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O. Amosha,
Academician of NAS of Ukraine,
DrHab (Economics), Professor,
ORCID 0000-0003-0189-3819,
e-mail: admin@econindustry.org,

N. Bryukhovetska,
DrHab (Economics), Professor,
ORCID 0000-0002-6652-4523,
e-mail: Bryukhovetskaya@nas.gov.ua,

I. Buleev,
DrHab (Economics), Professor,
ORCID 0000-0002-7912-3649,
e-mail: Buleev.I.P@nas.gov.ua,
Institute of Industrial Economics of NAS of Ukraine, Kyiv

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.). Similar processes are taking place in Ukraine, which by now has lost more than half of its industrial potential. The destruction processes continue. A public opinion is being formed that Ukraine should become an agrarian power. However, this is problematic and unpromising. In the modern world, states with a high-tech industry are successful. This also applies to Ukraine, which sets the task of ensuring the functioning of an "independent, sovereign, social power" (Article 1 of the Constitution of Ukraine [1, p. 8]).

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.

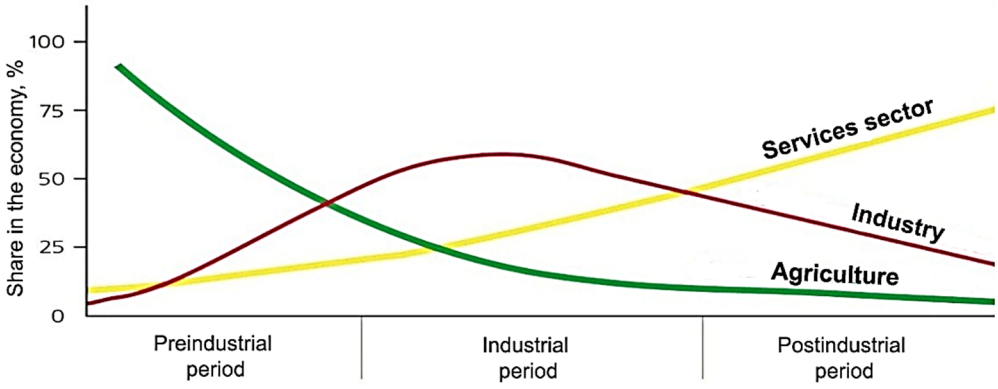

Fig. 1. Evolution of the economic structure of the world economy (Clarke model of economic sectors)

Source: Territorial structure of the world economy. URL: http://files.school-collection.edu.ru/dlrstore/00000c51-1000-4ddd-517d-3600483aebf5/06-1-1.htm.

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, % *

Countries	Real sector			Service sector
	Total	*including*		
		Industry	Agriculture	
World economy	36.0	32.0	4.0	64.0
China (PRC)	48.5	41.1	7.4	51.5
USA	20.0	19.1	0.9	80.0
Germany	32.8	31.7	1.1	67.2
United Kingdom	26.0	24.0	2.0	74.0
India	38.5	23.0	15.4	61.5
Russia	37.7	32.4	6.3	62.3
Belarus	48.9	40.8	8.1	51.1
Kazakhstan	38.8	34.1	4.7	61.2
Ukraine	50.8	28.6	12.2	49.2

* Compiled from the source: Useful finance. Economic map of the world. Yvision.kz project. URL: https://yvision.kz /post/534951.

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)*

Products, spheres		Years							
		1990		2000		2015		2016	
		billion dollars	*%*	*billion dollars*	*%*	*billion dollars*	*%*	*billion dollars*	*%*
GDP		5804	100	9817	100	12487	100	13195	100
Including	goods	2156	37.1	3449	35.1	3667	31.8	4092	31.0
	services	3114	53.7	5426	55.3	7186	57.5	7665	58.0
	tax redistribution	534	9.2	942	9.6	1334	10.7	1438	11

* Sources: Statistical Abstract of the United States 2007. URL: https://www.census.gov/prod/ 2006pubs/07statab/ health.pdf, p. 431; Economic Report of the President 2008, p. 236 [31, p. 10].

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*

Indicators	2010	2014	2015	2016	2017	2018	2019	2020
Ukraine	72.3 (by 2008)	73.7	68.7	92.4	118.4	119.7	117.6	95.6
Economy (at par and PPP) by 1990	65.8	64.8	58.5	59.9	61.4	65.9	65.5	63.2
Industry	112.2	82.8	98.4	103.1	97.1	95.3	91.7	n/d
Mechanical engineering	115.4 (2011)	79.4	85.9	101.7	97.6	101.6	98.4	n/d

* Source: Ukraine in figures for 2019. Kyiv: State Statistics Service of Ukraine. 44 p.; Regions of Ukraine for 2016-2019. Kyiv: State Statistics Service of Ukraine. 640 p. [24, p. 236].

