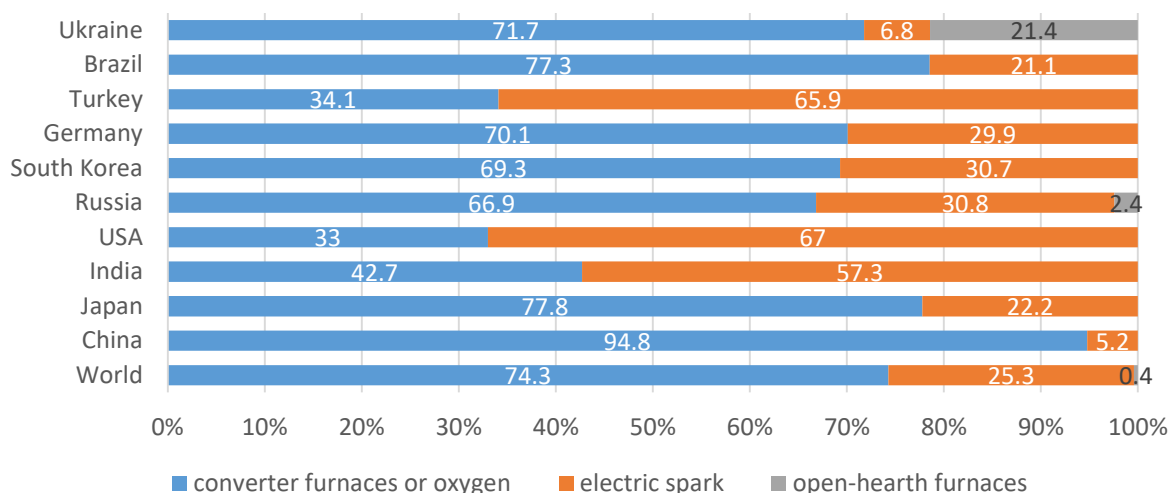
Estimation of the global position of enterprises of the metallurgical complex of Ukraine shows that in 2016, 24.2 million tons of crude steel were produced, which is 1.2 million tons more than in 2015. If we analyze the share of extraction in world total production, according to the World Steel Association, it was, in 2016, only 1.49%, which is 0.07% more than in the previous period (World Trade Organization, 2017).

The necessity of building a system for managing the activity of the enterprises of the metallurgi-

cal complex with the transition to innovative methods confirms the statistics of the World Association of Steel Manufacturers regarding its processing. Practice shows that there are three main methods of steel processing, namely processing in converter furnaces or oxygen, electric spark, in open-hearth furnaces (Hudson, Sadler, 2017). The fuel cost for the smelting of 1 ton of converting steel is 5.7 kg of conventional fuel (cf.), open-hearth steel – 106.6 kg per year (Fedina, 2014). The world's top ten steelmakers are demonstrating that the vast majority of countries treat steel with the first two methods, and only Ukraine and the Russian Federation are using processing in open-hearth furnaces (Figure 1).

In Ukraine, for steel processing in open-hearth furnaces in 2016, it accounted for 21.4% of total production and 75% of production in this way in the world (World Steel Association, 2017). This method of steel processing is not used in the EU countries (including Latvia from 2011, Belarus and Uzbekistan – from 2012, India – from 2015). Although in the structure of metallurgical production in Ukraine, the share of steel processing in the open-hearth furnaces has decreased by 1.2% in 2015 in favor of electric spark handling, but in general, it remains extremely energy-intensive and costly, which prevents Ukraine from becoming a more powerful leader in the metallurgical industry. Replacing the open-hearth melting process in the amount of 5.18 million tons in 2016 by the con-

Source: Built according to World Steel Association (2017).



**Figure 1.** Structure of production of metallurgical products by the enterprises of the leading countries for steel production by the processing method in 2016, %

**Table 1.** Production volumes of finished steel products in the period 2007–2016, kg/person

Source: World Steel Association (2016), World Steel Association (2017).

