INDUSTRY AS A DOMINANT IN THE FORMATION OF AN UKRAINE’S SELF-SUFFICIENT ECONOMY

Introduction. In the modern world, the economy of most countries is capitalist, based on private (oligarchic, corporate, individual) property, market relations, competition, etc. Successful states are those with a high level of self-sufficiency. The latter presupposes stable growth, a high level of production of real gross domestic product (GDP), calculated in terms of purchasing power parity (PPP) in general and per capita, an economic structure oriented towards meeting domestic needs (at the level of 70-80%), export and import operations (20-30%), availability of appropriate industrial and civil infrastructure, military-industrial complex, etc. The development of these areas is especially important for the post-socialist states, which for decades were part of unions and had freedom of action due to the developed general system of cooperation and division of labour. Having become separate states, the former republics had to conduct an in-depth analysis of the availability of production potential and labour, based on their possible use for the development of domestic and participation in world markets. This applied to the entire economy and industry. Modern aspirations to join economically more developed states and unions put the joining in the position of a “junior partner” with the need to bring the economy to international requirements. In practice, this most often leads to the destruction of industry (the Baltic countries, Georgia, Greece, etc.).

Solving the complex of the identified problems of structural changes in industry, determining the vector of its development, justifying the increase in the role of industry in ensuring the self-sufficiency of the economy as a whole, regions and enterprises is very relevant in theoretical and practical aspects.

Analysis of recent publications on the problem. Scientific developments concerning the self-sufficient economy of states, regions, types of economic activity, industry are in the field of view of leading foreign and domestic research organizations, scientists, politicians, business leaders. Many researchers divide the historical path of development of society, economy, industry into stages: pre-industrial; industrial; post-industrial. In the industrial era, the leading sphere of activity, the dominant of the development of society and the economy, is industry, which in the middle of the twentieth century accounted for more than 50% of world real GDP.

Fundamental studies to identify the role of industry in the economy of the industrial period are outlined by K. Marx and F. Engels in the works "Capital", "Theory of surplus value" [2], in the works of V. I. Lenin in “The Development of Capitalism in Russia” [3], “Imperialism as the Highest Stage of Capitalism” [4], in the works of J. M. Keynes [5], V. Yu. Katasonov [6] and others. Certain aspects of the development of capitalism, the industry of bourgeois society, including modern ones, have been studied by foreign authors [7-15], including the leaders of the largest companies [14-15], as well as by domestic researchers academicians O. Alymov, O. Amosha, V. Heyets, V. Vishnevsky, E. Libanova, A. Chukhno [16-21].

The institutes of the National Academy of Sciences of Ukraine prepared, published and sent to the state and regional authorities a number of national and scientific reports on the directions of solving the problems of the Ukrainian economy emerging from the systemic socio-
economic crisis [22-25]. Scientific developments are partially used by governing bodies, interested research organizations, enterprises, and higher educational institutions.

The monographs published on the problem [26-30] contain recommendations on ways to overcome the crisis in the economy through the advanced development of industry, and in it – mechanical engineering. This is the transition of industry from the conditions created by the II industrial revolution (IR) to the technologies of the III and IV industrial revolutions. The expediency of the evolutionary movement to the level of modern requirements is fairly emphasized, using the experience of the developed countries G-7 and G-20, adapting it to domestic conditions.

The desire of politicians now and immediately to move from technologies II-III to IV IR, V-VI technological order (TO) has formed a mistaken understanding of the possibility of building an economy of an agrarian superpower with a collapsing industrial base, since the agrarian economy should also be based on modern industry.

Partially noted positions and trends are reflected in the above and some other works and studies. However, this is still not enough, the problem of preserving industry as a dominant in the formation of a self-sufficient post-industrial economy in Ukraine remains very relevant and requires further scientific research.

**The purpose of this study** is to substantiate and deepen the directions of restoring the self-sufficiency of the Ukrainian economy on the basis of high-tech industry, including mechanical engineering.

**Outline of the main results and their justification.** The genius thinkers of ancient Greece (Socrates, Xenophon, Aristotle, etc.) saw two areas of economic activity in the life support of households: the economy as an art (methods of conducting, managing, ensuring an effective household), chrematistics – the activity of accumulating money, often in isolation from social useful activity. Subsequently, in these areas, the real sector of the economy (agriculture and industry) and the service sector were formed, the main role in which currently belongs to financial activities. From the times of antiquity to the present, most specialists still divide the economy into three spheres: agriculture, industry, and services. Their state in the pre-industrial period (slave-owning and feudal socio-economic formations), in the industrial period (capitalism, socialism) and the post-industrial period (inclusive capitalism, new world economic order) is shown in Fig. 1.

