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HIGH-TECH MARKET DEVELOPMENT TRENDS IN UKRAINE

ТЕНДЕНЦІЇ РОЗВИТКУ РИНКУ ВИСОКОТЕХНОЛОГІЧНОЇ ПРОДУКЦІЇ В УКРАЇНІ

Introduction. The high-tech market is changing dynamically, driven by both domestic economic transformations and global technological trends. Active digitalization, the development of the IT sector, and growing demand for innovative solutions in industry, medicine, and energy are contributing to a competitive environment. At the same time, the challenges faced by Ukraine due to the full-scale war, strengthening of European integration trends, attraction of investments and strengthening of export potential require intensification of the development of high-tech production to meet the needs of the domestic market and integration into global value chains. The article analyses the main trends affecting this market and outlines the ways to stimulate its development in Ukraine.

Materials and methods. The theoretical and methodological basis of the article includes the scientific works of domestic and foreign scientists, methods of general scientific methods: abstract and logical, induction and deduction, systematic approach, analysis and synthesis, as well as special research methods: statistical comparisons, grouping, expert assessments in substantiating the directions of promoting the development of high-tech products markets.

The purpose of the article is determining methodological approaches to assessing the level of technological sophistication of economic activity, identifying trends in the development of the high-tech market in Ukraine and justifying regulatory decisions to support and stimulate it.

Results and discussion. The article considers methodological approaches developed by international economic organizations to determine the level of technological sophistication of economic activity, in particular, the Eurostat methodology (sectoral, product and patent); the OECD industry classification; the NAICS methodology, which allowed to define a high-tech industry list. Based on the analysis of leading international rankings, comparative analysis of the dynamics of high-tech exports in different countries of the world, it is determined that Ukraine is lagging behind the technological leaders and European neighboring countries in terms of technological exports. The author substantiates the factors that limit the ability of the Ukrainian economy to fully realize the potential of the high-tech market, namely military risks; low competitiveness of high-tech products; limited access to investment; reduced export potential; low investment attractiveness; lack of highly qualified personnel, etc.

Conclusions. The development of high-tech markets is a key factor in increasing the competitiveness of Ukraine's economy and its integration into the global market. Despite the growing demand for high-tech products and active digital transformation in the global world, the Ukrainian economy has limited capacity to fully realize the opportunities of these markets. This requires the development and implementation of effective management and regulatory solutions to support and stimulate high-tech production in Ukraine, which include: creating conditions for the development of innovation infrastructure (research centers, incubators, accelerators, scientific, industrial and innovation parks); effective management of public institutions and implementation of international corporate governance principles in their management system; institutional support for the implementation of innovative projects and development of critical technologies, in particular, through public-private partnership mechanisms; support for small and medium-sized enterprises by promoting their development in terms of development and creation of innovative technologies; expansion of soft loans through the government programs “Affordable Loans 5-7-9” and “Affordable Finance”. Implementation of these measures will contribute to the development of high-tech production, creation of new jobs, increase in exports, and ensure the country's defense capability.

Keywords: high-tech products, market, development, economy, innovation infrastructure, exports.

Вступ. Ринок високотехнологічної продукції перебуває на етапі динамічних змін, зумовлених як внутрішніми економічними трансформаціями, так і глобальними технологічними тенденціями. Активна цифровізація, розвиток ІТ-сектору, зростання попиту на інноваційні рішення в промисловості, медицині та енергетиці сприяють формуванню конкурентоспроможного середовища. Водночас виклики, що постали перед Україною, пов’язані з повномасштабною війною, інтеграцією у світову економіку, залученням інвестицій і зміцненням експортного потенціалу, вимагають активізації розвитку виробництва високотехнологічної продукції для забезпечення потреб внутрішнього ринку та інтеграції в глобальні ланцюги доданої вартості. У статті проаналізовано основні тенденції, що впливають на цей ринок, та окреслено напрями стимулювання його розвитку в України.

Матеріали та методи. В статті використані загальнонаукові методи: абстрактно-логічний, індукції та дедукції, системного підходу; аналізу і синтезу, а також спеціальні методи дослідження: статистичних порівнянь, групування; експертних оцінок при обґрунтуванні напрямів сприяння розвитку ринків високотехнологічної продукції.