Country	2007	2010	2011	2012	2013	2014	2015	2016	Base change, %
China	313,0	438,2	475,6	487	539,5	519,0	488,6	492,7	157.4
Japan	631,7	499,3	503,7	503,0	513,8	533,9	497,3	492,6	78.0
India	43,6	52,8	55,9	57,3	57,6	58,7	60,6	63,0	144.5
United States	360,2	257,8	285,5	305,6	301,8	335	297,4	282,7	78.5
Russian Federation	282,1	256,7	289,7	298,7	302,1	299,8	274,6	265,7	94.2
South Korea	1125,2	1067,2	1142,5	1089,9	1038,4	1108,8	1113,6	1130,2	100.4
Germany	525,2	450,5	506,2	465,9	471,8	491,6	483,8	499,5	95.1
Brazil	115,5	134,3	130,1	131,3	137,2	124,3	102,6	86,9	75.2
Turkey	341,5	325,9	366,3	380,3	410,6	396,9	436,8	428,0	125.3
Ukraine	173,6	119,9	139,2	138,7	123,6	94,8	74,7	96,4	55.5

verter method would allow to reduce almost 522.5 million tons. In the equivalent of natural gas, it is 0.44 billion cubic meters, or almost 4% of natural gas imports to Ukraine in 2016 (Natsionalna aktsionerna kompaniia "Naftohaz Ukrainy", 2018).

In 2017 (according to preliminary data), in Ukraine, steel production decreased by 6.4%, with an annual indicator of 22.7 million tons (Walters, Forder, 2018). By degree of processing, 51.2% of steel is produced in ingots, the rest – semi-finished products, which, in the industry, are considered ready-made products. There is no similar production structure in any country in the world, which indicates the inertia of the industry development on the principle of total exploitation of available resources and the absence of alternative implementation of the results of innovative processes. The finished steel products were manufactured in the volume of 4.3 million tons, which is almost one third less than in 2011. For comparison, at the same level of production in 2016, it was Argentina, which, in the overall ranking of producers, occupies the 33rd place. Taking into account the population of Ukraine, the manufactured products of steel are 96 kg/person, and products of untreated steel – 110 kg/person. Compared to 2014, volumes of production have not changed, and with the pre-crisis period – decreased almost twice. Table 1 shows volumes of finished products from steel in kilograms per capita, dozens of countries-leaders in the manufacturing of metallurgical products.

Estimation of volumes of manufactured steel products per capita in the top 10 countries shows that less than 100 kg/person is produced by Brazil, India and Ukraine, over 1000 kg/person – South

Korea, in the range of 400-500 kg/person – Japan, China, Germany, Turkey. In comparison with the pre-crisis of 2007, Ukraine has the largest drop in the production of finished products from steel.

The research of the metallurgical complex of Ukraine takes into account the results of the activities of the enterprises of the following types of economic activity: section 05 for QVED-2010 – mining of stony and brown coal; section 07 – extraction of metal ores; section 08 – extraction of other minerals and development of quarries; section 24 – metallurgical production; division 25 – manufacture of fabricated metal products, except machinery and equipment.

It should be noted that existing metallurgical enterprises in Ukraine do not work at full capacity. According to various estimates, the capacity utilization by the corresponding enterprises does not exceed 65-70% and has a downward trend. The reason for this is not only the loss of strategic assets and the destruction of infrastructure base industries (Horbulin, Vlasiuk, & Liashenko, 2017, p. 576). In addition, the degree of depreciation of fixed assets is increasing each year and, in 2016, it reached 59.2% versus 41.2% in 2014 (Table 2). In general, for the industries of Ukraine, the opposite tendency is characteristic, as the degree of depreciation of fixed assets decreased from 83.5% in 2014 to 58.1% in 2016.

Some renewal of fixed assets occurred due to large capital injections in metallurgical production compared with the production of finished metal products. In particular, only iron and steel production and ferroalloys were invested in 2016



**Table 2.** Dynamics of fixed assets of enterprises of the metallurgical complex of Ukraine

Source: Compiled and calculated according to the data of the State Statistics Service of Ukraine (Derzhavna Sluzhba Statystyky Ukrainy, 2017).

Year	The cost of fixed assets				Degree of depreciation of fixed assets, %	Growth (decrease) in fixed assets, %
	At the beginning of the year		At the end of the year			
	UAN billion	In % to the total volume	UAN billion	In % to the total volume		
2014	386,4	3.95	451,8	3.2	41.2	97.4
2015	466,8	3.3	501,3	6.6	55.9	100.7
2016	497,0	6.3	591,2	7.2	59.2	325.1

in the amount of UAH 11,2 billion, while in the manufacture of finished metal products, in addition to machinery and equipment – UAH 1.7 billion. In general, according to the results of 2017, metallurgical production directed UAH 36.3 billion, or 8.8% of developed investments in Ukraine (Table 3). In the period 2014–2016, UAH 24.6 billion, UAH 22.6 billion and UAH 26.7 billion, respectively, were capitalized. The smallest amount of capital investment is directed at metal casting.