As can be seen from Fig. 1, in the prehistoric period, the leading sector of the economy was agricultural production, in the industrial – industrial production (capitalist and socialist economies, since their material and technical base is identical); in the post-industrial sector, the service sector (inclusive capitalist economy and the economy of countries with a new world economic order, for example, China, India, etc.).

In the first twenty years of the XXI century the world economy is represented by the economies of the industrial period (developing and post-socialist countries) and the post-industrial period (the G-7 countries and some G-20 countries).

The widely known data on the structure of the GDP of the world economy and individual countries (the second decade of the XXI century) show different ratios (Table 1).

The presented data allow us to assert that the indicators of individual countries differ significantly from the world ones. For example, the share of agriculture in world GDP by the beginning and in the first decades of the 21st century was 4%, 35% of the population worked in it; in developing countries, respectively 19% and 40%, in developed countries 1% and 4%. The indicators of industry and services differ significantly in relative and absolute terms.
Table 1

Structure of GDP of the world and individual countries, % *

<table>
<thead>
<tr>
<th>Countries</th>
<th>Real sector</th>
<th>Service sector</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Industry</td>
</tr>
<tr>
<td>World economy</td>
<td>36.0</td>
<td>32.0</td>
</tr>
<tr>
<td>China (PRC)</td>
<td>48.5</td>
<td>41.1</td>
</tr>
<tr>
<td>USA</td>
<td>20.0</td>
<td>19.1</td>
</tr>
<tr>
<td>Germany</td>
<td>32.8</td>
<td>31.7</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>26.0</td>
<td>24.0</td>
</tr>
<tr>
<td>India</td>
<td>38.5</td>
<td>23.0</td>
</tr>
<tr>
<td>Russia</td>
<td>37.7</td>
<td>32.4</td>
</tr>
<tr>
<td>Belarus</td>
<td>48.9</td>
<td>40.8</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>38.8</td>
<td>34.1</td>
</tr>
<tr>
<td>Ukraine</td>
<td>50.8</td>
<td>28.6</td>
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</tbody>
</table>


The indicators in Figure 1 and the data in Table 1 give an idea of the vectors of changes in the structure of the economy and GDP of the world and individual countries. The dynamics of changes in the structure of US GDP (1990-2016) is shown in Table 2.

Statistical data (Table 2) show that in the United States, with a drop in the share of goods in the real sector of the economy (industry and agriculture) in 1990 – 37.1%, in 2010 – 31.0%, their absolute volumes increase: 1990 – 2.1 trillion dollars, 2016 – 4.1 trillion dollars USA. The absolute volumes of production of goods are increasing in most countries in the world as a whole.

Table 2

The structure of the manufacturing GDP of the United States (in current prices)

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>GDP</td>
<td>5804</td>
<td>100</td>
<td>9817</td>
<td>100</td>
</tr>
<tr>
<td>Including goods</td>
<td>2156</td>
<td>37.1</td>
<td>3449</td>
<td>35.1</td>
</tr>
<tr>
<td>services</td>
<td>3114</td>
<td>53.7</td>
<td>5426</td>
<td>55.3</td>
</tr>
<tr>
<td>tax redistribution</td>
<td>534</td>
<td>9.2</td>
<td>942</td>
<td>9.6</td>
</tr>
</tbody>
</table>


In Ukraine, the change in the ratio of three sectors of the economy (agriculture, industry, services) is taking place against the background of a general decline in production volumes (in price and physical terms) since 1991. In 2021, Ukraine's GDP (in constant prices, in dollar terms at par and PPP, in absolute terms) still did not reach the 1991 level, which is not observed in any of the post-Soviet countries in Europe. Among the reasons – the outstripping, relative to other spheres of activity, decline in industrial production in price and absolute terms (Table 3).

Table 3

Industry indices, including mechanical engineering of Ukraine, % to the previous year

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ukraine (by 2008)</td>
<td>72.3</td>
<td>73.7</td>
<td>68.7</td>
<td>92.4</td>
<td>118.4</td>
<td>119.7</td>
<td>117.6</td>
<td>95.6</td>
</tr>
<tr>
<td>Economy (at par and PPP) by 1990</td>
<td>65.8</td>
<td>64.8</td>
<td>58.5</td>
<td>59.9</td>
<td>61.4</td>
<td>65.9</td>
<td>65.5</td>
<td>63.2</td>
</tr>
<tr>
<td>Industry</td>
<td>112.2</td>
<td>82.8</td>
<td>96.4</td>
<td>103.1</td>
<td>97.1</td>
<td>95.3</td>
<td>91.7</td>
<td>n/d</td>
</tr>
<tr>
<td>Mechanical engineering (2011)</td>
<td>115.4</td>
<td>79.4</td>
<td>85.9</td>
<td>101.7</td>
<td>97.6</td>
<td>101.6</td>
<td>98.4</td>
<td>n/d</td>
</tr>
</tbody>
</table>


Data on the dynamics of industry and mechanical engineering are somewhat overestimated, since the movement (decline) of the economy as a whole, real GDP, and the ratio of the exchange rate are not taken into account.