Метою статті є визначення методичних підходів до оцінювання рівня технологічності економічної діяльності, виявлення тенденцій розвитку ринку високотехнологічної продукції в Україні та обґрунтування регуляторних рішень щодо його підтримки і стимулювання.

Результати і обговорення. В статті розглянуто методичні підходи, розроблені міжнародними економічними організаціями щодо визначення рівня технологічності економічної діяльності, зокрема методика Євростату (секторальний, продуктовий і патентний); галузева класифікація ОЕСР; методика Бюро економічного аналізу NAICS, що дало змогу визначити перелік високотехнологічних галузей. На основі аналізу провідних міжнародних рейтингів, порівняльного аналізу динаміки експорту високотехнологічних

товарів в різних країнах світу, визначено, що Україна відстає від країн-технологічних лідерів, а також європейських країн-сусідів за рівнем технологічного експорту. Обґрунтовано чинники, що обмежують спроможність української економіки повноцінно реалізувати потенціал високотехнологічного ринку, а саме воєнні ризики; низький рівень конкурентоспроможності високотехнологічної продукції; обмежений доступ до інвестицій; зниження експортного потенціалу; низький рівень інвестиційної привабливості; дефіцит висококваліфікованого персоналу тощо.

Висновки. Розвиток ринків високотехнологічної продукції є ключовим чинником підвищення конкурентоспроможності економіки України та її інтеграції в глобальний ринок. Незважаючи на зростання попиту на високотехнологічну продукцію та активну цифрову трансформацію у глобальному світі, українська економіка має обмежену спроможність повноцінно реалізувати можливості цих ринків. Це вимагає розробки та впровадження дієвих управлінських та регуляторних рішень щодо підтримки і стимулювання високотехнологічного виробництва в Україні, які передбачають: створення умов для розвитку інноваційної інфраструктури (науково-дослідних центрів, інкубаторів, акселераторів, наукових, індустріальних та інноваційних парків); ефективний менеджмент державних установ та впровадження в систему управління ними міжнародних принципів корпоративного управління; інституційне забезпечення впровадження інноваційних проєктів та розвитку критичних технологій, зокрема, з використанням механізмів державно-приватного партнерства; підтримка малого та середнього підприємництва шляхом сприяння його розвитку в частині розроблення і створення інноваційних технологій; розширення програм пільгового кредитування за допомогою державних програм “Доступні кредити 5-7-9” та “Доступний фінансовий лізинг 5-7-9”; надання безповоротної державної допомоги у формі грантів для створення або розвитку переробних підприємств; підтримка внутрішнього попиту на вітчизняні товари та послуги шляхом часткової компенсації їх вартості, тощо. Реалізація цих заходів сприятиме розвитку високотехнологічного виробництва, створенню нових робочих місць, збільшенню обсягів експорту, а також забезпеченню обороноздатності країни.

Ключові слова: високотехнологічна продукція, ринок, розвиток, економіка, інноваційна інфраструктура, експорт.

JEL Classification: F14; L52; O14; O32.

Introduction. Current trends in economic development demonstrate the growing role of high-tech products as one of the key drivers of innovation and competitiveness of the leading countries. In a world where digitalization is sweeping across all areas of economic activity, traditional models of production and market interaction are undergoing significant changes. The rapid implementation of digital technologies, automation of production processes and development of intelligent control systems open up new opportunities for industrial modernization and the creation of a high-tech market (Dovzhanyn, 2021). These processes help to increase production efficiency, optimize supply chains and enhance the added value of products, which are important conditions for the integration of enterprises into global economic processes. At the same time, the transformation of the high-tech market in the context of digitalization requires a rethinking of traditional approaches to management, marketing and investment. Changes in the structure of production and market dynamics create both new opportunities and challenges that require a comprehensive analysis and development of effective strategies for the further development of the industry (Ptashchenko, 2021). In this regard, the research of trends in the development of the high-tech products market is relevant, which will help determine the prospects for the Ukrainian industry.

The purpose of the article is determining methodological approaches to assessing the level of technological sophistication of economic activity, identifying trends in the development of the high-tech market in Ukraine and justifying regulatory decisions to support and stimulate it.