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

economy, updating their material and technical base at least every 5-10 years (depending on the industry).

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 that government bodies and civil society take an active part in this on the principles of public-private and public-private partnerships. Studies by the Institute of Industrial Economics of the National Academy of Sciences of Ukraine confirm that it is advisable to start work with mechanical engineering, extend to industry, 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 4

Advanced technologies for domestic mechanical engineering

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

Source: Revival of Donbass: assessment of socio-economic losses and priority areas of public policy: a national report / ed. E. M. Libanova. Kyiv: National Academy of Sciences of Ukraine, 2015. 206 p. (P. 159).

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 at least 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.

Literature

1. **Конституція** України станом на 30.09.2016 р. Відповідає офіційному тексту. Харків. «Право», 2016. 74 с. 2. **Маркс К.** Капитал / К. Маркс и Ф. Энгельс. Соч. 2-е изд., т. 23-25. Москва: Политиздат, 1961. 3. **Ленин В. И.** Развитие капитализма в России. ПСС. Т. 3. Москва: Политиздат, 1971. С. 1-609. 4. **Ленин В. И.** Империализм как высшая стадия капитализма ПСС. Москва, 1917. Т. 27. С. 307-426. 5. **Кейнс Дж. М.** Общая теория занятости, процента и денег. Антология экономической классики. В 2-х томах. Т. 2. Предисловие, составление И. А. Столярова. Москва: Эконов, 1992. Т. 2. С. 137–432. 6. **Катасонов В.Ю.** Капитализм. История и идеология денежной цивилизации. Москва: Институт русской цивилизации, 2015. 1120 с. 7. **Гэлбрейт Дж. Г.** Экономика невинного обмана: правда нашего времени. Москва: Европа, 2004. 8. **Белл Д.** Грядущее постиндустриального общества / пер. с англ. Москва: Академия, 1999. 788 с. 9. **Друкер П. Ф.** Задачи менеджмента в XXI веке / пер. с англ. Москва: ИД «Вильямс», 2001. 272 с. 10. **Глазьев С.** Экономика будущего. Есть ли у России шанс? Москва: Книжный мир, 2016. 634 с. 11. **Шваб К.** Четвертая промышленная революция. Москва: «Эксмо», 2017. 208 с. 12. **Шваб К., Милерт Т.** «COVID-19». Всемирная перезагрузка. Изд-во Forum Publishing, 2020. 13. **Эрхард Л.** Полвека размышлений: Речи и статьи / пер. с нем. Москва: Русско: Ордынка, 1993. 253 с. 14. **Форд Г.** Моя жизнь, мои достижения / пер. с англ. М.: Финансы и статистика, 1989. 206 с. 15. **Якокка Ли.** Карьера менеджера. Москва: Прогресс, 1991. 548 с. 16. **Стратегия** структурной перестройки промышленности / А.Н. Алымов и др. Киев: Ин-тут экономики НАН Украины, 2001. 202 с. 17. **Украинская** металлургия: современные вызовы и перспективы развития: монография / А.И. Амоша и др.; Ин-т экон. пром-сти НАН Украины. Донецк, 2013. 114 с. 18. **Економіка** знань та її перспективи для України / за наук. ред. В. М. Гейця; Ін-т економ. і прогнозування НАН України. Київ, 2005. 168 с. 19. **Цифровізація** економіки України: трансформаційний потенціал: монографія / за ред. В. П. Вишневського та С. І. Князєва; НАН України, Ін-т економіки пром-сті. Київ: Академперіодика, 2020. 188 с. 20. **Політика** інтеграції українського суспільства в контексті викликів та загроз подій на Донбасі (національна доповідь) / [Лібанова Е. М., Горбулін В. П., Пирожков С. І. та ін.]; за ред. Е. М. Лібанової. Київ: НАН України, 2015. 363 с. 21. **Чухно А. А.** Твори : У 3-х т. Т. 2. Інформаційна постіндустріальна економіка: теорія і практика / НАН України, Київ. нац. ун-т ім. Т. Шевченка; Науково-дослідний фін. ін-т при М-ві фінансів України. Київ, 2006. 512 с. 22. **Соціально**-економічний стан України: наслідки для народу та держави: національна доповідь / за заг. ред. В. М. Гейця [та ін.]. Київ: НВЦ НБУВ, 2009. 687 с. 23. **Промисловість** і промислова політика України 2013: актуальні тренди, виклики, можливості: наук.-аналіт. доповідь / О. І. Амоша, В. П. Вишневський, Л. О. Збаразська та ін.; за заг. ред. В. П. Вишневського; НАН Украї ни, Ін-т економіки пром-сті. Донецьк, 2014. 200 с. 24. **Промисловість** України 2014-2016: невикористані можливості, шляхи відновлення, модернізації та сучасної розбудови: наукова доповідь / редкол.: О. І. Амоша, І. П. Булєєв, Ю. С. Залознова; НАН України, Ін-т економіки пром-сті. Київ, 2017. 554 с. 25. **Відродження** Донбасу: оцінка соціально-економічних втрат і пріоритетні напрями державної політики: національна доповідь / за заг. ред. Е. М. Лібанової. Київ: НАН України, 2015. 206 с. 26. **Промислова** політика посткризової економіки : монографія / [Дейнеко Л. В. та ін.]; за ред. Л. В. Дейнеко, М. М. Якубовського; Нац. акад. наук України, ДУ «Ін-т економікита прогнозування НАН України». Київ: Ін-т економіки та прогнозування НАН України, 2014. 315 с. 27. **Переробна** промисловість регіонів України: проблеми та перспективи розвитку: монографія / ДУ "Інститут регіональних досліджень імені М. І. Долішнього НАН України"; наук. ред.: С. О. Іщук. Львів, 2020. 341 с. 28. **Панков В. А.** Управление стоимостью наукоемкого машиностроительного предприятия: теория и практика / НАН Украины, Ин-т экон.-прав. исслед. Киев : Наук. думка, 2003. 414 с. 29. **Янков-**