It is known that the indicators of industry and economy significantly depend on the basic industry – mechanical engineering, which ensures its own development, technical re-equipment of all sectors of the state's
The experience of developed countries shows that modern mechanical engineering is able to stabilize the work of industry and accelerate economic recovery, make it self-sufficient, steadily developing, focused on meeting the needs of the population by at least 80% of products and services of its own production. For this, it is necessary to create priority sectors of the real economy, sectors of the real economy, and then to the economy as a whole.

Let us consider this process using the example of domestic mechanical engineering. In the 90s of the twentieth century, Ukraine was one of the 10 most developed industrial states in Europe, having a fairly modern, according to the criteria of that time, structure of industry and mechanical engineering. The share of industry (section B, C, D according to Classification of economic activities) in Ukraine's GDP in 1991 was 45%. Machine building in Ukraine in 1990 provided up to 14% of GDP, and its share in industry reached 30.5% [32]. Today in the EU the share of mechanical engineering in industrial production is 36-45%, including in Germany – 53.6%, Italy – 36.4%. In other countries: Japan – 51.52%, Great Britain – 34.6%, China – 35.21%. In the USA, the contribution of mechanical engineering to GDP is 5-10%, in the Russian Federation – 18% [35; 36; 38].

Currently, the engineering industry of Ukraine includes more than 11 thousand enterprises of various forms of ownership, size, level of technology, etc., 15% of fixed assets, 6% of current assets, up to 20% of industrial workers. But the share of mechanical engineering in Ukraine's GDP is declining, amounting to no more than 7% [40].

One of the negative indicators of the domestic machine-building industry is the decline in exports from 13.2 billion dollars in 2012 to 5 billion dollars in 2018. Imports significantly exceed supplies abroad, which is a reflection of government policy. The principles of market relations are violated, export-import activities of mechanical engineering with individual large foreign partners are prohibited. At the same time, assistance is not provided to domestic producers in increasing quotas for the supply of products to Europe, in the development of world markets.

In order to ensure economic security and reindustrialize production, it is necessary to systematically and continuously support mechanical engineering from the state. On the basis of public-private partnership, it is necessary to create and implement promising, breakthrough technologies (Table 4).

<table>
<thead>
<tr>
<th>Technology segments</th>
<th>Traditional techniques and technologies</th>
<th>Promising (breakthrough) technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment and technologies for product shaping</td>
<td>Machine-tool industry, material processing equipment</td>
<td>Additive technologies</td>
</tr>
<tr>
<td>Equipment and technologies for automation of production processes</td>
<td>Relays, switches, sensors, power electronics</td>
<td>Industrial robotics, sensors</td>
</tr>
<tr>
<td>Advanced materials for new technologies and processes</td>
<td>Metal, plastic</td>
<td>New alloys, powder metallurgy, composite materials, ceramics</td>
</tr>
<tr>
<td>ICT, robotization, digitalization, artificial intelligence</td>
<td>ACS, intelligent control systems</td>
<td>Artificial intelligence, smart machines and technologies, cloud technologies</td>
</tr>
</tbody>
</table>


For the development of mechanical engineering, it is necessary to change the strategy of the state regarding the provision of engineering enterprises with its own and state sources of financing investments, technical re-equipment and development. Throughout the entire period of the functioning of the state of Ukraine, there are attempts to attract foreign direct investment (FDI) into the economy. However, practice shows that FDI in the domestic economy is no more than 5% of total investment and is "scattered" across all industries. These, albeit insignificant, receipts should be concentrated in mechanical engineering. It is advisable to apply the model of monetary financing by banks of investment projects of domestic machine-building enterprises. This model is actively used in the European Union, in the G-20 countries.

For the practical implementation of this model in the domestic industry, mechanical engineering, the necessary paradigm and mechanisms have been developed [30, p. 274-311], which makes it possible to allocate double the financing of capital investments in mechanical engineering. The availability of sufficient funding for projects of innovative and investment re-equipment of mechanical engineering will allow the industry to solve internal problems, then to carry out technical re-equipment of the industry and the economy as a whole.

Modern self-sufficient states of Europe and the world are developed industrial and post-industrial (hyperindustrial) countries that provide their economy and population with guaranteed up to 90% of the products of their production, participate in the international equal division of labour and cooperation, included in those
unions and associations that allow them to remain really independent and self-sufficient. The high level of development of mechanical engineering and industry as drivers of economic development contribute to the implementation of this lofty goal. Science and education, managers of all levels, civil society and its institutions should work to promote and implement this direction.