Materials and methods. The article considers methodological approaches developed by international economic organizations to determine the level of technological sophistication of economic activity, in particular, the Eurostat methodology (sectoral, product and patent); the OECD

industry classification; the NAICS methodology, which allowed to define a high-tech industry list. Based on the analysis of leading international rankings, comparative analysis of the dynamics of high-tech exports in different countries of the world, it is determined that Ukraine is lagging behind the technological leaders and European neighboring countries in terms of technological exports. The author substantiates the factors that limit the ability of the Ukrainian economy to fully realize the potential of the high-tech market, namely military risks; low competitiveness of high-tech products; limited access to investment; reduced export potential; low investment attractiveness; lack of highly qualified personnel, etc.

Results and discussion. The development of high-tech markets is a key factor in improving the competitiveness of any country's economy and its integration into the global market. Given the growing impact of digitalization on the global economy, creating favorable conditions for the development of high-tech markets is of particular importance, due to the following factors. Firstly, the rapid development of digital technologies and information systems significantly changes the mechanisms of production, sales and interaction between market players, which creates new opportunities for innovation and competitive advantages for enterprises. Secondly, the globalization of economic processes combined with digital transformation facilitates the integration of national markets into the global economy, which requires companies to adapt to new standards of quality, efficiency and ecological compatibility. Thirdly, high-tech products are the driving force of the modern economy, as their development stimulates investment growth, the implementation of scientific and technological advances, and the creation of new production niches. This process is closely linked to digitalization, which optimizes business processes, increases productivity and reduces costs through the use of modern information systems and automation. In addition, the digitalization of the high-tech market creates preconditions for further integration of the economy, promotes the development of new models of cooperation between government agencies, research institutions and enterprises, which is a prerequisite for achieving sustainable development. In the context of growing competition in the international arena, the ability to quickly adapt to digital changes is becoming critical to ensuring economic security and the country's innovation potential. Thus, the analysis of the development of the high-tech products market in the context of digitalization not only allows to identify current trends and challenges, but also contributes to the formation of strategies that ensure the competitiveness and sustainability of the economic system in the face of rapid technological change.

Thus, according to D. Turko, science, innovation, engineering and technology are now considered to be the main factors of growth and competitiveness of all industries, as well as the national economy as a whole. The main indicator of competitiveness is not only the price of a product, but also its quality and degree of innovation, which depend on R&D and the number of expenditures on it, the availability of a sufficient number of scientific personnel, patent activity, high-tech orientation of enterprises (Turko, 2018).

The peculiarities of such a phenomenon as digitalization are reflected and described in the works of many foreign experts of the modern period. The term ‘digital economy’ was first used in 1995 by Canadian management professor D. Tapscott (Tapscott, 1994) and American IT specialist N. Negroponte (Negroponte, 1995), who characterized the benefits of using new information and communication technologies as a driver of the new economy. WEF Founder and Chairman K.M. Schwab defined digitalization as the merger of technologies and the blurring of boundaries between the physical, digital and biological worlds as a result of the evolution of information technology (Schwab, 2017).

In Ukraine, digital economy issues are considered in a wide range of perspectives - from social reality to the problems of industrial and trade development. V. Heyets substantiated the conceptual foundations of business digitalization to stabilize Ukraine's socio-economic development (Heyets, 2022). Investigating the informational and digital stage of the development of socio-economic systems, A. Grytsenko identified the place of digitalization in human interaction with the external world and the forms of transformation of basic institutions in the process of establishing an information and network economy (Grytsenko, 2022). As for market transformation, it is necessary

to highlight the work of I. Lytovchenko (Lytovchenko, 2020). The author proves that effective market activity in the transition to a digital economy is impossible without understanding the vector of development of the market itself. Among the main trends that have emerged due to the digitalization of the economy, the author identifies the following: strengthening of the virtual component of the market, digital neo-industrialization, emergence of new market participants and business models, and changes in consumer behavior.

