

STATE-OF-THE-ART OF WELDING EQUIPMENT AND CONSUMABLES MARKET IN UKRAINE

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Welding as a main technology of materials joining is an integral part of commercial sector of economy, integrated into production process of the basic branches of industry. The paper presents systematic economical-statistical information on state and evolution of market of welding equipment and consumables in Ukraine, indices of volumes of their production and export-import operations. Production capacities of enterprises-manufacturers allow both the satisfying of domestic market demand, as well as delivery products to the foreign market. 9 Ref., 11 Figures.

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The processes of globalization of the world economy [1, 2] influence the domestic market of welding equipment in Ukraine and predetermine the need in investigations of its state to reveal the challenging directions of development of welding production, optimal ways of functioning of Ukrainian enterprises and ensuring a stable demand for products in the conditions of rigid competition at the domestic and foreign markets. The works [3–5] are devoted to economic and statistical analysis of the state of the world market of welding equipment and consumables. The regional peculiarities and prospects of its development are considered in the works [6–9], in which it is shown that the strategies of development of national welding productions in the medium-term perspective almost have no sharp differences and are focused on solution of the most urgent problems, among which the increase in volumes and expansion of fields of application of welding and related technologies, enhancing in efficiency of technological processes at the simultaneous providing the high quality of joints, as well as reducing the energy consumption and total production costs for welding and related technologies. The aim of the work is the investigation of the state and tendencies in the development of market of welding equipment and consumables in Ukraine. Such an analysis allows determining the necessary solutions for successful functioning of Ukrainian producers and ensuring a steadily growing demand for their products.

The welding production in Ukraine is a complex scientific-technical and production complex of the national economy, in which about 80 thou people are involved. Its main components are scientific centers, leading research and developments of new welding technologies, equipment and consumables; industrial enterprises realizing the production of modern basic and auxiliary equipment, welding consumables, means of protection of production and ambient environment; a network of organizations which provide relation be-

tween designers and consumers of welding equipment; system of training of engineering and working personnel, consisting of higher educational establishments of the I–IV accreditation level and vocational schools.

The regional structure of capacities of welding production in Ukraine and the output of welded structures is shown in Figure 1. The greatest number of industrial enterprises, producing more than a half of welded structures manufactured in the country, is concentrated in the Donetsk-Pridneprovsk region, where large industrial associations of different industries are located.

The welding equipment and consumables for welding and brazing are the important components of welding production in Ukraine. The capacities of Ukrainian enterprises as to their production allow meeting the needs of both the domestic market as well as delivering the products to foreign markets. The dynamics of production of welding equipment and welding consumables is shown in Figure 2. It is seen that during crises in the economy, the volumes of production are significantly reduced and during recovery, they are increased to the pre-crisis levels. The unfavourable situation at the world market, political and economic crises in Ukraine caused a reduction in industrial production and, as a consequence, a decrease in the outputs of welding consumables, which is observed in all groups of welding consumables. The production of welding equipment after recession in 2014 gradually recovered and reached a maximum value of 26.7 thou units in 2016. This indicates the fact that enterprises manufacturers of welding equipment adapted to the new conditions of the domestic market.

Welding equipment. A significant segment of the Ukrainian market of welding engineering products is the production of welding equipment. In Ukraine, there are 39 enterprises-manufacturers of welding equipment certified in the system UkrSEPRO [1], whose production capacities provide the total production of 20–25 thou units of equipment per year.