ский Н. А. Управление конкурентоспособностью предприятия на мировых рынках: микро- и макроуровни : моногр. Донецк: Донец. нац. ун-т., 2004. 376 с. 30. **Інвестиційна** активність підприємств з виробництва продукції з високою доданою вартістю в умовах обмежених ринків: парадигма та механізми забезпечення: монографія / Н.Ю. Брюховецька, І.П. Булєєв та ін. Київ: НАН України, Ін-т економіки пром-сті, 2019. 388 с. 31. **Пороховский А. А.** Американская экономика: вызовы управлению. *США. Канада. Экономика – Политика – Культура*. 2008. № 8. С. 3-22. 32. **Державна** служба статистики України. URL: http://www.ukrstat.gov.ua/. 33. **Дані** МВФ та СБ. URL: https://www.worldbank.org/; https//e-news.su/in-world/28547. 34. **Мінфін** України. URL: https://www.inf.org.index.minfin.com.ua/economy/gap. 35. **Динамика** ВВП Украины с 1990 по 2023 годы. URL: https://seosait.com/dinamika-vvp-ukrainy-s-2002-po-2016-gody/. 36. **Машиностроение** Украины. URL: minprom.ua/print/755.html. 17.10.2018. 37. **Експортна** стратегія України ("дорожня карта" стратегічного розвитку торгівлі) на 2017-2021 роки: Розпорядження Кабінету Міністрів України від 27 грудня 2017 р. № 1017-р. URL: https://zakon.rada.gov.ua/laws/show/1017-2017-%D1%80#Text. 38. **Машинобудівна** галузь України: концепційні можливості для розширення експорту на період до 2021 року. Київ: ДП «Укрпромзовнішекспертиза». 2019. 350 с.

References

1. Konstytutsiia Ukrainy [The Constitution of Ukraine] (2016). Kharkiv, Pravo [in Ukrainian].

2. Marx, K. (1961). Kapital [Capital]. 2nd ed. Vol. 23-25. Moscow, Politizdat [in Russian].

3. Lenin, V. I. (1971). Razvitie kapitalizma v Rossii [The development of capitalism in Russia]. PSS. Vol. 3, pp. 1-609. Moscow, Politizdat [in Russian].

4. Lenin, V. I. (1917). Imperializm kak vysshaya stadiya kapitalizma [Imperialism as the Highest Stage of Capitalism MSS]. PSS. Vol. 27, pp. 307-426. Moscow [in Russian].