Over the past few decades, industry has undergone significant transformations. On the one hand, manufacturing has become more fragmented, with its individual stages dispersed across many countries, while on the other hand, the rapid growth of innovation has initiated the development of technologies and equipment based on the most advanced technologies. Today, to be more competitive in the context of globalization, leading industrial manufacturers are switching to digital technologies. The use of digital technologies enables manufacturers to introduce new processes across the global value chain, from production and sales to services. That is why global industrial leaders are actively engaging in digitization of key functions within their internal vertical value chains, integrating them with horizontal supply chain partners, expanding their product range with digital functions and launching innovative services based on digital data (Gakhovich, 2024). These trends indicate that digitalization is not just a transition from analogue to digital data and documents, but a network of business processes between the creation of effective interfaces, integrated data exchange and management[1] (Herzog, 2024).

The creation of new technologies, their effective use and launching on the market are important in the global race for competitiveness. This was investigated by scientists from the Institute for Economics and Forecasting of the National Academy of Sciences of Ukraine (Structural changes…, 2019; Venger, 2020; Kushnirenko, 2019; Bykonya, 2024). High-tech sectors and enterprises are key drivers of economic growth and productivity and tend to create high-paying jobs and produce high value-added products (Mosiychuk, 2024).

Eurostat uses three approaches to measure technological intensity: sectoral, product and patent. *The sectoral approach* is a specific grouping of industries according to their level of technological intensity (R&D expenditure/value added), using the statistical classification of economic activities in the European Community (NACE Rev.2) at the 2- or 3-digit level to compile the groups. Manufacturing activities are grouped into high-, medium-, medium-low- and low-tech types[2].

The product approach considers the level of technological intensity of industrial products and identifies trade in high-tech products. The list of high-tech products is based on calculations of R&D intensity by product group (R&D expenditure/total sales). Groups classified as high-tech products are aggregated together based on the Standard International Trade Classification.

The patent approach considers whether a patent is high-tech and also identifies biotechnology patents. The groups are aggregated on the basis of the International Patent Classification. In Ukraine, the list of high-tech industries is specified in the "Draft Strategy for the Development of High-Tech Industries until 2025"[3]. A comparative analysis of Ukrainian and European approaches to identifying a list of high-tech industries is presented in Table 1.

The current situation in Ukraine and the world requires a revision of the classification and the definition of integrated directions for the development of these areas. This is due to the fact that the existing classification in Ukraine does not take into account new technologies, digital solutions and integrated business models that are gaining popularity in the global economy. Currently, this list is not officially legitimized, which requires the implementation of European approaches to the classification of high-tech activities in Ukraine. Revising the classification will allow it to be adapted to modern technological trends, contribute to a more accurate reflection of the realities of the high-

[1] https://magazine.primetals.com/2022/04/22/from-automation-to-digitalization-in-the-steel-industry/ (accessed 14.01.2025)
[2] URL: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:High-tech (accessed 14.01.2025)
[3] URL: https://me.gov.ua/view/8b96d8a1-8009-4c0e-a7d5-a7d96a2a7072 (accessed 14.01.2025)

tech market, and provide a basis for the development of new regulations, guidelines and strategic documents that incorporate current challenges and opportunities of digitalization.

Table 1.

A comparative analysis of Ukrainian and European approaches to identifying a list of high-tech industries

№	Ukraine	EU
1	*Information technology industry:* - production of computer and office equipment and software development'; - providing consulting services on digital business transformation and support of information and communication infrastructure.	*High technology:* - production of computer, electronic and optical products;
2	Aerospace	*High technologies:* - production of aircraft and spacecraft and related equipment.
3	Pharmaceutical industry	*High technologies:* - production of basic pharmaceutical products and pharmaceuticals.
4	Manufacture of electronics and telecommunications equipment	*Medium and high-tech technologies:* - manufacture of electrical equipment; - manufacture of machinery and equipment not included in other categories.
5	Manufacture of medical, high-precision and optical equipment	*Medium and high-tech technologies:* manufacture of medical and dental instruments and accessories.
6		*Medium and high-tech technologies:* - manufacture of motor vehicles, trailers and semi-trailers; - manufacture of other transport equipment, except for construction of ships and boats and manufacture of aircraft and spacecraft and related equipment.
7		*Medium and high-tech technologies:* - manufacture of chemicals and chemical products.
8		*Medium and high-tech technologies:* - production of weapons and ammunition.