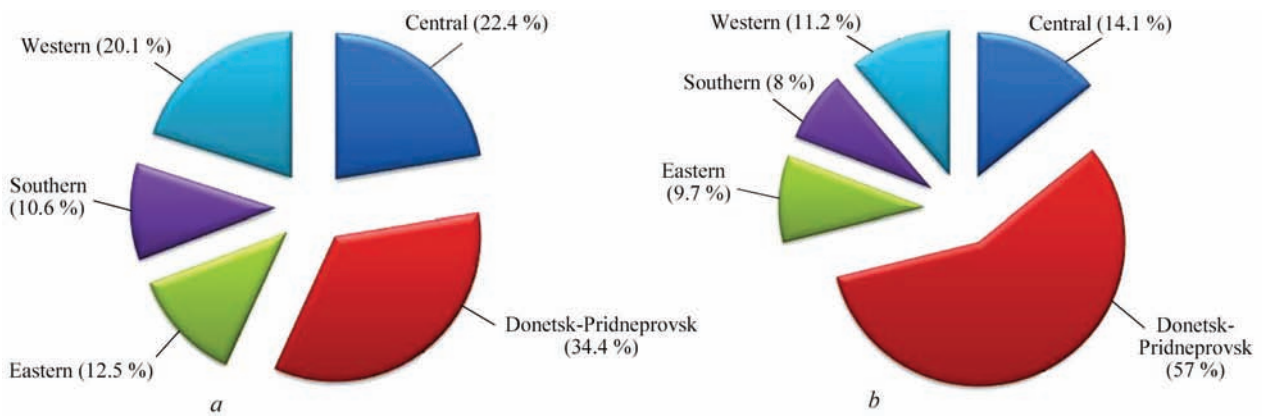


Figure 1. Regional structure of enterprises on output of welded structures (a) and volumes of their production (b) in Ukraine (composition of regions according to classification of State Committee of Statistics of Ukraine)

The output of welding equipment in Ukraine is oriented to consumption both within the country in different branches of industry and construction, as well as to delivery to the foreign markets. The volumes of production depend on the state of the Ukrainian economy and demand in the domestic and global sales markets. The realization of large infrastructure projects (for example, preparation for Euro-2012) facilitates the increase in business activity of enterprises, engaged in performance of works, and growth in demand for welding equipment, and this, in its turn, stimulates the growth of its production volumes and realization. Since 2013, at the main foreign markets, a decrease in demand for many products of Ukrainian industry is observed. This caused a recession of the production in the export-oriented industries and reduction in demand for many industrial products, including welding equipment. The adaptation of enterprises-manufacturers to the new conditions, which arose in the domestic and foreign markets, allowed recovering the pre-crisis production volumes.

Figure 3 presents the structure of production of electric welding equipment in Ukraine in dynamics. In the structure of production of welding equipment, the shares predominate which correspond to the production of automatic and semiautomatic machines for arc welding. The volume of their production since 2013 is constantly growing and in 2016 amounted to 25.2 thou units. The output volume of machines for flash-butt welding for the past three years is at the level of 100 machines per

year. Basically, these are rail welding machines, 98 % of which are exported. Whereas, the production of power sources is constantly decreasing from 2012 and in 2016 it amounted to 1.4 thou units, which is almost 7 times less than in 2013. The main cause for such decline is the entry of Ukraine into the WTO and, accordingly, the opening of the domestic market. The volume of imported deliveries of welding equipment to the Ukrainian market has been constantly growing since that time and in the conditions of severe competition the share of domestic manufacturers decreases.

Also, it should be noted that in Ukraine the production of automatic electric welding lines and complexes, as well as specialized equipment for special welding methods, the share of which in the structure of production was several percents, has practically stopped. This equipment is the most science intensive, highly-technological, in which perspective scientific and engineering solutions, as a rule patented, are introduced.

Such unique equipment is competitive and demanded at the market. As a rule, such equipment is created by the enterprises in close and fruitful cooperation with scientific organizations, design bureaus, different innovative organizations. Therefore, the increasing of production of this equipment is one of the tasks put before the enterprises and organizations of welding production.