False tendencies towards the capitalization of Ukrainian metallurgical enterprises not only affect their value and international competitiveness, but also exacerbate the development of the metallurgical industry in Ukraine. In 2017, only 8.4% of FDI was sent to metallurgy. Taking into account the regulatory restrictions on FDI inflow (Organisation for Economic Co-operation and Development, 2017) and investment protectionism (Organisation for Economic Co-operation and Development, 2017) in metallurgy, it is more appropriate to talk about the survival possibilities of the industry than on the upward trend. Consequently, the need for an integrated system for managing the activities of Ukrainian metal-

lurgical enterprises based on world-class instruments is urgent.

In the ranking of steel exporters in 2016, Ukraine ranked 7th in terms of natural numbers (18.2 million tons of semi-finished and finished steel products, or 75% of production) (World Steel Association, 2017). In the top 50 steel producers, Ukraine is represented by Metinvest holding, which, in 2016, ranked 37th in terms of world production (Table 4) and provided over 56% of Ukrainian production.

Although not included in the rating, the weight of another Ukrainian corporation – “Industrial Union of Donbass”, whose production corresponds to 59 steps, is determined.

On the international steel market, Ukraine acts as a net exporter, providing 3.8% of world exports of finished products and finished steel products, and only China, Japan and the Russian Federation are behind the trade balance. In addition, Ukrainian exporters provided in 2016 the world market with 19.5% pig iron (2.5 million tons, or 10.8% of production), 2.5% iron ore (39.2 million tons, or

**Table 3.** Dynamics of capital investments of enterprises of the metallurgical complex of Ukraine

Source: Compiled and calculated according to the data of the State Statistics Service of Ukraine (Derzhavna Sluzhba Statystyky Ukrainy, 2018).

Type of economic activity	2014	2015	2016	2017	Base change, %	Change to 2016, %
Extraction of stony and brown coal, UAH billion	4,5	3,4	5,0	6,1	135.6	122.0
Extraction of metal ore, UAH billion	7,3	5,8	6,0	10,6	145.2	176.7
Extraction of other minerals and development of quarries, UAH billion	1,0	0,9	1,0	1,6	160.0	160.0
Metallurgical production, UAH billion	10,8	11,4	12,9	15,9	147.2	123.3
Manufacture of fabricated metal products, except machinery and equipment, UAH billion	1,1	1,1	1,7	2,2	200.0	129.4
Total, UAH billion	24,6	22,6	26,7	36,3	147.6	136.0
Share in capital investments in Ukraine, %	11.2	8.3	7.4	8.8	78.6	118.9

**Table 4.** Location of Ukrainian enterprises among the world steel producers

Source: World Steel Association (2016), World Steel Association (2017).

Company	Output, million tons						Place in the world, 2016
	2011	2012	2013	2014	2015	2016	
Metinvest holding	14,34	14,34	14,29	11,18	9,65	10,34	37
Industrial Union of Donbass	–	8,49	7,94	6,03	–	–	–

55.5% of production), 0.3% of scrap (World Steel Association, 2017). Such a foreign trade position confirms the export-oriented industry.

In the commodity structure of exports in 2015, 24.8% were for metallurgy, including 21.2% for the group of “ferrous metals”. Forming almost a quarter of the export basket at the expense of products below the average technological capacity (Zubko, 2011) indicates its inefficient structure and extensive hysteresis of GDP. Taking into account the fact that Ukraine is an exporter of metallurgical raw materials, and not of finished products, it is necessary to talk about the critical dependence of the industry on demand in foreign markets. They traditionally belong to the EU countries (including Italy, which accounted for 12.7% of Ukrainian exports of metallurgical products, Poland – 5.4%, Bulgaria – 4%), the Middle East (Turkey – 17%, Egypt – 11.9%) and Asia (Russia – 14.5%) (UN Comtrade, 2017).

