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Editors office address:
National Scientific Center "Institute of Agrarian Economics"
03127, 10 Heroiv Oborony Str., Kyiv, Ukraine
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Post-war restructuring of the agricultural sector of Ukraine: elimination of distortions to achieve stability and well-being

Oleksii Mohylnyi¹*, Mykola Kalinchyk², Olena Gryschenko³

¹Full Doctor in Economic Sciences, Professor. ORCID: <https://orcid.org/0000-0002-9802-1701>.

National Scientific Centre «Institute of Agrarian Economics», 03127, 10 Heroiv Oborony Str., Kyiv, Ukraine

²Full Doctor in Economic Sciences, Professor. ORCID: <https://orcid.org/0000-0002-6240-4479>.

«WinMix-Soft» Limited Liability Scientific and Production Enterprise, 03127, 10/1 Priozerna Str., Kyiv, Ukraine

³ORCID: <https://orcid.org/0000-0003-2271-3629>.

National Scientific Centre «Institute of Agrarian Economics», 03127, 10 Heroiv Oborony Str., Kyiv, Ukraine

► **Abstract.** The relevance of the study is due to the formation of the rent-seeking model of the agricultural sector, the dominance of the raw material structure of export and the related socio-economic problems that have escalated to the scale of national security in the context of Russia's war against Ukraine. The purpose of the research is to identify cause-and-effect relationships of structural distortions of the agricultural sector and justify the state regulatory policy aimed at strengthening its sustainability. The methods of empirical observation, expert evaluations, dynamic series of statistics, monographic, critical analysis, graphic tools, statistical database processing, system-structural processing of material, abstract-logical and other tools. The scale of destruction of assets of the agricultural sector and ecology as a result of Russian aggression was revealed. The institutional prerequisites for structural distortions in the agricultural sector are substantiated. The dynamics of export-import operations of the agricultural sector and alternative possibilities in the international division of labour to increase its efficiency are highlighted. Measures to restore animal husbandry by activating micro and small businesses, establishing equivalent relations of market counterparties and their observance of virtuous practices have been developed. The practical significance is reflected with a proposal on overcoming the protracted crisis in animal husbandry through an inclusive approach to the realization of the potential of micro, small, and medium-sized farms

► **Keywords:** structure of agriculture, agri-food potential, crop and livestock products, added value, foreign economic activity

► Introduction

Due to the beginning of Russia's full-scale war against Ukraine on February 24, 2022, the agricultural sector suffered significant human casualties and physical losses of assets for all components that guaranteed food security for the population of the country and the world. Among them, in particular:

- risks to the life and health of workers during spring field work and harvesting in temporarily occupied, liberated, and front-line territories.
- a surge in prices for agricultural production equipment and the impossibility of purchasing them due to an aggravating shortage.
- destruction of the infrastructure for production, processing, storage, and sale of agricultural products, etc.;

– environmental destruction and ecological damage caused to agricultural land and groundwater by chemicals seeping into the ground, poisoning soils and plant nutrition (Murder of ecology..., 2022);

In the report of the Food and Agricultural Organization of the United Nations (FAO: Direct damage..., 2022), only direct losses of agricultural assets since the beginning of the war reached 6.4 billion USD, and indirect losses are estimated by the KSE Institute Centre for Food and Land Use Research together with the Ministry of Agrarian Policy of Ukraine (Indirect losses ..., 2022) at 23.3 billion USD, in particular, 51% – due to the blockade of ports, 42% – due to a decrease in crop production, 4% – an increase in the cost of production,

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*Corresponding author

3 % – decrease in livestock production. As of June 1, 2022, the Cabinet of Ministers of Ukraine, the European Commission, and the World Bank estimated the need for post-war reconstruction of agriculture (without irrigation and land reclamation) in the amount of 19 billion USD, but the war continues, so this amount is constantly increasing (World Bank..., 2022). The drop in gross value added in agriculture compared to the previous year is estimated to be up to 30%.

In Lugano, the Cabinet of Ministers of Ukraine presented the Plan for the post-war reconstruction of the state worth 750 billion USD, calculated till 2032, 850 projects, and 15 national programs should be implemented (Recovery Conference..., 2022). Measures for their implementation are expected to be carried out in three stages: a) to restore here and now (2023-2025); b) the reconstruction of damaged infrastructure; c) the long-term transformation (2026-2032). According to the results of the implementation of the Plan, Ukraine is at the TOP-25 according to the international indices of Economic Complexity and Human Capital. To achieve the goal of this study, the direction “Development of sectors of the economy with added value” is important, which requires a total of 50 billion USD, including for the agricultural sector – 37 billion, or more than two-thirds (Recovery Conference..., 2022). The direction “Development of the agricultural sector” provides: a) the development of processing of agricultural raw materials and production of final consumption goods in compliance with the principles of the EU Green Agreement; b) the construction of an irrigation system; c) the production of products with higher added value (vegetables, fruits, berries, seeds); d) the reclamation of damaged lands; e) increasing production of meat, milk, eggs; f) promoting the transition of the agri-food complex to “green” growth; g) restoration of 10,500 agricultural enterprises after the war.

Of course, the very list of these areas of post-war recovery does not give an understanding of their content, as it does not reveal the institutional mechanisms of their implementation and sources of financing. At the same time, it is somewhat alarming that all of them, except for the “operational recovery of agricultural companies”, somewhat echoes the National Economic Strategy for the period until 2030, approved by the Resolution of the Government of Ukraine dated March 3, 2021 No. 179 (On the National Economic Strategy..., 2021). Among the comparative and competitive advantages of Ukraine, favourable natural conditions and fertile soils, large areas of land resources, a qualified labour force, and leadership positions in the world markets of agricultural raw materials are traditionally considered. But given the advantages, there are also some problems and limitations, namely: low level of processing, insignificant production of added value by the industry, high dependence

on the tonnage of export contracts and overall imports, etc.

A critical analysis of the pre-war Strategy in terms of strict adherence to the principles of sustainable development of the agrarian sphere was carried out by the authors in one of the publications (Mohylnyi, 2021), so there is no point in dwelling on the document, which should expire with the adoption of the new Plan for the post-war reconstruction of the agrarian sector and the national economy as a whole. Ryzhkova et al., (2022) complained about the lack of a “Science” section in the Plan for the post-war reconstruction of Ukraine, although it is precisely science, in their opinion, that should become the “locomotive” of accelerating the economic development of the state. “Neglecting it... all the years of independence led to deindustrialization and debilitation, the transition from an aviation-missile-shipbuilding country to a raw material and agrarian appendage of developed countries and the status of one of the poorest countries in Europe.” Among the number of measures proposed by the authors, the following were highlighted: improvement of financing, the provoking interest of talented youth, struggle for teachers and researchers, and provision of modern equipment.

The aim of the study – substantiation the causes of inter-branch structural distortions of the agrarian sector and the need to change the tools of the organizational and economic mechanism of entrepreneurship regulation, taking into account the strengthening of its resistance to internal challenges and external threats.

► Literature review

Most of the publications considered by the authors do not pretend to be academically fundamental, because they were created based on the news in the conditions of an unfinished war and the temporary occupation of large territories of Ukraine, as well as a constant increase in human and material losses from the destructive consequences of Russian aggression. Due to these circumstances, less attention is paid to the aggravation of the sustainability problems of the agricultural sector caused by the archaic rent-based economy model, destructive sectoral distortions, and consumer exploitation of the country's agrarian resource potential in available sources.

T. Bohdan (Bohdan, 2022) stressed that the financing of the post-war reconstruction plan of Ukraine should take place mainly in the form of grants. This will prevent the risks of a debt crisis and will contribute to the impetus of economic growth in all sectors of the economy. An important aspect of this should be an organic combination of reconstruction with the processes of European integration. According to the researcher, the EU has significant experience in the pre-accession preparation of Central and Eastern European countries,

special programs, and resources of the European Investment Bank and the European Bank for Reconstruction and Development. The introduction of technologies that meet European standards will allow enterprises to regain their positions in the markets and integrate into global value chains. World Bank institutions (*Investment Guarantee Agency, Microfinance Bank, Entrepreneurial Fund*) and *Sponsor Trust Fund Multilateral Investment Guarantee Agency* (MIGA) could become participants.

Also, the proposals of P. Burkovskyi and A. Sukharin (2022) are constructive, they believed that the “grain corridor” only situationally solves the problem of global food security. It is time to create an organization that will make it impossible in the future to blackmail Russia with hunger and speculative price increases for the means of agricultural production by companies that conduct business with the state sponsoring terrorism to circumvent international sanctions. According to the authors, to protect the harvest and compensate for the loss of assets by small and medium-sized producers, it is advisable to introduce a kind of “agrarian lend-lease”, while ensuring transparent reporting on the targeted use of resources.

The Ukrainian Agrarian Council (UNA) proposed measures for the Post-War Recovery Plan and the long-term vision of commodity producers in the field of crop production, animal husbandry, and processing of agricultural raw materials. In particular, the opening of EU export markets, income from 30 to 80 million USD investments in cattle breeding, and the construction of 2-3 meat processing plants will contribute to increasing the number of cattle to 1 million heads. In turn, this will make it possible to convert up to 3 million tons of grain into livestock products, additionally create 5-7 thousand new jobs, and export revenue will amount to 500 million US dollars. The results of similar calculations are also given for pig farming (Agrarians made proposals..., 2022).

In the collective monograph (Economic revival, 2020), it is recommended to carry out a structural transformation of the economy of Ukraine, i.e. to develop sectors with higher labour productivity and technology, and to reduce the share in the GDP of the primary sector, in particular the agrarian sector, since the import dependence of agriculture on modern means of production and its focus on the export of unprocessed raw materials is the model that works for the economies of other countries and wastes the industry's potential for economic growth and the well-being of the country's population. The accompanying negative phenomena of this model are the degradation of land resources, significant deterioration of the environment, loss of jobs, and forced migration of the rural population to large cities or abroad. This repeats the destructive social models of the “Third World” countries

when huge urban agglomerations are formed and the countryside is depopulated.