The dynamics of export and import on the group of products of electric welding equipment is shown in Figure 4. In the foreign trade activity since 2014 the import operations prevail. As compared to the

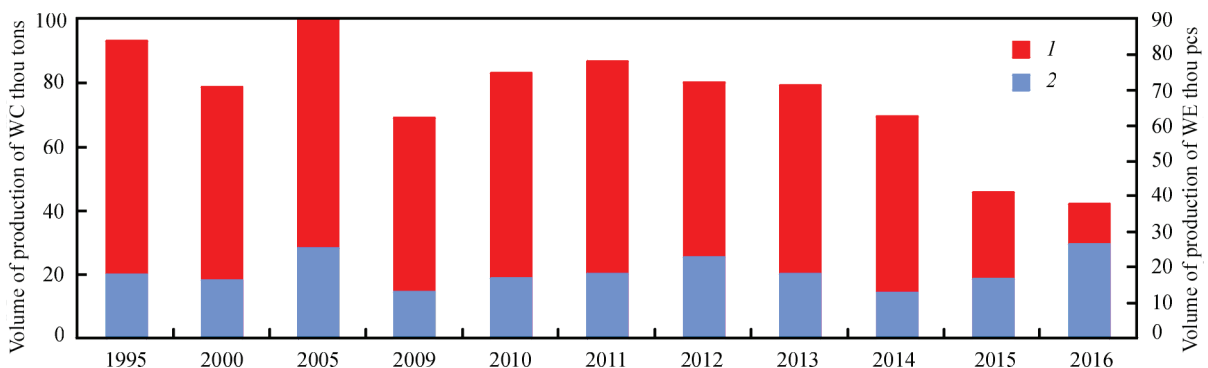


Figure 2. Dynamics of production of welding equipment (WE) and welding consumables (WC) in Ukraine: 1 — WC; 2 — WE

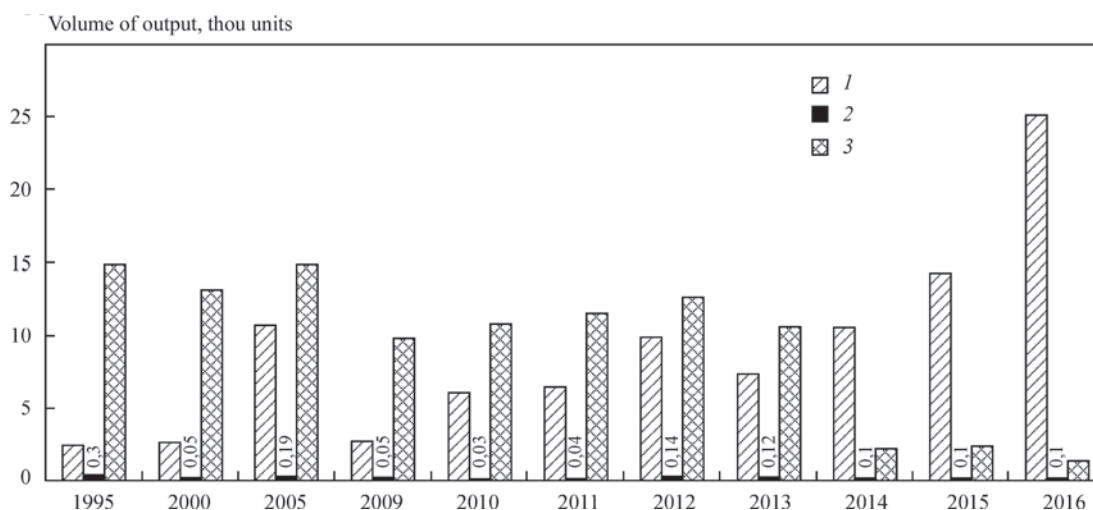


Figure 3. Dynamics and structure of production of electric welding equipment, thou units: 1 — automatic and semi-automatic machines for MAW and ESW; 2 — machines for flash-butt welding; 3 — power sources not included in the set of automatic and semi-automatic machines

base period of 2005, the volume of import in 2016 increased by 1.8 times. The volume of export of electric welding equipment depends on the demand at the foreign markets. During the crises of the world economy, the volumes of product deliveries decrease and during recovery of the market, they increase. The observed ratio of volumes of import and export operations forms a negative balance on the group of products of electric welding equipment.