This situation again confirms the need for strategic management decisions on the activities of metallurgical enterprises in both domestic and foreign markets. According to Igbaekemen, any strategic decisions are based on reliable data and analytical information (Igbaekemen, 2014). Getting iterative and credible relevant information helps in predicting, identifying, analyzing, solving or preventing problems.

It should be noted that, thanks to the efforts of the Government of Ukraine, the use of trade barriers to Ukrainian products in the USA, Canada, Argentina, the EU, Turkey, Egypt, India, Belarus, etc., was abolished and prevented on the external markets (Shevchenko, 2017). In 2018, the domestic market of Ukraine protects the interests of producers through the use of 140 instruments of non-tariff regulation of special, compensatory measures on import of goods into Ukraine, of which 4 (an-

tidumping duty, 2 quotas, technical barriers) concerned imports of steel products (World Trade Organization, 2017).

The enterprises of the metallurgical complex, which manufacture and export products, are the sphere of interests of various associations of enterprises – business groups that play an important role in the development of the Ukrainian economy (Table 5). As a result, practically all powerful business groups (industrial, banking) control certain metallurgical objects of Ukraine.

Now, in Ukraine, there are 15 business groups in the metallurgical industry. Individual business groups went into control over the generating companies (mining, concentrating, coking plants, coal mines, “oblenergos” (regional energy supply companies)), since metallurgical production needed cheap electricity in large volumes. Such areas of control over metallurgical production identified the main lines of the most powerful modern Ukrainian business groups.

The preliminary stage for forming strategic directions of activity management of the metallurgical enterprises is to determine the internal causes that led to the inertia of the development of the enterprises under investigation.

The overall economic downturn has affected the results of the activity of the metallurgical complex of Ukraine. In 2016, the volume of sales has increased compared to 2014 by almost UAH 112.5 billion in absolute terms and 30% in relative terms.

The number of enterprises of metallurgy and metalworking in 2016 amounted to 4,400 units, having decreased by 445 enterprises (Table 6).

At the same time, the number of employees and wage costs in this area have not undergone sig-

**Table 5.** Business groups operating in the metallurgical complex of Ukraine

Source: Compiled and calculated according to the data of the State Statistics Service of Ukraine (Derzhavna Sluzhba Statystyky Ukrainy, 2018).

No	The name of the association	Country of registration	Scope of activity								
			Metallurgy	Mining	FEC	AIC	Construction	Finance	Chemical industry	EET	Other
1	FIG "Pryvat" (informal)	Ukraine	+	+	+	+	+	+	+	+	+
2	Corporation "Industrial union of Donbas"	Ukraine	+		+	+					+
3	FIG SKM	Ukraine	+	+	+	+		+		+	+
4	FIG "Metal Union"	Ukraine	+	+	+			+	+		+
5	FIG "Al'tcom"	Ukraine		+		+	+				
6	FIG "Smart-Holding"	Ukraine	+	+	+	+	+	+			
7	International holding company Group DF	Austria		+	+	+	+	+	+	+	+
8	FIG "Ukrpidshypnyk"	Austria	+				+				
9	Group "DonetskSteel"	Ukraine	+	+							
10	FIG "Finance and credit"	Ukraine		+	+	+	+	+	+		+
11	Evrast Group S.A.	Luxembourg	+						+		
12	Group APC	Ukraine		+			+				
13	Group Embrol Ukraine	Ukraine		+	+	+					+
14	Holding "UkrSteelConstruction"	Ukraine	+				+				
15	Group EastOne	UK	+			+	+	+		+	

nificant changes in relative indicators in the relevant structures in the industry in Ukraine. However, in absolute terms, employment from 2014 decreased by 75.3 thousand people, and the salary fund – by UAH 8.5 billion. It should be emphasized that the share of labor costs in the enterprises of metallurgy and metal processing relative to the volume of sales has decreased from 12.2% to 7.6%. Instead, the sale of products, converted to 1 UAH of labor costs, increased from 8.2 UAH to 13.2 UAH. Compared to the results of the Ukrainian industry (UAH 9.8 and

UAH 15.4, respectively), respectively), metallurgy and metal processing enterprises have lower rates, indicating a low level of value added and inadequate innovation activity.