Source: compiled according to Eurostat[1], Ministry of Economy of Ukraine[2]

An analysis of the main trends in the global high-tech market should be started with the Global Innovation Index 2023, which is based on indicators of the innovation cycle: investment in science and innovation; technical progress; technology adoption; and socio-economic impact of innovation. The ranking ranks countries by their level of innovation development from 1st to 132nd place. In 2023, Ukraine was ranked 55th in the general list of countries, and in the group of comparable countries of the low- and lower-middle-income bloc among the countries of the European region in 2023, it was ranked 3rd. Compared to 2019, Ukraine has lost 8 positions in this ranking, which is primarily due to the impact of hostilities. The full-scale war has significantly damaged infrastructure, reduced economic activity and further limited opportunities for investment in innovation. In addition, wartime increases risks for businesses, making investment in high-tech projects less attractive. Moreover, this decrease is caused by a set of interrelated factors: low investment in R&D; insufficient funding of research institutions; instability of government policy and lack of a coherent innovation strategy; macroeconomic and political instability; economic difficulties

caused by internal crises, weak GDP growth and the impact of external factors; outflow of skilled personnel; insufficient support from business; and low integration with international innovation networks (Gakhovich, 2024).

Analyzing the dynamics of exports of high-tech goods in the world according to the World Bank's methodology, which uses a 'product approach' based on the R&D intensity (costs divided by total sales) for high-tech product groups SITC Rev. 3, we can note a high share (up to 30% in the structure of global exports) and its growth over the past 10 years (Table 2).

Table 2

Exports of high-tech goods (% of industrial exports)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
World	19,1	19,9	20,1	20,6	20,5	20,7	21,9	21,5	23,3	22,9
Switzerland	26,7	27,1	27,3	14,0	13,3	12,9	12,8	14,2	30,0	29,3
United Kingdom	22,2	22,3	23,6	22,6	22,3	23,1	23,0	23,9	27,2	28,9
China	29,7	30,4	30,3	30,9	31,5	30,8	31,1	30,2	27,8	26,6
USA	20,5	21,4	22,4	19,3	18,5	18,7	19,5	19,9	20,6	21,8
Germany	17,2	17,8	18,1	15,9	15,7	16,4	15,5	15,4	17,5	17,9
Hungary	16,7	17,1	17,6	17,3	16,8	17,4	17,5	16,4	18,4	17,9
Romania	8,4	9,4	10,4	9,8	10,1	11,1	11,9	11,5	11,9	12,7
Poland	10,1	10,8	10,7	10,7	10,4	9,9	9,9	9,4	10,9	10,8
Slovak Republic	11,1	11,2	10,7	11,8	10,6	9,9	10,0	9,0	8,5	9,7
Ukraine	6,9	8,0	6,7	6,2	5,4	5,5	5,9	4,5	5,7	6,7
Moldova	5,3	4,6	3,5	5,4	2,5	3,0	2,2	2,2	2,1	2,6

Source: compiled according to The World Bank [4]

The data in Table 2 suggest that Ukraine is lagging far behind not only the technological leaders, but also its nearest neighbors, the EU countries. Thus, in 2023, Ukraine lagged behind the global average in exports of high-tech goods by 16.2 percentage points, including Switzerland - 22.6 percentage points, the United Kingdom - 22.2 percentage points, China - 19.9 percentage points, the United States - 15.1 percentage points, Germany and Hungary - 11.2 percentage points, Romania - 6 percentage points, Poland - 4.1 percentage points. The share of high-tech Ukrainian exports remained almost unchanged in 2014-2023: there was a small decrease from 6.9% in 2014 to 6.7% in 2023, which is evidence of structural problems in the national economy and foreign trade policy. This is primarily due to the structural dominance of commodity exports Ukraine traditionally focuses on exports of raw and semi-finished goods with lower added value (Figure 1).

The growth of low-tech exports is faster than that of high-tech production. Thus, in 2020, the share of high- and medium-tech exports of industrial products was 15.0% in the structure of Ukraine's total exports, and in 2023 it decreased by 4.1 pp. At the same time, the share of low-tech exports increased from 82.8% in 2020 to 86.1% in 2023. The growth of low-tech exports from Ukraine is faster than the development of high-tech production, which is primarily due to the loss of control over some territories, the closure of the sales market in Russia and the deterioration of the socio-political and economic situation in the country. In addition, traditionally, the largest share of high-tech products in Ukraine's foreign trade has been accounted for by the machine building industry, which has been significantly affected by the consequences of the war, when most of the production facilities were suspended or closed down.