Scientist M.I. Zveryakov (2022) devoted his works to studying prerequisites for the formation of a new economic model of Ukraine in the post-war period. In his opinion, the transformational model formed in the 1990s, built within the framework of the conjuncture of raw materials on foreign markets, led to the deindustrialization of the economy. There was “growth without development”, which led to the polarization of society into rich and poor. He highlighted the features of economic growth and the existing structure of GDP use. The need for new industrialization as a prerequisite for increasing the production of added value in the conditions of integration with the structures of the European space is well-founded. Scientific discussions on the application of the “Marshall Plan” for Ukraine are considered, and key reservations regarding its implementation in the post-war period are identified.

Institute of Strategic Studies (Features of functioning..., 2022) singled out the main areas of ensuring stability and adaptability of the agricultural sector to functioning in war conditions. Among them are a) financial support of farmers, retention of employees, and prevention of bankruptcy; b) achieving sustainability of community food systems by creating a closed chain of material and technical resources for agricultural production within the community; c) review of cultivated areas in the direction of balancing them and satisfying the domestic market with food, loading the domestic food industry with raw materials, as well as reorienting the structure of exports to highly profitable and smaller tonnage products and processing products with a higher added value; d) restoration of technical possibilities of export of agricultural raw materials and food products through traditional partners and the search for new supply opportunities for European and world markets, etc.

His “Anti-Morgenthau Plan” was proposed by V. Novikov (2022), who believed that to transition from an agrarian-raw material to a technological economy, Ukraine needs to avoid the plan that was originally proposed to Germany in 1945-1946 and provided for the structural restructuring of the economy – from industrial to agrarian. It was a plan of investors because post-war Europe needed foreign food aid. However, the transformation of the German economy into an agrarian country would deprive 25 million people of their jobs. Under the same scenario, according to the expert, our country will preserve the status of a raw material and food appendage to the technologically developed economies of the world with all the systemic consequences of the poorest country in Europe. In the new realities, there is an opportunity to overcome the historically formed stereotype of potential investors who perceive Ukraine only “as a granary” of Europe and the world.

Referring to the experience of Canada, Germany, and Italy, N. Reznikova and V. Panchenko (2022) considered it expedient to establish a network of “food banks” (food banks or food pantries) for internally displaced persons. These are a kind of territorial hubs that redistribute products from food companies, grocery stores, restaurants, grocers, packers, farmers, and government institutions to organizations that need them through logistics and warehouse infrastructure. In addition to internally displaced persons, these can also be orphanages, centers for the elderly, free canteens, and shelters. Such a model, the authors believe, provides sustainable, long-term intervention in the domestic market to increase food security and prevent hunger.

► Materials and methods

Methodological basis at all stages of the research, a dialectical approach to the study of transformation phenomena and processes took place in economy and organization of agriculture from a centrally-planned system to a liberal-market economy, which contributed to the identification and determination of miscalculations in the use of the human, the economic, and natural resource potential of Ukraine, which were exacerbated in force majeure circumstances, especially in relation to the stability of the pre-war parameters of the reproduction of the industry. Using the abstract-logical method, techniques of induction and deduction, analysis and synthesis, analogy, comparison, moving from abstract to concrete, system-structural, and other research tools were used.

The choice of general economic methods is determined by the research object related to the need to restructure the agrarian sector for the sustainable development of the national economy and the well-being of society. Among them are: monographic, empirical observations using expert assessments, economic and statistical, elements of the balanced approach, normative, indices, coefficients, absolute indicators, and others. Processing and systematization of the FAO database statistical methods due to the need to analyse the effectiveness of the use of agricultural resource potential by Ukraine by grouping 168 countries of the world according to the ratio of consumption of grain crops for fodder purposes to own production. This showed unused reserves and missed benefits from comparative and competitive advantages of national commodity producers regarding insufficient conversion of fodder crops into livestock products, the dominance of raw materials in export operations, negative balance of soil nutrients, hypothetical loss of jobs, lack of added value, etc. Taking into account the blockade of seaports from February to July 2022, calculations were made of the export value of dominant crops per hectare of land, as well as its total tonnage in Ukraine and in some leading countries in global agri-food markets.

► Results and Discussion

Structural distortions of the agricultural sector.

The transformations that have taken place in the agricultural sector over the past three decades have diverse economic, social, ecological, demographic, migration, and other consequences since without exaggeration they affect all important spheres of society and the vital interests of the entire population of the country. Depending on the scale of expectations of changes for the better and post-reform realities, structural reforms are evaluated differently by peasants, society, business, local, and regional state authorities, local self-government bodies, and other stakeholders. So, let's focus on the fundamental changes in the basic sector of the economy during the transition from a centrally-planned economic system to functioning on a market basis and the reversal of Ukraine from an industrial-agrarian to an agrarian one – one of the global centers of food security and at the same time the poorest country in Europe in terms of GDP per capita.

The positive achievements of the reforms are the specification of private property rights on agricultural land and other agricultural assets; market circulation of rights to land plots for individuals; formation of large, medium, and small business entities with various organizational and legal forms of activity; development of potential market infrastructure; proper level of self-sufficiency of the state in basic food products, etc. At the same time, like any multifaceted process in the economy, the market transformation of the agricultural sector has negative consequences. The “invisible hand of the market” has led to “growth without development” and large-scale systemic threats to the stability of the agricultural sector: structural distortions in crop and livestock production and within these industries; non-observance of scientifically based crop rotations and depletion of soil fertility, giving preference to high-margin crops; the crisis state of meat and dairy cattle breeding, in particular, the reduction of livestock and production volumes and the long-standing unprofitability of products; conflict of interests between producers of agricultural products and processors, and the latter – with trade networks due to non-equivalence of commodity exchange; the dominance of the raw material export structure, etc.

As we can see in fig. 1, the rent-oriented commercialization of the industry led to excessive plowing of agricultural land, which reached 80%, and a bias towards crop production, which had a boomerang effect on the reproduction of soil fertility. During the analysed period, the application of organic fertilizers per 1 ha of land decreased 12 times (from 6737 kg to 581 kg), and nitrogen fertilizers, on the contrary, increased 41 times (from 48 kg of active substance to 1970 kg). A similar trend also applies to chemical means of plant protection.

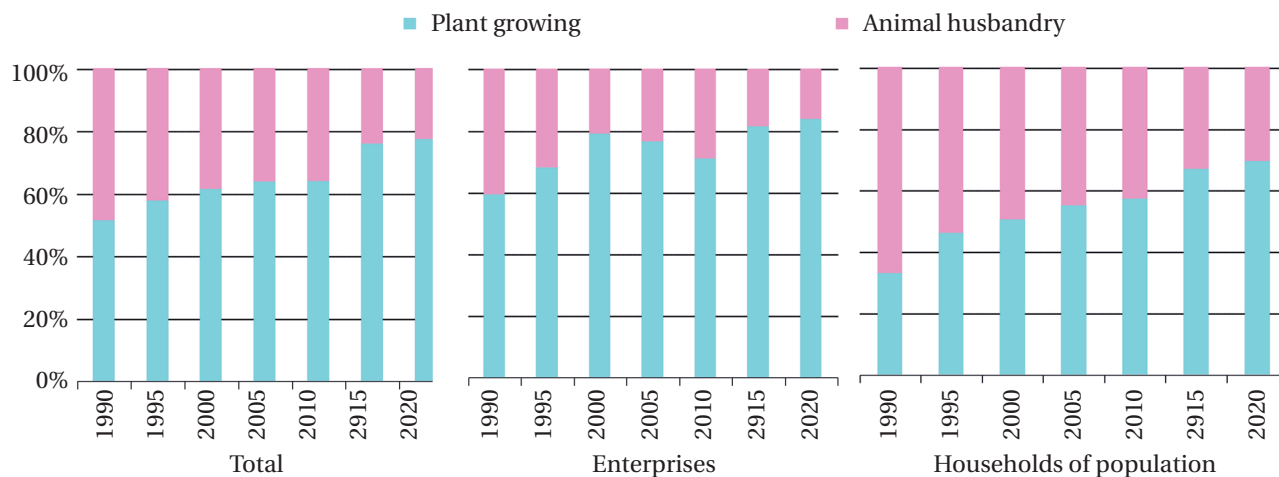


Figure 1. Structure of gross agricultural output in constant 2016 prices for 1990-2020, as a percentage of the total

Note: here and after, the data are from 2015 without the temporarily occupied territories of the Autonomous Republic of Crimea, the city of Sevastopol, and certain districts of the Donetsk and Luhansk regions

Source: Developed by authors given data (Statistical Bulletin, n. d.)

In 1990, the ratio of the value of the gross production of crops and livestock was 51.5% to 48.5%, and in the households of the population, livestock production was 18.5% p. p. more and was equal to 67%. However, in the following years, crop production gradually replaced livestock production. Over the course of three decades, enterprises reduced its production by 2.5 times, and households reduced it by 2.2 times. Only statistical data on changes in the share of industries in gross output are given.

Imbalance of the plant industry. Since plant growing and animal husbandry are industries interconnected by the main and related products and financial income, the decrease in the need for fodder and other factors inevitably affected the location of production and the structure of

cultivated areas in all categories of farms. Cereal and industrial crops have a constant tendency to expand at different rates in individual years, depending on weather conditions and the changing conjuncture of commodity markets. In 2021, they collectively occupied the largest share of arable land – 88.3%, or 56.0 and 32.3%, respectively (Fig. 2). The increase in the area under high-margin crops (wheat, corn, sunflower, rapeseed) in 1990-2021 was due to a reduction in fodder crops by almost 7 times – from 37% to 5.4%. What lost socio-economic opportunities this led to, we will analyse further in the context of Ukraine's place in the international division of labour, processing of agricultural raw materials, creation of added value, and loss of jobs.