5. Keynes, J. M. (1992). Obshchaya teoriya zanyatosti, protsenta i deneg. Antologiya ekonomicheskoy klassiki [General theory of employment, interest and money. An anthology of economic classics]. In 2 vol. Preface, compiled by I. A. Stolyarova. Moscow, Ekonov. Vol. 2, pp. 137-432 [in Russian].

6. Katasonov, V. Yu. (2015). Kapitalizm. Istoriya i ideologiya denezhnoy tsivilizatsii [Capitalism. History and ideology of monetary civilization]. Moscow, Institute of Russian Civilization [in Russian].

7. Galbraith, J. G. (2004). Ekonomika nevinnogo obmana: pravda nashego vremeni [The Economy of Innocent Deception: The Truth of Our Time]. Moscow, Europe [in Russian].

8. Bell, D. (1999). Gryadushchee postindustrial'nogo obshchestva [The future of post-industrial society]. Moscow, Academy [in Russian].

9. Drucker, P. F. (2001). Zadachi menedzhmenta v XXI veke [Management tasks in the XXI century]. Moscow, Publishing House "Williams" [in Russian].

10. Glazyev, S. (2016). Ekonomika budushchego. Est' li u Rossii shans? [Economy of the future. Does Russia have a chance?]. Moscow, Knizhnyi mir [in Russian].

11. Schwab, K. (2017). Chetvertaya promyshlennaya revolyutsiya [The fourth industrial revolution]. Moscow, "Eksmo" [in Russian].

12. Schwab, K. & Milert, T. (2020). "COVID-19". Vsemirnaya perezagruzka. ["COVID-19". World reboot]. Moscow, Forum Publishing [in Russian].

13. Erhard, L. (1993). Polveka razmyshleniy: Rechi i stat'i [Half a century of reflections: Speeches and articles]. Moscow, Russko, Ordynka [in Russian].

14. Ford, G. (1989). Moya zhizn', moi dostizheniya [My life, my achievements]. Moscow, Finance and Statistics [in Russian].

15. Iacocca, L. (1991). Kar'era menedzhera [Career manager]. Moscow, Progress [in Russian].

16. Alymov, A. et al. (2001). Strategiya strukturnoy perestroyki promyshlennosti [Strategy of industrial restructuring]. Kyiv, Institute of Economics of the NAS of Ukraine [in Russian].

17. Amosha, O. et al. (2013). Ukrainskaya metallurgiya: sovremennye vyzovy i perspektivy razvitiya [Ukrainian metallurgy: modern challenges and development prospects]. Donetsk, IIE of the NAS of Ukraine [in Russian].

18. Heyets, V. (Ed.). (2005). Ekonomika znan ta yii perspektyvy dlia Ukrainy [Knowledge economy and its prospects for Ukraine]. Kyiv, IIE of the NAS of Ukraine [in Ukrainian].

19. Vyshnevsky, V., Knyazev, S. (Eds.). (2020). Tsyfrovizatsiia ekonomiky Ukrainy: transformatsiinyi potentsial [Digitalization of the economy of Ukraine: transformational potential]. Kyiv, Akademperiodika [in Ukrainian].

20. Libanova, E. M., Horbulin, V. P., Pyrozhkov, S. I. et al. (2015). Polityka intehratsii ukrainskoho suspilstva v konteksti vyklykiv ta zahroz podii na Donbasi (natsionalna dopovid) [The policy of integration of Ukrainian society in the context of challenges and threats of events in the Donbass (national report)]. Kyiv, National Academy of Sciences of Ukraine [in Ukrainian].

21. Chukhno, A. A. (2006). Informatsiina postindustrialna ekonomika: teoriia i praktyka [Information post-industrial economy: theory and practice]. Vol. 2. Kyiv [in Ukrainian].

22. Heyets, V. (Ed.). (2009). Sotsialno-ekonomichnyi stan Ukrainy: naslidky dlia narodu ta derzhavy [Socio-economic condition of Ukraine: consequences for the people and the state]: national report. Kyiv, NVTs NBUV [in Ukrainian].

23. Amosha, O., Vyshnevsky, V., Zbarazskaya, L. et al. (2014). Promyslovist i promyslova polityka Ukrainy 2013: aktualni trendy, vyklyky, mozhlyvosti [Industry and industrial policy of Ukraine 2013: current trends, challenges, opportunities: scientific analyst. report]. Donetsk, IIE of NAS of Ukraine [in Ukrainian].