The prevalence of low-tech exports makes the domestic economy dependent on global market conditions and energy supplies, as Ukraine's main exports are energy-intensive. In addition, exporters are largely dependent on imports of materials, equipment and components.

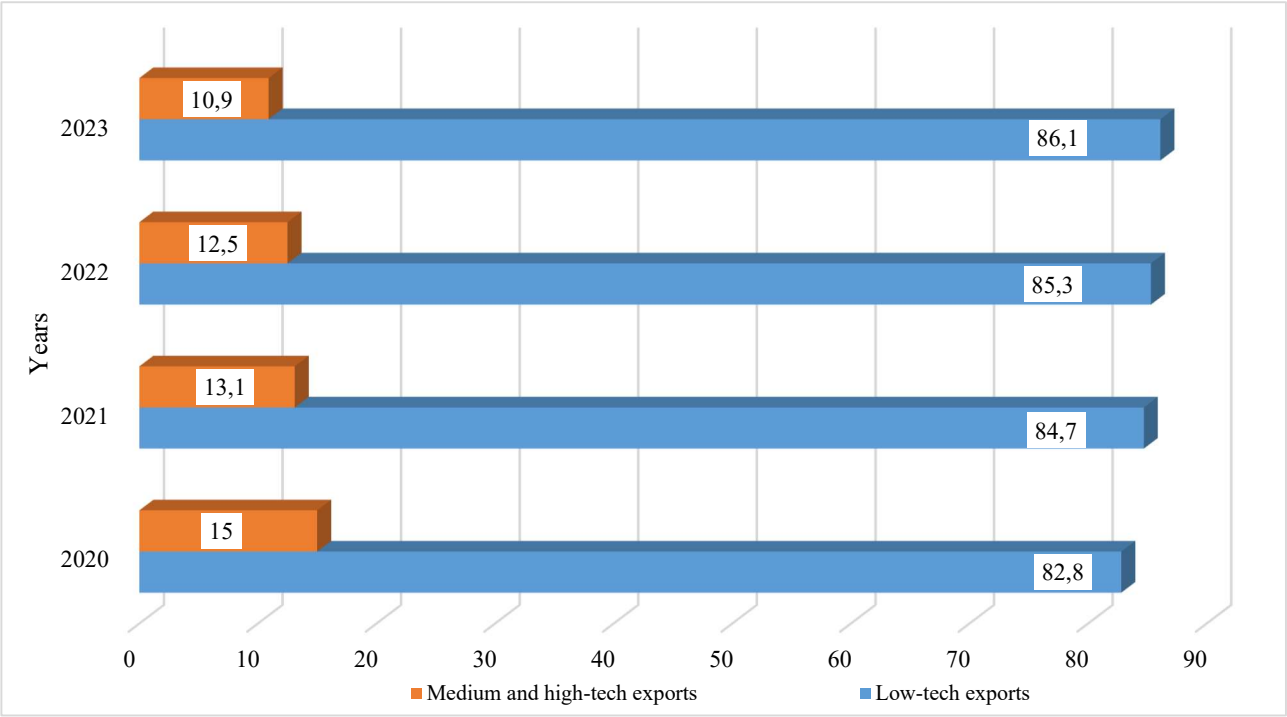

Figure 1. Shares of low-, medium-, and high-tech exports of industrial products in the structure of Ukraine's total exports in 2020-2023, %

Source: compiled according to State Statistics Service of Ukraine [4]

The foregoing requires the development and implementation of *effective management and regulatory solutions to support and stimulate high-tech production in Ukraine*, which include:

1. Development of innovation infrastructure, namely the creation of a network of research centres, incubators, accelerators, scientific, industrial and innovation parks to create a favorable environment for innovative companies and research groups.

2. Effective management of state institutions and implementation of international corporate governance principles in their management system.