The export-import operations on the group of products of electric welding equipment cover more than 50 countries. Among them the two major regional associations are distinguished — the EU and the CIS. The CIS countries (mainly Russia, Belarus and Kazakhstan) account for the bulk of export, and import comes mainly from the European Union and China. Since 2008, the volumes of welding equipment from China increased significantly and then annually grew.

Figure 5 shows the export-import data of the main nomenclature of welding equipment for 2016 — machines for flash-butt welding, for arc welding and other welding machines and apparatus for — by the

major regional associations. They show a tendency to reduction of volume of export to the CIS countries and to increase in the share of import from the EU countries (exceeds 50 %).

The analysis of the state of export-import operations by the group of products of electric welding equipment showed that manufacturers of such equipment need diversification of sales directions for their products. A big dependence on deliveries of electric welding equipment to the market of CIS countries in today's conditions of mutual relations of the countries conceals a great deal of risks. The restrictions, imposed on this market, can negatively affect the economic status of enterprises-manufacturers of welding equipment.

The welding consumables are manufactured at 64 enterprises, 32 of which are certified in the system UkrSEPRO. Among them, the leading manufacturers are Zaporozhye plant of welding fluxes and glass products, Plazmatek, Vistek, BADM LTD, Pilot Plant of welding consumables, TM. VELTEK, Ganza, Mariupol Metallurgical Plant named after Iliich and Sumy-Electrode. The total share of these enterprises

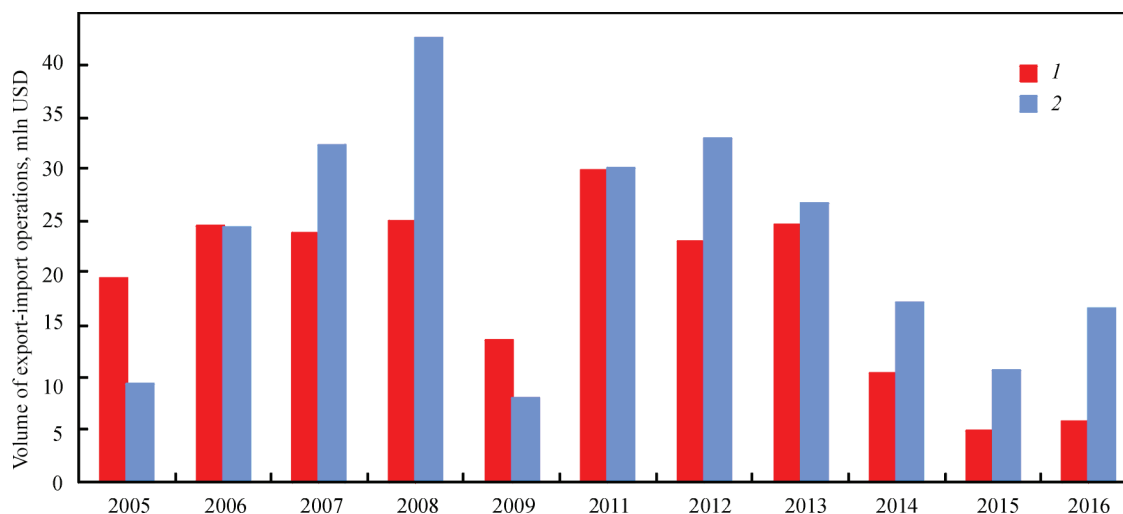


Figure 4. Dynamics of export-import on group of products of electric welding equipment: 1 — export; 2 — import