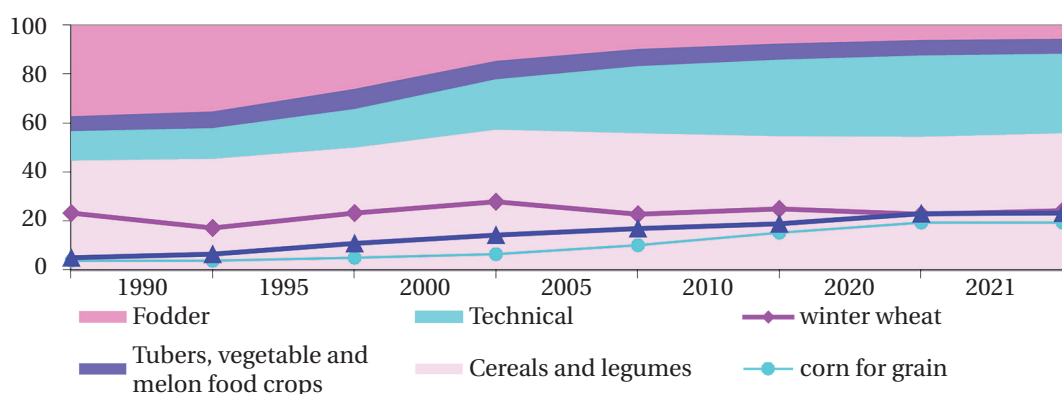


Figure 2. The structure of cultivated areas of agricultural crops in all categories of farms, as a percentage of the total area

Source: developed by authors given data (Statistical Compendium, n. d.)

The long-term contemplative position of the authorized regulatory bodies and late changes in fiscal policy in the crisis years of the 1990s led to

the imbalance of crop production in terms of the cultivation of the most profitable crops and the neglect by commodity producers of recommended

crop rotations and technologies. The tax burden (the ratio of tax payments to gross income) on agricultural enterprises in 1998 reached 20.8%, although the level of payment of direct taxes was only 43.3%. Two-thirds of enterprises ended this year with losses totalling 4,537.5 million UAH, with negative profitability of 26.9%. In order to overcome the hopeless indebtedness of enterprises to the state by suppliers of material and technical resources, banks, and peasants for the lease of land and property shares, the Law of Ukraine “On Fixed Agricultural Tax” of December 17, 1998 No. 320 (On Fixed Agricultural..., 1998) instead of 12 taxes and fees one was entered (leaving VAT, excise duty, and local payments).

The only object of taxation is the area of land used by commodity producers. The introduction of this tax ensured a reduction of taxes in the amount of 1.4 billion UAH, or almost twice (Mohylnyi, 2021). Agriculture became more attractive for investments in the cultivation of some of the most liquid and quick-paying crops, which was taken advantage of by large companies, including those with non-core assets and speculative motivation.

The most rapid expansion of the sowing wedge of high-yielding crops occurred starting in 2000, when, under favourable external conditions on raw material markets, agro holding formations leased hundreds of thousands of hectares of agricultural land from unsold collective enterprises. A single tenant (or group of companies) could be under the control of several integral property complexes of bankrupt farms and almost all the lands of the administrative district. From 2000 to 2018, basic enterprises (reformed collective farms and state

farms), in which peasants worked during the division of land and property complexes, halved the leased space – from 85% to 43%. Farms increased their leased land from 15% to 18%. However, agricultural holdings increased their share from zero to 44% in 2013 (with a land area of up to 6 million hectares) and decreased to 39% in 2018 (5.6 million hectares) (Gajuduky, 2020). The redistribution of agricultural land in favour of large companies, including through the mechanism of repeated assignment of land lease rights, led to the fact that for the first time in the entire agricultural history of Ukraine in 2020, the area sown under winter wheat was smaller than under sunflower – 6429 and 6457 thousand hectares, respectively (see Fig. 2).

So, since the 2000s, the state has created a kind of internal offshore, introducing the following preferences: a fixed agricultural tax; special mode of payment of value-added tax; reimbursement of part of the interest rate for loans from commercial banks and the cost of technical means of production purchased under the terms of financial leasing; state guarantees for foreign loans; budget loans, advances, and subsidies for products, commodity loans, customs, and tariff reductions, etc. Firstly, agricultural holding companies close to the state regulatory and control bodies skilfully took advantage of the favourable conditions. The production of cereals, including wheat, corn, and sunflower seeds, increased at a significant rate (Fig. 3). In addition, using the liberal legislation, the beneficiary's agricultural holding structures uncontrollably diverted (and diverted during the legal regime of martial law) rent surplus profits to offshore tax havens with foreign jurisdictions.

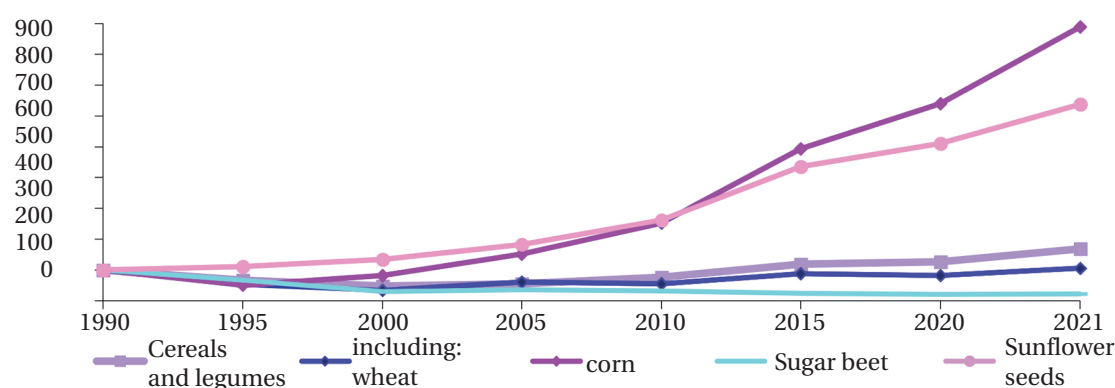


Figure 3. Indices until 1990 and production of the main types of crop production by all categories of farms for 1991-2001, million tons

Source: developed by authors given data (Statistical Compendium, n. d.; Statistical Information, n.d.)

Despite the unprecedentedly favourable conditions for investments in crop production, only in 2008, the record gross collection of grain and leguminous crops of the Soviet period of Ukraine of 51 million tons was overcome, and 53.3 million tons were collected. At that time, it was quite an achievement of socialism, because a ton of grain was produced per person. This testified to the fulfilment of the farmer's first commandment to fill the union silos, the opportunity to balance the bread and fodder balance (now it is the balance of supply and demand of grain), to provide food for the country's population, and livestock – with concentrated fodder.

In recent years, the records of the production of grain and oil crops have been updated almost annually. In 2021, 86 million tons of grain and leguminous crops were produced, or twice as much per person. But because of Ukraine's losses, which are kept silent, this is a rather dubious result. In particular, this was achieved by a decrease in the number of the population by more than 10 million people (from 51.8 in 1990 to 41.2 in 2022, as of January 1), a critical imbalance of the reproductive parameters of the industry, predatory raw material exploitation of agricultural resource potential, decline rural development, degradation of human capital, family unemployment in rural areas, demographic, migration and environmental crises. In addition, according to estimates, farmers spend up to 30% of export revenue (that which is returned to Ukraine) every year on the import of machinery, equipment, fuel and lubricants, mineral fertilizers, chemical plant protection agents, etc. According to other studies (Semenda et al., 2021), when growing corn for grain, 50% of export revenue is directed to the purchase of imported components.

Investment unattractiveness of animal husbandry. As for the attitude to the development of animal husbandry, agricultural holding companies consider it too capital-intensive and risky for guaranteed stable profits. Insignificant investments in the industry, compared to the needs, of land rent seekers, is an exclusively image-based social project and a kind of marker of socially responsible behaviour to ensure the employment of the rural population, maintain household incomes and fill the budgets of amalgamated territorial communities.

We consider the following among the objective reasons that led to the structural inter-branch misalignment.

The first. Longer payback periods for capital investments in meat and dairy livestock breeding compared to plant breeding (it takes 6-7 years to form a dairy herd).

The second. The need to synchronize organizational and economic measures for reproduction, turnover, and herd structure with biological laws and animal physiology.

The third. The technological complexity of the industry in terms of compliance with strict veterinary and sanitary requirements for keeping and caring for animals, ensuring food quality and safety standards.

The fourth. Financial vulnerability of producers who are at the beginning of the marketing chain (from farm to table) due to monopolistic behaviour of processing enterprises and trading networks with a constant deficit in operating funds (10-12 thousand USD is spent to obtain one cow per year).

The fifth. The high labour intensity of the industry, the continuous work regime, and the involvement of qualified specialists of various competencies in the process of production and animal care.

The sixth. Distortion of competition due to saturation of the domestic market with falsified dairy products and abuse of vegetable fat substitutes.

The seventh. An imperfect system of managing the seasonality of milk production leads to oversaturation of the market in the summer months and a shortage in the autumn-winter period, and corresponding price volatility.

The eighth. Special rules for handling organic waste that threatens human health and the environment, and other features of the economy and organization of the industry.

So, if plant growing for business is a relatively quickly repaid investment, then animal husbandry (except for pig and poultry breeding) requires more resources in the actual production and promotion of marketable products along a much longer marketing chain with risks for the return of capital investments and obtaining profits in the future, sufficient for extended reproduction of the industry. Hence, the priority goal of the state should be the creation of long-term reliable prerequisites for investments, especially in the development of dairy and meat cattle breeding, which will become a real alternative to monostructural specialization in crop production and export of fodder crops and related products of processing of grains, sunflower seeds, and other oil crops.

The main subjective factors include the following.

The first. The imperfect mechanism of privatization of state processing enterprises and property complexes of collective farms in the 1990s, when livestock premises were dismantled to the foundations with the participation of the peasants themselves, who previously had jobs there.