An important analysis of the dynamics of the number of enterprises as a whole and the organizational and legal form of management is an analysis of the strategic directions of the activity of enterprises of the metallurgical complex. In October 2017, 9,482 legal entities belonging to the metallurgical complex were registered in the EDRPOU (Table 7).

**Table 6.** Dynamics of the main indicators of activity of enterprises of the metallurgical complex of Ukraine in the period 2014–2016

Source: Compiled and calculated according to the data of the State Statistics Service of Ukraine (Derzhavna Sluzhba Statystyky Ukrainy, 2017).

Indicator	2014	2015	2016	Average growth rate, %	Share in the industry of Ukraine, %		
					2014	2015	2016
Volume of sold products, UAH billion	373,9	427,3	486,3	130.1	24.17	22.64	21.09
Number of enterprises, units	4,717	4,878	4,433	94.0	11.18	11.46	11.50
Number of hired employees, ths.	529,9	492,7	454,6	85.8	21.90	21.98	20.97
Labor costs, UAH billion	45,43	33,82	36,96	81.4	28.70	26.81	24.61



**Table 7.** Dynamics of the number of EDRPOU entities for the enterprises of the metallurgical complex of Ukraine by the organizational and legal form of management

Source: Compiled and calculated according to the data of the State Statistics Service of Ukraine (Derzhavna Sluzhba Statystyky Ukrainy, 2017).

Indicator				Number of subjects in the industry, units	Share in the number of subjects, %	
					Ukraine	Industry
As of	January 1, 2015	Total		8,186	0.42	100
		incl. by organizational form	1	1,423	0.07	17.4
			2	179	0.01	2.2
			3	5,968	0.31	72.9
			4	10	0.00	0.1
			5	606	0.03	7.4
	January 1, 2016	Total		8,706	0.44	100
		incl. by organizational form	1	1,365	0.07	15.7
			2	147	0.01	1.7
			3	6,092	0.31	70.0
			4	1	0.00	0.0
			5	1,101	0.06	12.6
	January 1, 2017	Total		9,300	0.50	100
		incl. by organizational form	1	1,469	0.08	15.8
			2	148	0.01	1.6
			3	7,046	0.38	75.8
			4	1	0.00	0.0
			5	636	0.03	6.8

Note: 1 – private enterprises; 2 – state and state-owned enterprises; 3 – economic companies; 4 – associations of enterprises (legal entities); 5 – other.

The largest number of enterprises is registered in the manufacture of building metal constructions and parts of structures (25.11 code for KWEED), which is 0.08% of the total number of registered legal entities. In general, for the industry, the share of registered legal entities is increasing from 0.42% (8,186 enterprises) in 2014 to 0.5% (9300 enterprises) in 2016.

Thus, in spite of a decrease in sales of the studied types of economic activity, there is a tendency to increase their role in the number of enterprises. This is due to the faster rate of liquidation of enterprises in other areas, compared with the analyzed ones. In 2016, 108.8 thousand units ceased to exist in Ukraine, or 5.5% of registered legal entities.

According to the organizational and legal form of management in the studied industries, more than 90% of enterprises are registered as limited liability companies and private enterprises. Their shares in early 2017 accounted for 75.8% and 15.8%, respectively. The share and number of state and state-owned enterprises is unimportant and decreasing from 2014. No state-owned joint-stock company or holding company with the main type

of activity in the investigated industries is registered in Ukraine.

Since 2011, the volume of production of major types of metallurgical products has tended to decrease, decreasing in 2016 compared with 2011 in the natural volume on average by almost a third. The reduction in production volumes affected all major types of metallurgical products, except for some of the types mentioned in Table 8.

The greatest decrease in the volume of production was obtained by positions such as central heating boilers for producing hot water or low pressure steam from black metals.

The reduction of natural volumes of production took place in virtually all the range of products. In 2016, the volume of steel melting was 63.6% from the level of 2011, the ferroalloys – 92.9%, cast iron – 81.7%, semi-finished products – 74.2%, rolled products – 68.2%, tubes – 41.7%. In addition, such volumes of production are lower than in the pre-crisis of 2007 and correspond to the level of the period 1995–1996, which indicates the weak ability of the industry to recover.

The fall in volumes of production is attributable to the reduction of demand in the traditional foreign markets and the reduction of the needs of industries consuming metallurgical products. According to various estimates, the need for new freight cars in Ukraine during the period 2017–2020 will be 53.7–69.2 thousand units (Lipskiy, 2017). Consequently, the machine-building industry generates strong demand and can support the market of metallurgical products of Ukraine.