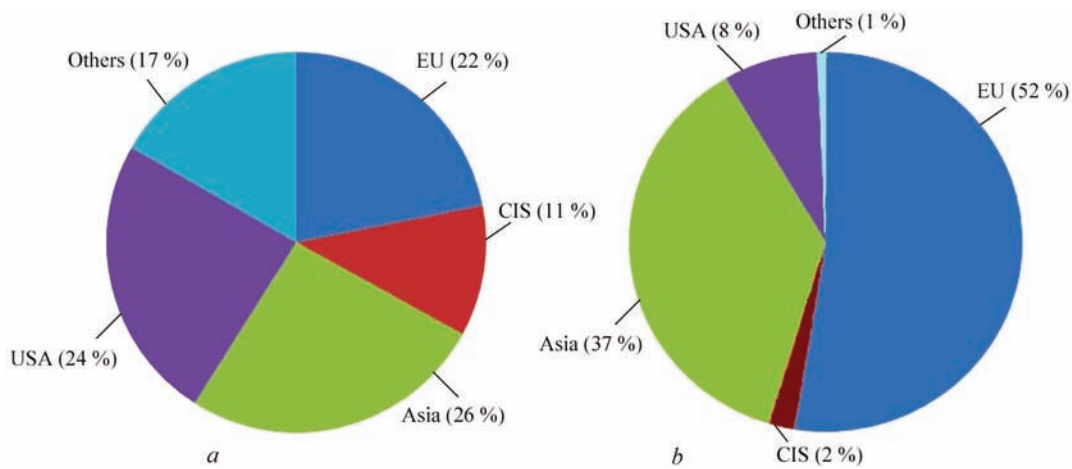


Figure 5. Structure of export (a) and import (b) by major regional associations and countries in 2016

exceeds 90 % of the annual output of welding consumables in Ukraine. Such a high indicator of production and sales of these enterprises at the domestic market evidences about the concentration of production of welding consumables at large enterprises.

The production of welding consumables has been constantly reducing since 2012. In 2015–2016 years the volume of output was 42–46 thou tons, which is almost twice lower than the value of 2012. This is predetermined by restrictions in deliveries of products to the market of CIS countries, which was the main foreign market. A significant cause is also the change in the structure of industrial production in Ukraine. The share of machine building in the total volume of industrial production almost 4 times decreased (to 7.2 %). Therefore, the output of the main types of industrial products decreased, in the production of which the welding technologies used for joining and treatment of structural materials are basic.

The dynamics of structure of the output of welding consumables is shown in Figure 6. The analysis of data on production and sales of products shows a drop in volumes on all the positions of the nomenclature of the group of products of welding consumables, especially in 2014–2016. The capacities of Ukrainian enterprises-manufacturers of welding consumables are designed to meet the needs of both the domestic market, as well as delivery to the foreign markets.

In the structure, according to 2016, the main part (65 %) is occupied by production of welding elec-

trodes, welding fluxes amount for almost 15 %, welding wire of standard quality is 14 %, alloyed wire — 5 %, and the share of flux-cored wire is less than 1 %.

The dynamics and structure of export-import operations is shown in Figures 7 and 8. The export deliveries almost 2 times exceed import ones, which allows ensuring a positive foreign trade balance on the group of welding consumables.

In 2016 the Ukrainian manufacturers mainly exported welding fluxes and electrodes, the share of which is almost 80 % (Figure 7). In the structure of import the main volume (86 %) makes up the alloyed wire, the production of which is only mastered in Ukraine at the leading enterprises.

Since 2014, the volume of export deliveries of welding consumables has been constantly decreasing and in 2016 it amounted to 13 mln USD dollars (2.5 times lower than of the value of 2013), which accounts to almost the one third of the volume of their production in Ukraine. The volume of import for this period also decreased and amounted to 8.47 mln USD.

Such ratio of export-import ensures a positive foreign trade balance on welding consumables during 2002–2016. Thus, in 2016, the foreign trade balance amounted to 4.65 mln USD, i.e., the enterprises which produce welding consumables, are among those, which contribute to entry of foreign currency to Ukraine.