3. Institutional support for the implementation of innovative projects and the development of critical technologies, in particular, through the use of public-private partnership mechanisms.

4. Support for small and medium-sized enterprises by promoting the development of small and medium-sized enterprises in terms of developing and creating innovative technologies. In particular, it is important to introduce grant support for manufacturers of dual-use products, which can be used to purchase, deliver and install equipment, and own funds can be used to replenish working capital.

5. Concessional lending through the expansion of the state programs “Affordable Loans 5-7-9” and “Affordable Financial Leasing 5-7-9” to reduce the cost of loans for small and medium-sized enterprises; providing non-repayable state aid in the form of grants for the creation or development of processing enterprises, horticulture, berry growing, viticulture and greenhouse production.

6. Supporting domestic demand for domestic goods and services by partially compensating for their cost. In particular, compensation for the cost of municipal and special equipment, public transport, power equipment, elevators and elevator equipment of domestic production.

7. Identification of priority areas of innovation activity and their approval for the period until 31 December of the year following the termination or cancellation of martial law. The priorities are technological renewal and development of national security and defense, information,

[4] URL: https://www.ukrstat.gov.ua/ (accessed 14.01.2025)

communication and electronic systems and technologies for national security and defense, information and cyber security.

8. Financial support for industrial entities under the budget program “Provision of State Support for the Implementation of Investment Projects with Significant Investments” is introduced to attract investors through the introduction of state support for large investment projects and to implement the Law of Ukraine “On State Support for Investment Projects with Significant Investments in Ukraine”.

The implementation of these measures will contribute to the development of high-tech production, create new jobs, increase production and exports, and ensure the country's defense capability under martial law.

Conclusions. The present study identifies the challenges facing Ukraine related to a full-scale war, integration into the European Union, attracting investment, and strengthening export potential. This encourages the intensification of the development of high-tech production to ensure the needs of the domestic market and integration into global value chains.

The article suggests that in Ukraine, the existing classification for determining the level of technological sophistication of economic activity does not consider new technologies, digital solutions and integrated business models that are gaining popularity in the global economy. Based on a generalization of methodological approaches developed by international economic organizations, in particular, the Eurostat methodology (sectoral, product and patent); the OECD industry classification; and the NAICS methodology, the article identifies a list of high-tech industries for assessing their export potential.

Based on the analysis of leading international rankings comparing exports of high-tech goods in different countries, it is determined that Ukraine lags behind the technological leaders and European neighboring countries in terms of technological exports. The main constraint to the development of the high-tech market in Ukraine is the full-scale war and the risks associated with it, which scare away investors and, even under formal force majeure circumstances, prevent Ukrainian business and scientists from joining international consortia and partnerships. In addition, the inconsistency of regulations and a complex regulatory environment are another deterrent to the development of the high-tech sector of the Ukrainian economy.

It is revealed that the growth of low-tech exports is faster than that of advanced high-tech production. Thus, in 2020, the share of high- and medium-tech exports of industrial products was 15.0% in the structure of Ukraine's total exports, and in 2023 it decreased by 4.1 percentage points, while the share of low-tech exports increased from 82.8% in 2020 to 86.1% in 2023. The growth of low-tech exports from Ukraine is faster than the development of high-tech production, which is primarily due to the loss of control over some territories, the closure of the sales market in Russia and the deterioration of the socio-political and economic situation in the country. In addition, traditionally, the largest share of high-tech products in the structure of Ukraine's foreign trade was accounted for by the machine building industry, which suffered significantly from the consequences of the war, when most of the production facilities were either unavailable or closed down.

The prevalence of low-tech exports makes the domestic economy dependent on global market conditions and energy supplies, as Ukraine's main exports are energy-intensive. In addition, exporters are highly dependent on imports of materials, equipment and components.

The outlined above requires development and implementation of effective management and regulatory solutions to support and stimulate high-tech production in Ukraine, which include creation of conditions for the development of innovation infrastructure (research centers, incubators, accelerators, scientific, industrial and innovation parks); effective management of state institutions and implementation of international corporate governance principles in their management system; institutional support for the implementation of innovative projects and development of the national economy. The implementation of these measures will help develop high-tech production, create new jobs, increase exports, and ensure the country's defense capability.

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