24. Amosha, O., Buleev, I., Zaloznova, Yu. (Eds.). (2017). Promyslovist Ukrainy 2014-2016: nevykorystani mozhlyvosti, shliakhy vidnovlennia, modernizatsii ta suchasnoi rozbudovy [Industry of Ukraine 2014-2016: untapped opportunities, ways of restoration, modernization

and modern development: scientific report]. Kyiv, IIE of NAS of Ukraine [in Ukrainian].

25. Libanova, E. M. (Ed.). (2015). Vidrodzhennia Donbasu: otsinka sotsialno-ekonomichnykh vtrat i priorytetni napriamy derzhavnoi polityky [Revival of Donbass: assessment of socio-economic losses and priority areas of public policy: a national report]. Kyiv, National Academy of Sciences of Ukraine [in Ukrainian].

26. Deineko, L. V., Yakubovsky, M. M. (Eds.). (2014). Promyslova polityka postkryzovoi ekonomiky [Industrial policy of post-crisis economy]. Kyiv, Institute of Economics and Forecasting of the National Academy of Sciences of Ukraine [in Ukrainian].

27. Ishchuk, S. O. (Ed.). (2020). Pererobna promyslovist rehioniv Ukrainy: problemy ta perspektyvy rozvytku [Processing industry of regions of Ukraine: problems and prospects of development]. Lviv, Institute of Regional Studies named after M. I. Dolishny NAS of Ukraine [in Ukrainian].

28. Pankov, V. A. (2003). Upravlenie stoimost'yu naukoemkogo mashinostroitel'nogo predpriyatiya: teoriya i praktika [Cost management of a science-intensive machine-building enterprise: theory and practice]. Kyiv, Naukowa dumka [in Russian].

29. Yankovsky, N. A. (2004). Upravlenie konkurentosposobnost'yu predpriyatiya na mirovykh rynkakh: mikro- i makrourovni [Management of enterprise competitiveness in world markets: micro and macro levels]. Donetsk, DNU [in Russian].

30. Bryukhovetskaya, N. Ye., Buleev, I. P. et al. (2019). Investytsiina aktyvnist pidpryiemstv z vyrobnytstva produktsii z vysokoiu dodanoiu vartistiu v umovakh obmezhenykh rynkiv: paradyhma ta mekhanizmy zabezpechennia [Investment activity of enterprises for the production of products with high added value in the conditions of limited markets: paradigm and mechanisms of provision]. Kyiv, IIE of National Academy of Sciences of Ukraine [in Ukrainian].

31. Porokhovsky, A. A. (2008). Amerikanskaya ekonomika: vyzovy upravleniyu [American economy: management challenges]. *USA. Canada. Economy – Politics – Culture*, no. 8, pp. 3-22 [in Russian].

32. State Statistics Service of Ukraine. Retrieved from http://www.ukrstat.gov.ua/ [in Ukrainian].

33. IMF and WB data. Retrieved from https: //www.worldbank.org/; https // e-news.su / in-world/28547 [in Ukrainian].

34. Ministry of Finance of Ukraine. Retrieved from https://www.inf.org.index. minfin.com.ua/economy/gap [in Ukrainian].

35. Dynamics of Ukraine's GDP from 1990 to 2023. Retrieved from https://seosait.com/dinamika-vvp-ukrainy-s-2002-po-2016-gody/ [in Russian].

36. Mechanical engineering of Ukraine. Retrieved from minprom.ua/print/755.html.17.10.2018 [in Russian].

37. Export strategy of Ukraine ("road map" of strategic trade development) for 2017-2021 (2017). Retrieved from https://zakon.rada.gov.ua/laws/show/1017-2017-%D1%80#Text [in Ukrainian].

38. Machine-building industry of Ukraine: conceptual opportunities for export expansion for the period up to 2021 (2019). Kyiv, Ukrpromzovnishekspertiza [in Ukrainian].

Амоша О. І., Брюховецька Н. Ю., Булєєв І. П. Промисловість як домінанта формування самодостатньої економіки України

Тисячоліттями повільними темпами формувалася і розвивалася традиційна антична, рабовласницька, феодальна економіка, основу якої складало сільськогосподарське виробництво, а ремісництво (попередник промисловості), послуги за своїми обсягами були незначними, 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-II промислових 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, освоєння досягнень 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 переважання 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, які ефективно освоюють науково-технологічні досягнення IV ПР, V, VI ТУ, ІКТ, цифровізацію.