In 2016, the export-import operations on a group of welding consumables covered over 30 countries. Among them the countries are distinguished being a

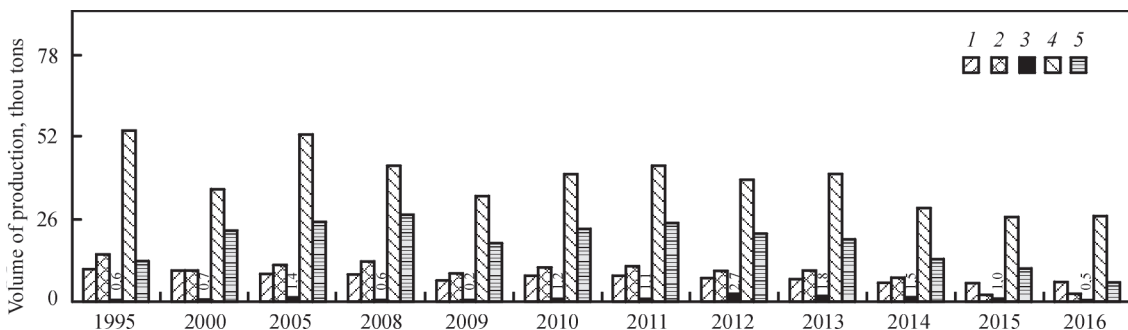


Figure 6. Dynamics of structure of production of welding consumables: 1 — welding wire of standard quality; 2 — alloyed welding wire; 3 — flux-cored welding wire; 4 — welding electrodes; 5 — welding fluxes

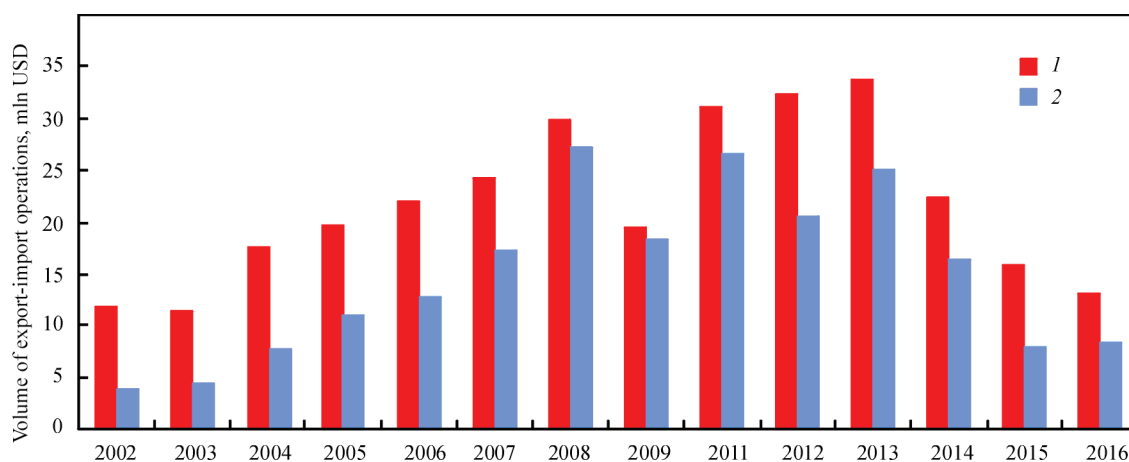


Figure 7. Dynamics of export-import operations on group of products of welding consumables: 1 — export; 2 — import

part of two main regional associations – the EU and the CIS (CU). The CIS countries (CU) account for the major part of export, and import comes mainly from the European Union and China. Figure 9 shows the geography of export-import of welding consumables for the major regional associations.

Foreign trade balance. The export-import operations on a group of products of welding equipment were carried out with organizations from over 60 countries. The data on dynamics of foreign trade

balance are shown in Figure 10. After the entry of Ukraine into the WTO, a negative balance in foreign trade is observed, which is predetermined by a significant prevalence of imported deliveries of equipment, especially electric welding one. During the financial crisis (2009), as a result of the hryvnya devaluation, the volume of import was significantly decreased and the foreign trade balance was positive.