Conclusions. Historical trends in economic development testify to the need and feasibility of large and medium-sized countries to be self-sufficient, to have a modern high-tech industry, to develop highly mechanized agriculture, a tertiary sector of the economy based on ICT, artificial intelligence, a highly qualified workforce, and digitalization. It is advisable to have economic growth rates of average countries close to the world ones, and in developing countries, to which Ukraine belongs, they should be higher than the world rates by 1.5-2.0 and more times.

The self-sufficiency of the country's economy presupposes the provision of scientifically substantiated needs of the economy and the population by at least 80% with products and services of its own production, with the share of high-tech mechanical engineering at the level of 30-35%. This will allow preserving and developing the material and technical base of the state, to solve internal social and economic problems, to participate in the international division and cooperation of labor on the principles of mutual benefit, to participate as an equal subject in regional and world unions and associations, to preserve traditions and culture.

Directions for further research. Further research is required to study the issues of determining state priorities in the development of the Ukrainian economy, preserving and developing its industrial and human potential, deepening theoretical research to identify the role of spirituality in socio-economic activity, production of the VI technological order in combination with the growth of spirituality, the formation of civil society, collectives, a person as a spiritual-bio-social subject.

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Амоса О. І., Брюховецька Н. Ю., Булеєв І. П. Промисловість як домінанта формування само- достатньої економіки України

Тисячоліттями повільними темпами формувалась і розвивалась традиційна антична, рабовласницька, феодальна економіка, основою якої складало сільсько-господарське виробництво, а ремісництво (попередник промисловості), послуги за своїми обсягами були не значними, але темпи їх зростання випереджали темпи зростання аграрного сектору, що відображає модель секторів економіки Кларка. В індустріальну епоху домінуючим сектором економіки стає промисловість, досягаючи максимуму за питомою вагою в економіці розвинених країн і світу до середини XX ст. в результаті переважно екстенсивного розвитку, I-ІІ промислово- вих революцій, перетворення науки в безпосередню продуктивну силу. У II половині XX ст. розвиток промисловості переходить на шлях інтенсивних якісних перетворень (III промислова революція), а на початку XXI ст. розвинені країни увійшли в процеси IV промислової (виробничої) революції, освоюючи досягнення науки, V, VI технологічних укладів. Темпи зростання економіки прискорюються, питома вага промисловості в економіці знижується у відносних характеристиках, але в абсолютних показниках зберігається зростання промисловості, незважаючи на переваги у сучасній економіці сфери послуг (понад 60% у світовій економіці, понад 80% в економіці США). Однак базовою галуззю, домінантою розвитку самодостатніх країн, залишається промисловість, машинобудування, яка ефективно освоює науково-технологічні досягнення IV ПР, V, VI ТУ, ІКТ, цифровізація.

Дослідженням доведено безперспективність переходу до сучасної економіки шляхом тотального руйнування індустрії, як це відбувається в постсоціалістичних країнах та Україні. Обґрунтовується доцільність шляхом модернізації машинобудування реструктурування промисловості, що забезпечить відновлення економіки в цілому, її самодостатність, рівноправну участь у міжнародному поділі праці і кооперації, вхолдження і розвиток у складі спілок, асоцій індустріально- го та міжнародного рівнів. Робота з розвитку еконо- міки, досягання самодостатності держави та суспільства має супроводжуватися зростанням духовності людиною як духовно-біо-соціального суб’єкта, колективів, громадянського суспільства та його інститутів.

Ключові слова: економіка країн, самодостатня економіка, промисловість, машинобудування, домінанта розвитку, промисліві революції, прогресивні технології, високотехнологічні виробництва.

Amosha O., Bryukhovetska N., Buleev I. Industry as a Dominant in the Formation of an Ukraine's Self-Sufficient Economy

For millennia, the traditional ancient, slave-owning, feudal economy was formed and developed at a slow pace, the basis of which was agricultural production, and handicraft (the predecessor of industry), services were insignifi-
of mechanical engineering, development of scientific achievements, V, VI technological orders. The modernization of mechanical engineering is substantiated, as is the case in post-socialist countries and in Ukraine. The achievement of self-sufficiency of the state and international levels. Work on the development of the economic sector of the economy as a whole, its self-sufficiency, equal participation in the international division of labour and cooperation, entry and development as part of unions, associations of regional and international levels. Work on the development of the economy, the achievement of self-sufficiency of the state and society should be accompanied by an increase in the spirituality of a person as a spiritual-social subject, collectives, civil society and its institutions.

Keywords: country's economy, self-sufficient economy, industry, mechanical engineering, development dominant, industrial revolutions, progressive technologies, high-tech industries.

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