However, the volatile institutional environment, including regulatory levers, does not contribute to the stable development of the metallurgical complex. The volatility of the regulatory framework demonstrates constant changes to the Tax Code (107 revisions from 2011) and Customs (32 revisions from 2012) Codes (Natsionalnyi Instytut Stratehichnykh Doslidzhen, 2016). As a result, the activities of enterprises are accompanied by increased financial risks. This is directly reflected in the investment attractiveness of enterprises. In particular, in 2016, the Canadian company BlackIron (in Ukraine, it is represented by Shimanivsky Steel Ltd.) announced that it is considering investing in other European mining projects, since it is aimed at compensating for potential risks of the production of iron ore in Ukraine (Business Monitor International, 2016).

In contrast, Australia has signed an agreement with the Government of Ukraine on the supply of uranium by Ukrainian nuclear power plants (Kabinet Ministriv Ukrainy, 2017), underlining the fact that uranium production in the country is rising from

2014. The development of production and foreign trade in nuclear fuel also indicates a fall in the status of thermal coal in energy balance of Ukraine.

Despite the negative tendencies in the development of the metallurgical industry, Ukrainian metallurgical enterprises managed to consolidate themselves in the world market at the expense of selling metals and metal products at low prices.

According to BMI research, in the period 2018–2020, the average world price for steel is expected to be \$540/t, which is well below the level in the period 2012–2016 – \$594/t (Business Monitor International, 2018). At the same time, steel production in China, the world's largest steel producer, will start to decline in 2018 due to the fall in steel prices and the government's desire to reduce excess capacity in the industry. Remaining among the main steel consumers, the growth of China's share in consumption is projected to increase from 44.8% in 2017 to 48–50% in 2020. As a result, in the period 2018–2020, an increase in the steel deficit is expected due to global annual consumption growth by 1.6%. For Ukraine, this situation is favorable, since it will allow to use the unused capacities, increase production and increase export of steel.

Although international prices for metallurgical products remain under the pressure of weak global demand and strong investors (Steel Times International, 2016), it is expected that metallurgy will continue to be a source of foreign exchange inflows and will help the entire Ukrainian economy.

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## CONCLUSION

In the process of assessing the global position of enterprises of the metallurgical complex of Ukraine, it is determined that the share of steel extraction by Ukrainian enterprises in the total world production is rather low. Also, Ukrainian enterprises of the metallurgical complex are processing steel using outdated methods in open-hearth furnaces, which is too energy- and material-consuming. Therefore, an important task is to build an effective production management system with the transition to innovative methods.

It was established that enterprises of the metallurgical complex of Ukraine develop inertia on the principle of total exploitation of available resources. The global development of such enterprises suggests their innovative development. The directions of the transition to innovative development should be the creation of conditions for the production of metallurgical products of a deeper processing and the abandonment of outdated methods of production. And this, in turn, will reduce the import of natural gas to Ukraine by 4%.

It is proved that the control of the metallurgical enterprises of Ukraine to a limited number of private business groups creates restrictions on investment infusions and prolongs investment protectionism. The instability of regulatory mechanisms leads to an increase in financial risks and investment attractiveness of the industry. Therefore, the first priority is the search for ways to activate and create conditions for investment attractiveness of the industry.

It has been determined that the prolongation of the industry's critical dependence on demand in the traditional foreign markets of the EU, the Middle East and Asia due to the export of predominantly low value added metallurgical raw materials creates a number of risks and threats in the event of lower prices for steel, which is one of the main export goods of Ukraine. The reduction of domestic and external demand has led to a decline in natural production volumes.

Consequently, the prospects for the development of enterprises of the metallurgical complex of Ukraine should be: putting into operation non-tariff regulation instruments for the import of metallurgical goods to protect the market in Ukraine; the necessity and urgency of implementing a comprehensive system for managing such enterprises; the need for the renewal of fixed assets of the industries-consumers of metallurgical products; forming a strong domestic demand in the market of metallurgical products in Ukraine. And, the growth of the steel shortage in the international market should create the preconditions for the intensification of external demand, production and export of Ukrainian metallurgical products in the period 2018–2020.

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