The data on foreign trade balance by the main regions (for 2016) on a group of products of electric

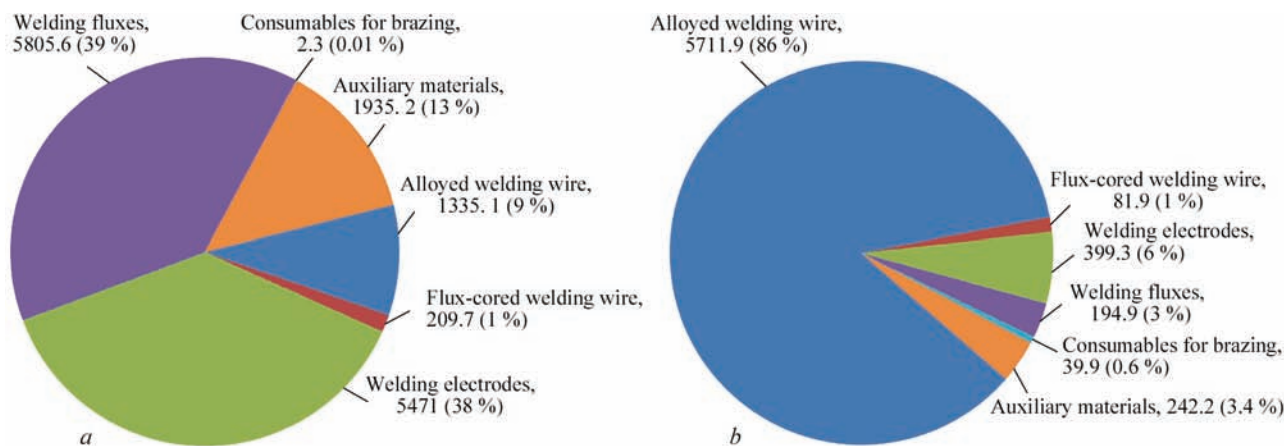


Figure 8. Structure of export (a) and import (b) of welding consumables in 2016, tons

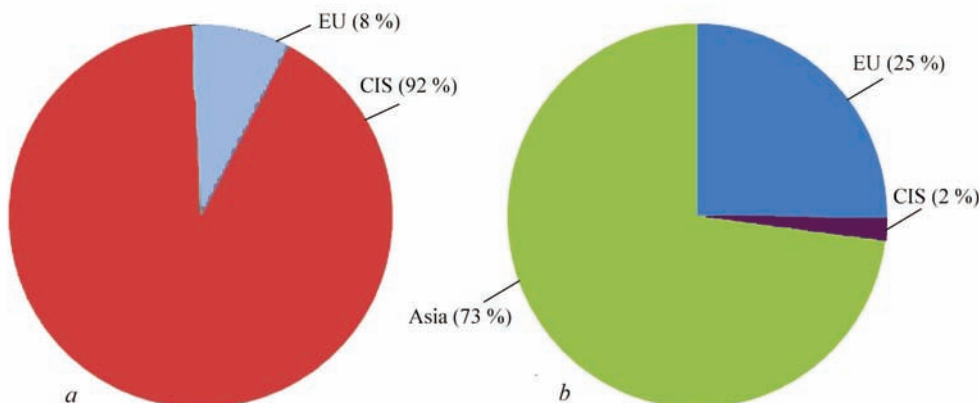


Figure 9. Geography of export (a) and import (b) of welding consumables by major regional associations in 2016