The second. Excessive export of live cattle in 1995-1997, destroyed the reproduction base of the dairy herd.

The third. Mass surrender of breeding stock (even breeding young) to meat processing plants to enrich individual heads of farms and replenish working capital for field work, settlements with borrowers, payment of arrears of wages to employees, etc.

The fourth. The sale of lands among the peasants and their transfer to rent deprived the reformed enterprises of fodder resources.

The fifth. Plowing and de-soldering of public pastures.

Sixth. Insufficient institutional support and resistance of local elites to the allocation of a collective of peasants – owners of land shares in a single massif for joint cultivation and the transfer to them of separate livestock premises, working and productive livestock, machinery, and equipment.

Seventh. The habit of heads of farms to constant administrative and party control over the implementation of planned quantitative indicators of the animal population, the turnover of the herd and its productivity, compliance with weight conditions when delivering them to processing enterprises, etc.

Due to the intertwining of objective and subjective factors, the livestock industry has been in a state of crisis for the past 30 years, which entails a whole series of other cause-and-effect destructive distortions in the production components of the agricultural sector, employment of workers, compliance with state standards and guarantees of social security of peasants, environment, etc. The most noticeable drop in the number of animals was observed in the period 1991-2001: cattle – up to 38.3%; cows – up to 59.2; pigs – up to 39.4; sheep and goats – up to 22.3% and poultry – up to 50.3% (Fig. 4). Although it is not possible to explain the large-scale reduction of livestock only by the transformational crisis. Probably, it became a kind of trigger, or a starting mechanism, because the indexes from 1991 to 1981 for cattle (91.7%), including cows (90.4%), pigs (98.4), sheep, and goats (93%) were decreasing (except for poultry).

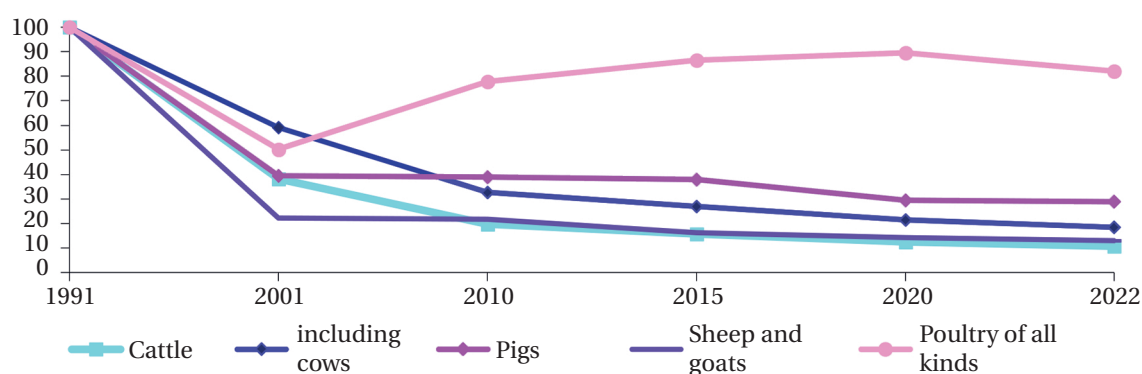
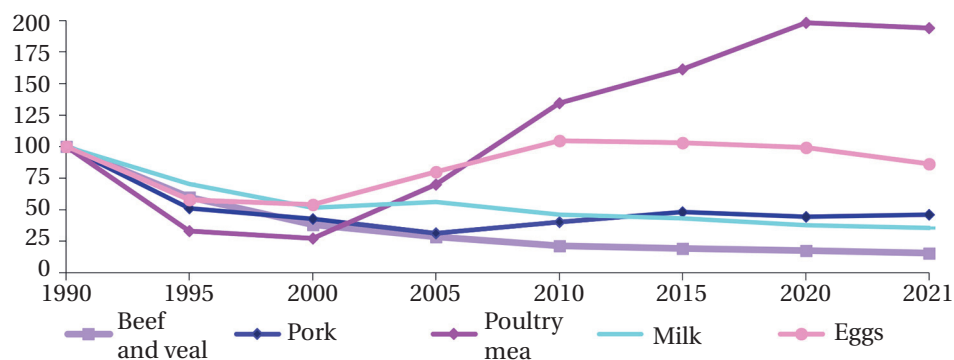


Figure 4. Indices until 1991 and the number of livestock of agricultural animals and poultry in all categories of farms, as of January 1; million heads

Source: developed by the authors given data (Statistical Compendium, n. d.)

For the sake of truth, we should note that the central and regional governing bodies, which form and implement the state agricultural policy, including issues of food security, are aware of the threats that are inevitable with the further reduction of livestock and the fall in the production of livestock products. Evidence of this is the annual allocation of funds under special budgetary programs to support the industry. Even in the conditions of martial law, the Procedure for the use of funds provided for in the state budget for state support for the development of animal husbandry and processing of agricultural products, which was approved by the resolution of the Cabinet of Ministers of Ukraine dated February 7, 2018 No. 107 (with changes and additions)

is in force (Procedure for the use of funds..., 2018). We can only assume that the allocated funds are not enough to cover all applications from farmers, which creates corruption risks, and those that are allocated are used inefficiently or are returned to the state budget due to the impossibility of using them for their intended purpose since from year to year the Ministry of Finance of Ukraine had a practice of allocating them to the chief administrator one or two months before the end of the calendar year. All business entities have significant reserves, but for various reasons, they are not used. Confirmation of this opinion is a critical decrease in the production of the main types of livestock products compared to 1990 (except for poultry and eggs).



Product	1990	1995	2000	2005	2010	2015	2020	2021
Beef and veal. thousand tons	1985	1186	754	562	428	384	345	311
Pork. thousand tons	1576	807	676	494	631	760	697	724
Poultry meat. thousand tons	708	235	193	497	954	1144	1405	1374
Milk. million tons	24.5	17.3	12.7	13.7	11.2	10.6	9.3	8.7
Eggs. billion pcs	16.3	9.4	8.8	13.0	17.1	16.8	16.2	14.1

Figure 5. Indices in percentages and production of the main types of livestock products by all categories of farms for 1990-2021

Source: developed by the authors given data (Statistical Collection, n. d.; Statistical Yearbook of Ukraine, n. d.)

The reduction in the production of livestock products during the analysed period, in addition to the already mentioned features of the industry, is explained purely by market factors and unscrupulous practices. Namely: a) insufficient competitiveness of industrial production on the domestic market, compared to imported subsidized products, especially from EU countries, b) unauthorized importation of meat and dairy products into the customs territory of Ukraine; c) raw material export orientation of agrarian business; d) narrowing of the share in the gross production of households more than twice: from 67% to 30.6% (see Fig. 1). The latter is a consequence of the decrease in the number of the rural population and its ageing, the monopolistic low purchase prices of processors and wholesalers, the increase in the price of fodder, animal preparations, the unavailability of quality veterinary care, etc.

If adequate measures are not taken in time, then in the long run, family farms, household plots, and individual entrepreneurs with the current primitive technologies of raising livestock and slaughtering livestock will not be able to supply meat products to the domestic market at all, that is, they will return to subsistence farming. In developed countries, modern farmer cooperative slaughterhouses operate. Central and local state authorities need to resolve a whole range of issues by January 1, 2025. After all, according to Art. 34 of the Law of Ukraine "On Basic Principles and Requirements for the Safety and Quality of Food Products" dated December 27, 1997 No. 771 (On Basic Principles..., 1997), such activity will be prohibited. It is obvious that once again it is impossible to postpone the introduction of this norm because Ukraine has been

granted the status of a candidate for membership in the European Union since June of this year.

Experts explain the relatively minor drop in egg production starting in 2015 and significant since 2000 with the oligopoly of the domestic market since the combined share of the three largest agro-industrial groups ("Avangard", "Ovostar Union" and "Inter-Agrosystems") is more than 46%. Since 2015, manifestations of cartel collusion on pricing issues have been observed, since export prices have become lower than domestic prices, so, in their opinion, there is every reason to talk about anticompetitive concerted actions by large manufacturers (Larina, Popov, 2020).

The efficiency of production of agricultural products and the state of their processing. The general indicator of the efficiency of the use of resources in combination with other indicators is the profitability of production. The more or less stable profitability of plant and animal products under the planned economy is explained by the policy of administrative pricing. It performed important social functions through the mechanism of "tying" the prices of basic food products to the value of the consumer basket of households. The level of procurement and purchase prices depended on zonal conditions of production, over-fulfillment of procurement plans, product quality, exceeding the volumes of previous years and seasonality of supplies to the so-called state warehouses. Inter-industry parity was achieved by establishing price list prices (tariffs) for industrial goods for production purposes and agricultural services and double prices for agricultural products purchased by the state. Prices could be set separately for inefficient (with profitability below 15%) and unprofitable farms.

At the end of the 1990s, the price premium amounted to 4 billion rubles per year. Such preferences ensured an increase in the profitability of agricultural production from zero to 22% (Paschaver, 2004). Up to a third of the state budget of the USSR was directed to support retail food prices and the profitability of collective farms and state farms. Having partially ensured the population's affordability of food, an even more acute problem was inevitably created, related to the deficit, that is, a significant excess of demand over supply.

The unilateral liberalization of prices and tariffs of industry and services for the agricultural sector hurt the livestock sector. According to the State Statistics Service of Ukraine, starting from 1995, except for pork in some years, it became chronically unprofitable (Fig. 6). Against the background of administrative control of prices for meat and dairy products for the population and a significant reduction in subsidies to producers of livestock products, the monopolization of the markets of material and technical resources, processing, sales, and agricultural services intensified.