Дослідженнями доведено безперспективність переходу до сучасної економіки шляхом тотального руйнування індустрії, як це відбувається в постсоціалістичних країнах та Україні. Обґрунтовується доцільність шляхом модернізації машинобудування реструктурувати промисловість, що забезпечить відновлення економіки в цілому, її самодостатність, рівноправну участь у міжнародному поділі праці і кооперації, входження і розвиток у складі спілок, асоціацій регіонального та міжнародного рівнів. Робота з розвитку економіки, досягнення самодостатності держави та суспільства має супроводжуватися зростанням духовності людини як духовно-біо-соціального суб'єкта, колективів, громадянського суспільства та його інститутів.

Ключові слова: економіка країни, самодостатня економіка, промисловість, машинобудування, домінанта розвитку, промислові 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-

cant in terms of their volumes, but their growth rates outstripped the growth rates of the agricultural sector, which reflects the Clarke model. In the industrial era, industry becomes the dominant sector of the economy, reaching a maximum in terms of its share in the economy of developed countries and the world by the middle of the 20th century as a result of predominantly extensive development, the I-II industrial revolutions, and the transformation of science into a direct productive force. In the II half of the twentieth century the development of industry goes on the path of intensive qualitative transformations (the third industrial revolution), and at the beginning of the twenty-first century developed countries entered the processes of the IV industrial (production) revolution, the development of scientific achievements, V, VI technological orders. The growth rates of the economy are accelerating, the share of industry in the economy is decreasing in relative terms, but in absolute terms, the growth of industry remains, despite the prevalence of the service sector in the modern economy (more than 60% in the world economy, more than 80% in the US economy). However, the basic industry, the dominant feature of the development of self-sufficient countries, remains industry, mechanical engineering, effectively mastering the scientific and technological achievements of IV IR, V, VI TO, ICT, digitalization.

Research has proven the futility of the transition to a modern economy through the total destruction of industry, as is the case in post-socialist countries and in Ukraine. The expediency of restructuring the industry through the modernization of mechanical engineering is substantiated, which will ensure the restoration 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-bio-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.

Амоша А. И., Брюховецкая Н. Е., Булеев И. П. Промышленность как доминанта формирования самодостаточной экономики Украины

Тысячелетиями медленными темпами формировалась и развивалась традиционная античная, рабовладельческая, феодальная экономика, основу которой составляло сельскохозяйственное производство, а ремесленничество (предшественник промышленности), услуги по своим объёмам были незначительными, но темпы их роста опережали темпы роста аграрного сектора, что отражает модель секторов экономики Кларка. В индустриальную эпоху доминирующим сектором экономики становится промышленность, достигая максимума по удельному весу в экономике развитых стран и мира к середине XX в. в результате преимущественно экстенсивного развития, I-II промышленных революций, превращения науки в непосредственную производительную силу. Во II половине XX в. развитие промышленности переходит на путь интенсивных качественных преобразований (III промышленная революция), а в начале XXI в. развитые страны вошли в процессы IV промышленной (производственной) революции, освоение достижений науки, V, VI технологических укладов. Темпы роста экономики ускоряются, удельный вес промышленности в экономике снижается в относительных характеристиках, но в абсолютных показателях сохраняется рост промышленности, несмотря на преобладание в современной экономике сферы услуг (более 60% в мировой экономике, более 80% в экономике США). Однако базовой отраслью, доминантой развития самодостаточных стран остаётся промышленность, машиностроение, эффективно осваивающие научно-технологические достижения IV ПР, V, VI ТУ, ИКТ, цифровизацию.

Исследованиями доказана бесперспективность перехода к современной экономике путём тотального разрушения индустрии, как это происходит в постсоциалистических странах и в Украине. Обосновывается целесообразность путём модернизации машиностроения реструктуризировать промышленность, что обеспечит восстановление экономики в целом, её самодостаточность, равноправное участие в международном разделении труда и кооперации, вхождение и развитие в составе союзов, ассоциаций регионального и международного уровня. Работа по развитию экономики, достижению самодостаточности государства и общества должна сопровождаться ростом духовности человека как духовно-био-социального субъекта, коллективов, гражданского общества и его институтов.

Ключевые слова: экономика страны, самодостаточная экономика, промышленность, машиностроение, доминанта развития, промышленные революции, прогрессивные технологии, высокотехнологичные производства.

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