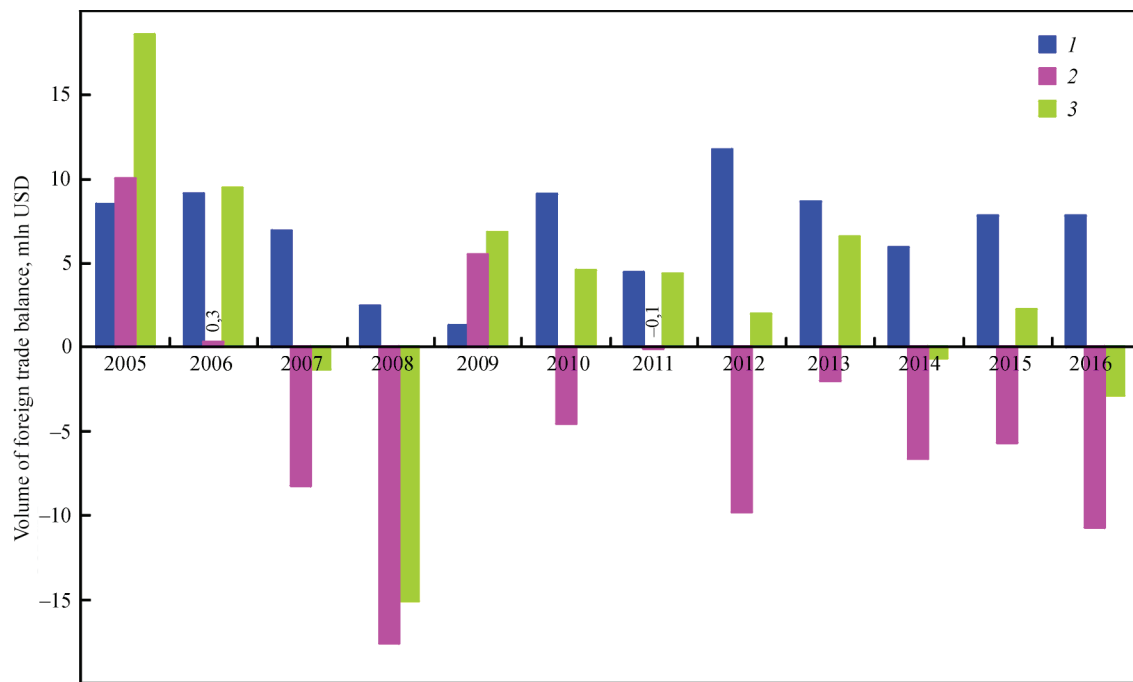


Figure 10. Dynamics of foreign trade balance on the group of products of welding equipment and consumables for 2005–2016: 1 — welding consumables; 2 — welding equipment; 3 — foreign trade balance

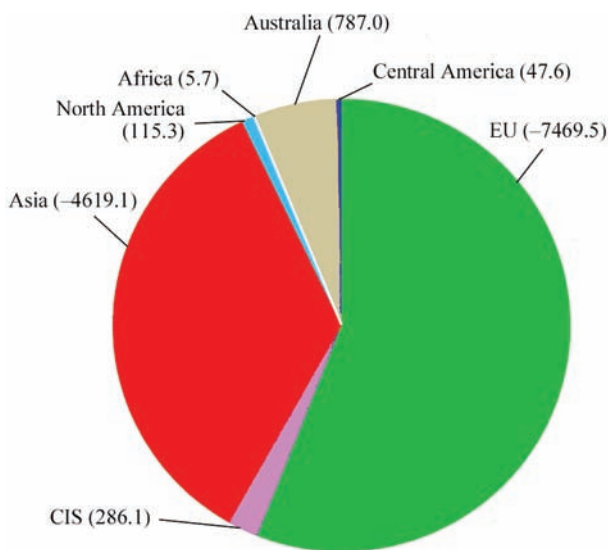


Figure 11. Distribution of foreign trade balance by the group of products of electric welding equipment in 2016, thou USD

welding equipment are shown in Figure 11. A positive balance is observed with the countries of the CIS, Africa, Central and South America, and the negative balance with the countries of EU and Asia (mainly China, Turkey and South Korea).

Conclusions

The presence of economic, statistical and marketing information about welding production in Ukraine allows enterprises to make grounded decisions on working out a strategy of actions on macro- and microlevels to provide their competitive advantages and grow the demand for their production.

The results of carried out analysis of state-of-the-art of the Ukrainian market of welding equipment and consumables allow concluding that the existing production capacities of Ukrainian enterprises-manufacturers allow satisfying the domestic needs on a group of products of electric welding equipment and welding consumables, and also delivering products to the foreign markets.

The further stable and effective development of markets of welding equipment and consumables is possible at the active transfer of advanced welding technologies and other innovations.

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