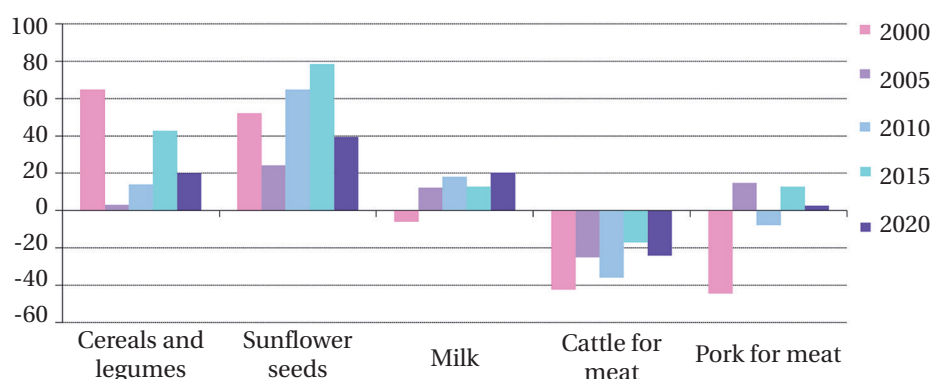


Figure 6. Profitability of production of the main types of agricultural products in enterprises, percentage

Note: meat of cattle, pigs, and poultry without taking into account transfer to the processing at our own production capacity

Source: developed by authors given data (Statistical Compendium, n. d.)

In the conditions of the hyperinflation of 1992-1995, "price scissors" led to the continuous unprofitability of enterprises. If in 1990 it was necessary to sell 24 tons of Class III wheat or 18 tons of milk, or 2.6 tons of cattle meat to purchase one YMZ-6 AKL tractor (without VAT), then in 2000, accordingly – 78 t (3.3 times more), 71 t (3.9 times more), 18.3 t (7 times more). Such trade also took place for other means of agricultural production.

Due to the critical non-equivalence of intersectoral trade in 1990-2000, the industry suffered losses in the amount of 57.1 billion UAH (Mohylnyi, 2021).

The Achilles' heel of agrarians was the rupture of production and cooperative ties with processing enterprises. Under the planned economy, they were provided with non-economic methods of encouraging cooperation. In 1990, almost all livestock products were processed (Table 1).

Table 1. Arrival of livestock and poultry to processing enterprises, in live weight, thousand tons

	1990	1995	2000	2005	2010 ²	2015	2020	2021	2021 to 1990/1995, %, in p. p.
Everything arrived, including:	4609	1118	452	489	1443	1690	1778	1827	39.6
enterprises	4314	872	207	280	407	376	273	253	5.9
to the end, %	93.6	78.0	45.8	57.2	28.2	22.2	15.3	13.9	-79.7 p. p.
economy of the population	295	236	238	200	106	19	10	12	4.0
to the end, %	6.4	21.1	52.6	40.9	7.3	1.1	0.6	0.6	-5.8 p.p.
From the total volume by species of animals									
Cattle	...	828	342	335	225	124	80	89	10.7
to the end, %	–	74.1	75.7	68.5	15.6	7.3	4.5	4.9	-69.2 p. p.
pigs	...	132	74	108	230	325	303	318	240.9
to the end, %	–	11.8	16.4	22.1	15.9	19.2	17.0	17.4	5.6 p. p.
Bird	...	44	17	38	948	1203	1389	1418	32 times more
to the end, %	–	3.9	3.8	7.8	65.7	71.2	78.1	77.6	73.7 p. p.

Source: calculated given data (Statistical Yearbook of Ukraine)

To load meat processing enterprises and maintain the income of agricultural enterprises, the Decree of the President of Ukraine dated 12/02/1998 No. 1328 "On State Support of Agricultural Producers" (On State Support..., 1998) introduced a special regime for charging and paying VAT for sold milk and meat in live mass. A similar mechanism is used for operations on the sale of products manufactured under factory conditions from their raw materials. Subsequently, this procedure was regulated by the Law of Ukraine dated 04/03/1997 No. 168 "On Value Added Tax" (On Tax..., 1997).

Later, this mechanism underwent significant changes, starting in 2016, the scope of its application was narrowed, and in 2018 it was cancelled altogether. This was affected by a decrease in income to animal processing enterprises in 2020 compared to 2015, with cattle – by 44 thousand tons (35.5%), and pigs – by 151 thousand tons (46.6%). As a result, the rate of increase in production volumes of the processing industry decreased, and from 2010-2018 it became three times lower than in agriculture. The number of enterprises also decreased somewhat (Gajduky, 2020).

With the general downward trend of receipts for livestock processing directly from commodity producers, starting from 2010, the total volumes began to grow rapidly. Compared to 2005, it has

almost tripled (from 489 to 1,443,000 tons), and since 2020, the growth has been 3.6 times, and over the past 10 years, from 1,443 to 1,778,000 tons (Table 1). This is due to changes in static accounting, as raw materials supplied and products produced by processing enterprises are included. However, even taking into account the change in the methodology of statistical observations, in 2020 only 38.6 % of the 1990 figure was recycled. The specified deregulation measures did not affect the processing of poultry meat, since large poultry plants have their plants for a closed production cycle. So, there is a positive trend.

Foreign trade in agri-foodproducts. Inter-industry distortions of the agrarian sector affected the commodity structure of foreign trade. This is the case when internal state regulatory policy is a continuation of foreign economic policy. At the same time, the raw material trap is becoming more and more dangerous (Table 2). The export/import balance of ready-made food products for 1996-2021 has a negative value every year and varies in the corridor from 17.6%. (2010) to 32.5% (2021). At the same time, grain and oil crops took dominant positions in exports. In total, in 2021, they accounted for 53.3% of the total for 1-24 UCT ZED. In the same year, the export of finished products from grain amounted to only 1.5%, which is less than in 2010 by 0.6%.

Table 2. Commodity structure of foreign trade in agri-food products, as a percentage of the total for 1-24 UCT ZED

Product name		1996	2001	2010	2015	2020	2021
Live animals; products of animal origin	export	19.5	19.4	7,8	5.7	5.4	4.8
	imports	21.6	16.2	21.6	15.7	19.4	20.6
Saldo, p. p.		-2.1	3.2	-13.8	-10	-14	-15.8
Cereal crops	export	13.8	26.5	24.9	41.6	42.4	44.5
	imports	2.1	4.4	2.5	4.4	2.8	2.1
Saldo, p. p.		11.7	22.1	22.4	37.2	39.6	42.4
Seeds and fruits of oil crops	export	8.8	8.4	10.9	10.1	8.3	8.8
	imports	4.5	3.0	3.1	6.2	6	5.8
Saldo, p. p.		4.3	5.4	7,8	3.9	2,3	3
Ready food products	export	45.9	24.9	25.9	16.9	15.2	13.7
	imports	58.4	52.5	43.5	46.1	45.7	46.2
Saldo, p. p.		-12.5	-27.6	-17.6	-29.2	-30.5	-32.5

Source: calculated given data (Statistical yearbook of Ukraine, n. d.; Statistical information, n. d.)

The place of the agricultural sector of Ukraine in the international division of labour and the creation of added value. In 2021, Ukraine harvested almost 110 million tons of grain and oil crops. The needs of the domestic food market according to the current needs are 20 million tons, out of 90 million tons, 15 to 20 million are processed inside the country, mainly for meal and sunflower oil. The remaining 65-70 million tons should be sold for export, a significant part of which could be processed in Ukraine under favourable conditions (Lebid, 2022).

Ukraine's urgent need to convert grain crops into livestock products is evidenced by the grouping of countries in the world by the ratio of grain consumption for livestock and poultry feed to its production, made based on FAO statistical information (Table 3). As can be seen from the analytical data, 168 countries of the world are divided into two poles: the first – 52 countries are net exporters of agricultural raw materials and by-products from their processing (meals, bran, molasses, etc.) with a coefficient of "up to 0.35", which includes Ukraine; the second – 31 countries are net importers of this

raw material for advanced processing with a ratio of “more than 2”. Thanks to this, they achieved a much higher added value per 1 ha of arable land (salary + profit). In particular, countries in which more than

twice as much grain is used for livestock feed than is grown received 7,162 USD, and in Ukraine – 438 USD, or 16 times less. Even in its group, Ukraine is inferior to this average indicator by almost 4.5 times.

Table 3. Grouping of countries of the world by the ratio of grain consumption for livestock and poultry feed to the volume of own production, 2020

Indexes	Groups of countries by the volume of grain consumption for feed to the volume of its production, coefficient					
	more than 2	1.01-2	0.51-1	0.35-0.5	up to 0.35	including Ukraine
Number of states in the group	31	23	31	31	52	1
The share of food exports to the total in economies, %	7.6	9.3	7.6	7.5	17.8	44.7
Index to the corresponding indicator of Ukraine	0.17	0.21	0.17	0.17	0.40	1
Added value of agriculture per 1 ha of arable land, USD	7162	4726	3498	2835	1956	438
Index to the corresponding indicator of Ukraine	16.4	10.8	8.0	6.5	4.5	1
GDP per person, thousands of USD	22446	21291	15351	16861	2161	3557
Index to the corresponding indicator of Ukraine	6.3	6.0	4.3	4.7	0.6	1
For 1 ha of arable land, kg:						
export of NPK with export of all products	32	7	14	51	17	98
receipt of NPK with import of all products	342	133	68	28	9	0.3
Balance +, –	310	126	54	-23	-8	-97.7
Labour costs in animal husbandry (by labour intensity in Ukraine), man-hours	907	492	335	237	225	58

Source: calculated by the authors from the data (FAO Food agriculture data, n. d.)

Naturally, the larger the share of the revenue from the export of agri-food products to its total in economies, the lower the level of GDP per person. This indicator is 10 times more in the group of 31 countries with a high-tech closed cycle of production focused on final products than in the group of 52 countries with an archaic economic model. The raw material orientation of business not only condemns the population to unemployment and poverty, and the country to backwardness and the donor of the GDP of developed economies, but also excessively depletes the fertility of the soil. The negative balance according to the NPK indicator (withdrawal from the export of all agricultural products minus the receipt from the import of products) begins with the group of countries in which the ratio of grain costs for livestock and poultry feed to the volume of own production is “0.35-0.5”. Ukraine is in the risk group with an indicator of minus 97.7 kg of active substance per hectare. The estimated number of jobs indicates the unused reserves regarding the possible employment of workers in animal husbandry (according to the current labour intensity in the industry of Ukraine). It is almost 16 times less

than in the group, where the coefficient is “more than 2” and four times, compared to the countries in which the grain export structure dominates, i.e. “up to 0.35”. (For reference: from 1990 to 2020, the number of employees in agricultural enterprises decreased 11 times, or from 4881 to 443.7 thousand people).

The grouping of countries according to the same criterion and the same general population, but about the intensity of use of agricultural assets (Table 4), confirms that in countries with a rent-raw material orientation, business is not interested in the development of animal husbandry and the processing of its products into various meat and dairy products final consumption. In Ukraine, only 20% of the gross collection of grain crops is used for livestock feed, while the group of countries with a ratio of “more than 2” for fodder purposes directs 4 times more than it receives from its agriculture. Therefore, they have 559 heads of conventional animals per 100 hectares of arable land, or 14.3 times more, compared to Ukraine. In this case, it is obvious that the more arable land and the gross harvest of grain crops per person, the longer

the transformation of the economy from agrarian to industrial and post-industrial. Overcoming this “raw material curse” is possible if the state is aware

of the strategic priorities, the political will of top managers, and the use of effective ways of their implementation.

Table 4. Grouping of countries of the world by the ratio of grain consumption for livestock and poultry feed to own production, 2020

Indexes	Groups of countries by the volume of grain consumption for feed to the volume of its production, coefficient					
	more than 2	1.01-2	0.51-1	0.35-0.5	up to 0.35	including Ukraine
Number of countries in the group	31	23	31	31	52	1
Consumption of grain for livestock feed to its gross production, coefficient	4.02	1.26	0.68	0.39	0.16	0.20
Accounts for 1 inhabitant:						
arable land, ha	0.063	0.111	0.140	0.222	0.169	0.753
volumes of grain of own production, kg	53	170	289	595	290	1471
Number of conditional animals (according to EU coefficients*) per 100 ha of arable land, head	559	299	203	153	125	39

Source: calculated by the authors from the data (FAO Food agriculture data, n. d.)

Taking into account the current weak links with export logistics, which arose as a result of Russia blocking the ports of the Black and Azov seas, it is proposed to take measures to compress exports: to move from a large volume in tons to a larger volume in foreign exchange earnings thanks to deeper processing and the conquest of foreign markets for finished products. This should become an additional motivating factor for business. Therefore, the Plan for the post-war recovery of the agricultural economy envisages the development of enterprises in the processing industry. A positive example over the last 30 years, which is often cited in the literature, is the processing of sunflowers into sunflower oil due to the increase of the export duty in 1999 to 23%. It is proposed to repeat the history of this success by extending it to corn, wheat, barley, and other crops, processing them into fodder for livestock and poultry, bioethanol, biogas, biomethane, starch, developing niche areas of production, etc.

However, we must take into account the following: firstly, the reduction of tonnage in the export of sunflower oil was accompanied by an increase in the tonnage in the export of meal and cake. In 2020, according to this indicator, Ukraine reached a record 6,091 thousand tons, taking first place in the world, and in the calculation of 42.6 USD per

hectare, which is twice as much as Poland (Table 5); secondly, in 2018-2021, Ukraine exported an average of 5.9 million tons of sunflower oil every year, of which almost 90% was raw, that is, not final consumption, but raw materials. Then it is cleaned and packed in the enterprises of the importing countries for sale in their markets or re-exported. To increase deep processing, it is necessary to build modern enterprises in each region in Ukraine. In addition, tens of thousands of new jobs will be created, which will provide significantly higher foreign exchange earnings and contribute to the resilience of the entire oil and fat industry subcomplex. Given these considerations, the construction of the cross-border pipeline announced by the Ministry of Agrarian Policy, for the export of vegetable oil, in our opinion, is a dubious and insufficiently substantiated project, compared to the alternative of localization of a closed cycle of production. That is, the example with the export of sunflower oil is not entirely successful, because, from the point of view of creating added value and unloading the logistics and transport infrastructure, the proper effect has not been achieved. In 2021, 5.1 million tons of sunflower oil were exported to 107 countries, including 36.8% to Europe, 29% to Southeast Asia, and 14.9% to Asia.

Table 5. Export of agri-food products per hectare in Ukraine and other countries of the world in 2020, USD

Product	Ukraine	Canada	Netherlands	Poland
Agricultural products, total	669	1314	99785	3212
including vegetable oils	173	82.2	4243	32.3
corn	148	6.5	233	29.1
wheat	109	163	67	95
meal of all oil crops	42.6	39.3	1563	20.2
rapeseed	30.6	122	858	17.9
soybeans	21.0	50.1	445	0.3

Table 5, Continued

Product	Ukraine	Canada	Netherlands	Poland
poultry meat	17.1	11.4	3214	239
meat of cattle	2.7	58.6	2861	191
dairy products	2.0	4.4	2027	69.2
pork meat	0.3	86.0	3287	120
Cost of export of one ton of products (tonnage), USD	300	602	1292	1526

Source: calculated by the authors given data (FAO Food agriculture data, n. d.)

Out of nine commodity positions for the export of agri-food products in terms of value per hectare, Ukraine leads in four (vegetable oils, corn, wheat, meal of oil crops) and shows a significant lag behind all types of livestock products, which have a smaller tonnage at higher value. In total, the value of one ton of Ukrainian exports is twice that of Canada and significantly less compared to the Netherlands and Poland – 4.3 and 5.1 times, respectively. For example, in 2020, Ukraine exported all agri-food products weighing 74 million tons, receiving 22 billion USD, and Canada 77 million tons and received 55 billion USD. The difference of 2.5 times in monetary terms is due to the fact that Canada exports mostly processed products of animal origin, while Ukraine exports raw materials (Lebid, 2022).

It is obvious that the phenomenon of the Netherlands is related to the amount of agri-food products per hectare of land and small tonnage foreign trade is explained by high-tech, intensive agriculture. The processing of agricultural raw materials, including those imported from Ukraine, is extremely developed, which contributes to the production of livestock products with the maximum possible share of added value due to the export of significant volumes of food for final consumption and related products of the food industry (pulp, meal, dog food, various waste, animal skins, etc.). An important factor in the competitiveness of the agrarian sector is also the regulatory and legal regulation of mutually beneficial economic relations of counterparties of the entire product chain – from the field to the table.

In this vein, the heads of the Ministry of Agrarian Policy of Ukraine made, without exaggeration, a historic statement that in the seven months of Ukraine's war against Russia, the point of no return to the raw agrarian economy has been passed and a food model of development is already in place. Because the export of dairy products (milk powder, cream, cheese, butter), meat production, alternative energy sources (bioethanol, biogas, biomethane, etc.), as well as the processing of grain crops is actively developing (Ministry of Agricultural Policy, 2022). For a country in which agricultural raw materials make up 80% of the entire sector, the forced force majeure factor of such a minor change and the short time frame for such conclusions should be alarming. After all, there are no and cannot be guarantees that in peaceful conditions business

will not return to the quick money rent-commodity business model that has been developed in recent years with active state support.

The result of the application of general scientific and economic methods was the confirmation of the hypothesis, the essence of which is that Ukraine, as a state with developing markets, should eliminate the structural distortions of the agrarian sector using the entire toolkit of economic dirigism. In this way, it is possible to adjust the established rent-based model of business behaviour to a product-based one, taking into account national interests, namely, increasing the stability of the basic sector of the economy during the legal regime of martial law and in other force majeure circumstances and after their cancellation. At the same time, the triple priority should be: a) guaranteeing food security of the population; b) balanced use of human, economic, land, water, and other natural resources; c) integration of agrarian policy into the Green Agreement of the European Union.

Priority measures to restore animal husbandry.

The cancellation of state programs to support farmers in the draft state budget for 2023, the dependence of the forecasting horizon on the victory of Ukraine in the war with Russia, and the liberation of all temporarily occupied territories and financial assistance from international donors should be taken into account when developing institutional-legal and organizational-economic measures state (de) regulatory policies aimed at eliminating structural distortions in the agricultural sector that do not require additional financing. On the contrary, their introduction will contribute to the filling of local budgets.

In particular, it is critical to take a number of priority actions in order to create systemic prerequisites for overcoming the protracted crisis in animal husbandry, increasing the volume and depth of processing of its products, involving the resources of household plots, family farms, service cooperatives, amalgamated territorial communities, and other reserves. It is also time to decisively introduce tools aimed at demotivating farmers in relation to the export of grain and technical crops and other raw materials.

In view of the above, we offer a set of measures under martial law conditions and after its cancellation:

I. Encouraging business entities to increase production volumes:

I. 1) to develop a diversified structure of production of livestock products, localizing it in micro, small, and medium-sized enterprises, to support start-ups that are able to play the role of agricultural business locomotives through lending mechanisms under the program "Affordable loans "5-7-9%", grant programs of domestic and foreign investors, export insurance, partial reimbursement of investments in the latest equipment, as well as subsidizing the cost of energy resources;

I. 2) to provide regulatory and legal prerequisites for the development of dairy and meat cattle breeding, using ownerless and unused real estate objects of state and communal ownership and land plots under them, especially in rural amalgamated territorial communities, which sheltered a significant number of temporarily displaced persons;

I. 3) to develop special conditions for purchasing equipment for micro and small livestock farms, breeding (genetic) resources on a cooperative basis, partial compensation of their cost with grant funds;

I. 4) to introduce a mechanism of state support for insurance of livestock of cattle, pigs, sheep, goats, which are owned by household plots, family farms, individual entrepreneurs and other small and medium economic entities;

I. 5) to extend non-refundable grant funds and co-financing support to family dairy farms, craft cheese factories and dairy cooperatives, cooperative and private slaughterhouses for slaughtering animals, to projects using bioeconomic technologies and advisory services currently provided to enterprises for the establishment of gardens and berry orchards, construction of greenhouses, processing of agricultural raw materials;

I. 6) to promote the creation of demonstration family farms of various specializations in animal husbandry, in particular, in the production of niche types of products, support the formation of an online platform for the exchange of work experience, consulting on issues of epizootics, veterinary and sanitary services, prevention, and control of diseases, environmental requirements in amalgamated territorial communities, as well as organizational interaction to protect one's rights in various instances;

I. 7) to create institutional prerequisites for the formation of capable agro-industrial administrative-territorial clusters in the field of animal husbandry with the participation of micro, small, and medium-sized producers, administrations of amalgamated territorial communities, local divisions of the State Production and Consumer Service, regional scientific centres of the Ukrainian Academy of Sciences, institutions of advanced professional and higher education, processors, retail and other stakeholders;

I. 8) to study the experience of Denmark, Belgium, the Netherlands, Germany, Poland, and Spain regarding international cooperation in raising young animals and fattening pigs of high-yielding meat genotypes to commercial conditions and the possibility of adapting it to the conditions of Ukraine.

II. Stimulation of producers to localize processing of products at local enterprises and its sale on organized markets:

II. 1) to adapt the VAT calculation and accumulation mechanism that operated in 1998-2018 in terms of payment by processing enterprises to the state budget for livestock products sold by them, for livestock purchased in live weight, as well as payments and targeted use of funds received from its payments to commodity producers for the development of dairy and meat cattle breeding;

II. 2) to increase the effectiveness of monitoring the prices of meat and dairy products in retail chains connected with: unfair anticompetitive practices; using offshore jurisdictions to optimize taxes; establishment of control over processing and food industry enterprises and creation of vertically integrated formations; a decrease in the share of national producers, especially small and medium-sized enterprises, in trade networks and a corresponding increase in similar imported products;

II. 3) to regulate the equivalence of the distribution of the added value of the main participants of the meat and dairy market (household plots, family farms, small and medium-sized producers, logistics companies, processing enterprises of the food industry, retail chains) and to develop scientific and practical recommendations for the operational adjustment of the state regulatory policy in this field;

II. 4) to support the search for alternative ways of accessing the market of livestock products of household plots, small and medium-sized enterprises using remote forms of trade, web resources of local communities, Internet portals, information and advertising support, etc.;

III. The fight against abuse of the monopoly position of producers and processors of meat and dairy products and other unscrupulous practices in local and regional markets:

III. 1) to monitor and respond in a timely manner to antimonopoly practices during the procurement of milk from the public, household plots, family farms, cooperatives, and other micro and small producers;

III. 2) to strengthen the civil-legal and administrative responsibility for technological and pre-sales falsification of meat and dairy products, for unauthorized importation of food products into the customs territory of Ukraine and shadow circulation on the domestic market;

III. 3) to adapt Ukrainian legislation to the legal acquis of the EU (acquis communautaire) in terms of protecting the rights of consumers of meat and dairy products.

IV. Tax and customs tariff regulation:

IV. 1) to consider the multifaceted consequences of establishing a zero VAT rate on the export of grain and industrial crops and related processing products (oilseed meal, bran, etc.), where the bulk of the profit is obtained due to its reimbursement. This norm should be primarily extended to raw materials, in

which the share of exports in production exceeds 60% (in 2020/21 MR, this indicator for corn was 77.5%, wheat – 66.3%, barley – 55.3%, soybeans – 53.6%, rapeseed and colza – 92.3%). Import of final goods of animal origin, with a sufficient level of self-sufficiency in Ukraine, on the contrary, should be taxed at an increased VAT rate;

IV. 2) the legal regime of martial law opens a “window of opportunity” for eradicating corruption in the tax, customs, and control bodies; at the time of introducing radical anti-offshore policy rules, improving control over transfer pricing, strengthening the fight against VAT evasion by forming a fictitious tax credit through the notorious “scrolls”, eliminating “gray schemes” of non-return of export earnings by agricultural traders with money laundering and prevention other corruption -inducing factors of “earnings” from the state budget;

IV. 3) to provide in the conditions of crediting of commodity producers for the program “Available “5-7-9%” loans, in which 10,000 hectares or more of agricultural land are used, livestock ownership is at a level not lower than the average number of conditional livestock per 100 hectares of arable land in that administrative district (oblast, region), where economic activity is conducted;

IV. 3. To actively use the opportunities of the free trade zone with almost 50 countries of the world and the abolition of all customs duties and quotas on Ukrainian goods by the EU, Great Britain and the USA for the export of livestock products for final consumption. To achieve an extension of the term of preferential agreements on a special regime of trade after the abolition of the legal regime of martial law in Ukraine.

►Conclusions

As a result of the beginning of the full-scale invasion of Russia on the territory of Ukraine, the agrarian sphere suffered great losses, and the archaic commodity or rent model of the agrarian economy, which has been in place for the last three decades, turned out to be especially vulnerable in force majeure circumstances. It demonstrated the dead end of the chosen path of “growth without development”, because it ignored people’s well-being and environmental

limitations. The so-called success was measured by the area of crops, the gross harvest of grain and oil crops, the income of foreign currency from the export of raw materials, the share of the industry in the country’s GDP, etc.

The top managers of state institutions and the final recipients of benefits from the exploitation of human, land, water, and other natural resources imposed on society the stereotype that the agricultural sector is “the locomotive of the Ukrainian economy”, “a point of growth”, and grain is “Ukrainian oil and gas”. From this, it naturally followed that being a raw material donor of industrialized countries is honourable and is our “economic miracle” since historically we have inexhaustible natural, human, and other comparative and competitive advantages for this. In fact, due to the destructive distortions of agriculture, a transmission mechanism of macroeconomic parameter imbalance, aggravation of medium- and long-term sectoral problems related to the shortage of water resources, greenhouse gas emissions, and neglect of environmental protection rules has been launched.

The practical significance of the study is related to the primary measures of the state’s influence on the behaviour of owners of small, medium, and large agrarian businesses to develop animal husbandry, process raw materials, transitioning to the standards of environmentally friendly technologies, encouraging the preservation of existing and creating new jobs in rural areas. The result of the post-war reconstruction of the agricultural sector should be its fulfilment of key functions: a) uninterrupted satisfaction of the needs of the domestic market for basic food products of own production; b) a reliable net exporter of food for final consumption; c) economic, social and environmental efficiency.

Prospects for further scientific research in the direction of increasing the stability of the country’s agrarian sector can be a review of the theory of comparative advantages in international trade, which is more than two centuries old. After all, what is really in demand is the development of localized closed production cycles, taking into account exhaustible natural resources and global challenges associated with wars, pandemics, climate change, ecological crises, and other threats to food security.

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Повоєнна реструктуризація аграрного сектору України: усунення перекосів для досягнення стійкості та добробуту

Олексій Миколайович Могильний¹, Микола Володимирович Калінчик²,
Олена Юріївна Грищенко³

¹Доктор економічних наук, професор. ORCID: <https://orcid.org/0000-0002-9802-1701>.

Національний науковий центр «Інститут аграрної економіки», 03127, вул. Героїв Оборони, 10, м. Київ, Україна

²Доктор економічних наук, професор. ORCID: <https://orcid.org/0000-0002-6240-4479>.

Науково-виробниче підприємство Товариство з обмеженою відповідальністю «ВінМікс-Софт», 04211, вул. Приозерна, буд. 10/19, м. Київ, Україна

³ORCID: <https://orcid.org/0000-0003-2271-3629>.

Національний науковий центр «Інститут аграрної економіки», 03127, вул. Героїв Оборони, 10, м. Київ, Україна

► **Анотація.** Актуальність дослідження обумовлена формуванням рентної моделі аграрного сектору, домінування сировинної структури експорту та пов'язаних з ними соціально-економічних проблем, що загострилися до масштабів національної безпеки в умовах війни росії проти України. Мета дослідження – виявлення причинно-наслідкових зв'язків структурних перекосів аграрного сектору та обґрунтування державної регуляторної політики, спрямованої на посилення його стійкості. Використано методи емпіричного спостереження, експертних оцінок, динамічних рядів статистики, монографічного, критичного аналізу, графічних засобів, статистичної обробки бази даних, системно-структурного опрацювання матеріалу, абстрактно-логічного та інших інструментів. Було розкрито масштаби руйнування активів аграрного сектору й екології внаслідок російської агресії. Обґрунтовано інституційні передумови структурних перекосів аграрного сектору. Висвітлено динаміку експортно-імпортних операцій аграрного сектору та альтернативні можливості в міжнародному поділі праці щодо підвищення його ефективності. Опрацьовано заходи з відновлення тваринництва шляхом активізації мікро і малого бізнесу, налагодження еквівалентних відносин ринкових контрагентів та дотримання ними доброчесних практик. Практична значущість відображена пропозицією з питань подолання затяжної кризи в тваринництві за рахунок інклюзивного підходу до реалізації потенціалу мікро, малих і середніх форм господарювання

► **Ключові слова:** структура сільського господарства, агропродовольчий потенціал, продукція рослинництва і тваринництва, додана вартість, зовнішньо-економічна діяльність



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Adaptation of business entities in the agrarian sector of the economy to activities in wartime conditions

**Mykola Malik¹, Svitlana Kravchenko^{2*}, Oleksandr Shpykuliak³,
Larisa Malik⁴, Valentina Yuzhykova⁵**

¹Full Doctor in Economic Sciences, Professor. ORCID: <https://orcid.org/0000-0001-9198-4460>.
National Scientific Center "Institute of Agrarian Economics", 03127, 10 Heroiv Oborony Str., Kyiv, Ukraine

²Full Doctor in Economic Sciences, Professor. ORCID: <https://orcid.org/0000-0001-5541-4495>.
National Scientific Center "Institute of Agrarian Economics", 03127, 10 Heroiv Oborony Str., Kyiv, Ukraine

³Full Doctor in Economic Sciences, Professor. ORCID: <https://orcid.org/0000-0001-5257-5517>.
National Scientific Center "Institute of Agrarian Economics", 03127, 10 Heroiv Oborony Str., Kyiv, Ukraine

⁴PhD in Economic Sciences. Senior Researcher. ORCID: <https://orcid.org/0000-0001-6020-7335>.
National Scientific Center "Institute of Agrarian Economics", 03127, 10 Heroiv Oborony Str., Kyiv, Ukraine

⁵Postgraduate Student. ORCID: <https://orcid.org/0000-0001-9109-7618>.
National Scientific Center "Institute of Agrarian Economics", 03127, 10 Heroiv Oborony Str., Kyiv, Ukraine

► **Abstract.** The need for business entities to exit from an extreme state activates the development of processes of adaptation of business entities to functioning in wartime conditions. The purpose of the article is to substantiate the theoretical and methodological principles, socio-economic and legal problems of adaptation of business structures to activities in extreme conditions. System analysis and institutional economic theory served as the methodological basis of the research. Normative, graphic, abstract-logical methods and approaches to summarizing the results were used. Prospects for the development of entrepreneurship have been determined. It was established that during the period of economic recovery, issues of material and technical and financial support of production facilities and logistics routes will be problematic. The economic difficulties of large corporate structures are revealed (destruction of assets, disruption of logistics connections, blocking of sales markets). The essence of adaptation of business entities to activities in the conditions of armed conflict, functioning in wartime conditions, and integration-cooperative structures from the point of view of systemicity is substantiated. The concept of "adaptation" of business entities is clarified as a process of development and application of strategies for reflection by the enterprise and its structures of the effects of the consequences of the war in the management decision-making system to ensure competitiveness and efficiency of functioning. It was established that the adaptation of business entities to risk conditions in the post-war period will contribute to the development of integration structures (cooperatives, simple societies, cluster associations), the growth of independence in determining the programs of their economic activity, ensuring the interest of peasants as commodity producers with the rights of formal bearers of entrepreneurial status to meet their economic and social needs. It was found that the most adapted to the crisis conditions associated with military operations are farms and private peasant farms. The results of the study can be taken into account when developing programs for determining the priorities of the development of agrarian entrepreneurship subjects, in particular, integration-cooperative structures; development of regulatory and legal acts for the formation and development of cooperation and integration in the agrarian sphere of the economy

► **Keywords:** subject of entrepreneurial activity, adaptation to the conditions of martial law, agricultural cooperative, integration-cooperative structures, integration associations, mechanism of integrated structures, integrative formations, agricultural holdings, clusters

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*Corresponding author

► Introduction

The successful development of entrepreneurship as the main driving force in the development of the country's economy, and the agricultural sector in particular, depends on the state of the business environment. Martial law conditions have a significant impact on socioeconomic and political instability. The limited activity of business entities places new demands on the formation of an effective system of adaptation of the organizational and economic mechanism of business to the conditions of martial law. Adaptation of entrepreneurial activity to the conditions of martial law is characterized by the possibility of conducting economic activity both from the point of view of spatial freedom and from the standpoint of financial capabilities and logistical support.

The practice of business structures in wartime conditions showed certain advantages of the functioning of small and medium-sized business structures compared to larger ones, such as agro holdings. Small business structures were able to quickly adapt to the extreme conditions of the organization of production, storage, and sale of agricultural products. For large enterprises, disruption of the financial condition, and sociopsychological aspects of activity led to a significant decrease in export potential, logistics, and financial complications.

Studying the processes of adaptation of the economic mechanism of the functioning of agribusiness enterprises to extreme conditions of activity, most researchers paid attention to the feasibility of creating innovative and integrated structures in the agro-industrial complex; the formation of social capital of large enterprises and the military and economic importance of economic entities. The attention of economists is also focused on the problems of infrastructural provision of rural areas; priority vectors of development of business entities in agriculture and assessment of target parameters of anti-crisis stability and resource potential at enterprises. Peculiarities of business process and personnel management are substantiated; by the marketing strategy of enterprise development; increasing the investment activity of households and the impact of the armed conflict on the functioning of business structures.

The concept of "adaptation" was defined as a process of reaction to changes in the external and internal environment of the enterprise's functioning (Problems of adaptation..., 2018). A.V. Ivanko (2018) and R.V. Grinchenko (2019) substantiated the use of the system, process, and functional approaches in the management of benefits.

N. Taran (2019) substantiated the main features of the implementation of the adaptive organizational and economic management mechanism to increase competitiveness; special attention is focused on the identification and dynamism of directions of changes in management systems that mobilize the possibilities of effective functioning. M. Odnorog et al. (2019) established that business entities are most adapted to extreme operating conditions; found

that the functioning of inefficient institutions in the state reduces the guarantees of property rights and the level of life of the peasant.

M. Berdar, O. Yevtushevska (2020) revealed the management system of innovative activity of an entrepreneurial entity as a survival mechanism; the components of block diagrams were added to the ways of improving the management system: evaluation of innovative activity, directions of innovative development, strategies of innovative functioning, audit of the implementation of the company's development strategy. A. Potapov (2020) indicated the need to model the influence of resource factors on the production of agricultural products.

O. Shpykuliak and O. Sakovska (2020) substantiated that the cooperative system of interactions in rural and agro-industrial farms reflects state program actions regarding the institutional adaptation of cooperation in general as a special form of integration, as a mechanism of self-regulation and entrepreneurship. O. Sakovska (2020) proved that agricultural cooperation reflects the economic potential of the state, stimulates the growth of volumes of marketable products, ensures the social condition of competitive agricultural producers, and develops the infrastructure of the agricultural market in general.

However, some issues concerning the adaptation of business entities of the agrarian sector of the economy to functioning in wartime conditions remain insufficiently researched and require further consideration.

The purpose of the article is to evaluate and substantiate from the point of view of a systemic approach the theoretical, methodical, and practical principles of adaptation of business entities of the agrarian sector of the economy of Ukraine to activities in wartime conditions.

► Literature Review

The emphasis in literary sources on the problems of the development of the processes of adaptation of the economic mechanism of the functioning of enterprises to extreme conditions is focused on the essence of concepts, factors, assessment methods, management tools, the influence of external and internal factors affecting the processes of production and sales activities. In particular, it was established that the adaptation of the business entity to changes in the environment is carried out using search, investment, technological, and management operations; it is substantiated that the form of adaptation expands the possibilities of adaptation to extreme conditions and increases the flexibility of decision-making; it was found that the adaptation reflects a change in the organizational structure, goals, and strategy of functioning. Attention is focused on the idea of combining the mechanisms of various approaches to predicting the nature of the influence of external factors and flexibly varying the internal components of the enterprise's functioning. The essence of the adaptive model of the functioning of the

business entity is revealed as a model of making adequate changes in the structure and parameters of the management regulator to ensure the stability of the functioning.

A. Natorina (2019) assessed the implementation of the conceptual model of the adaptive marketing policy management system; substantiated the need for the formation of an adaptive system of marketing product policy management using the example of online retailers. N. Pylypenko et al. (2019) developed a methodology for calculating integral indicators of resource availability of business entities; justified the need to use innovations and reduce costs; identified human resources as essential for survival in extreme conditions. I. Vinichenko, T. Shutko (2019) revealed a methodological toolkit for assessing the investment attractiveness of business entities in agriculture and a matrix assessment model taking into account quantitative and qualitative criteria for assessing the entity's investment, financial, and production status.

N. Fedosieieva (2019) substantiated the system of goals for the sustainable development of business entities in agriculture in the conditions of competitive functioning and survival. O. Shpykuliak, I. Bilokinna (2019) revealed the importance of "green" cooperatives in the mechanism of development of alternative energy; proved that the rural population can ensure energy independence due to the sale of produced fuel, reduction of energy costs, functioning of established "green" cooperatives.

N. Golych, O. Panukhnyk (2020) revealed the concept of "enterprise adaptation" as a process of adjustment from the moment of creation of the business entity to its liquidation to ensure competitiveness and efficiency of functioning through a system of adaptation measures and actions; developed a coefficient of adaptation possibilities. The concept of "adaptive strategy" is related to project activities and the choice of subsequent decisions. Y. Kvach et al. (2020) substantiated the need to manage the adaptation of sustainable agrarian entrepreneurship to the conditions of tax changes in environmental investments; evaluated the effectiveness of environmental investments. K. Chimosh (2020) defined the adaptation mechanism of transport logistics management of agricultural enterprises; improved the adaptive logistics system; substantiated the adaptive decision support system.

M. Berdar, O. Yevtushevska (2020) revealed the management system of innovative activity of an entrepreneurial entity as a survival mechanism; to the ways of improving the management system, the components of block diagrams were added: evaluation of innovative activity, directions of innovative development, strategies of innovative functioning, audit of the implementation of the company's development strategy. A. Potapov (2020) indicated the need to model the influence of resource factors on the production of agricultural products.

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rural and agro-industrial farms reflects state program actions regarding the institutional adaptation of cooperation in general as a special form of integration, as a mechanism of self-regulation and entrepreneurship. O. Sakovska (2020) proved that agricultural cooperation reflects the economic potential of the state, stimulates the growth of volumes of marketable products, ensures the social condition of competitive agricultural producers, and develops the infrastructure of the agricultural market in general.

V. Hrosul et al. (2021) developed the concept of the economic core of the development of an entrepreneurial entity; identified strategic components of entrepreneurship development; substantiated that the component of resource potential provides the number of resources necessary for the subject; established that the component of the business model most of all increases the efficiency of the functioning of the subject of agrarian entrepreneurship. A. Shpakov et al. (2021) revealed the dependence of the ability to change in enterprises on the adaptive capabilities of personnel, established the internal factors of change using the McKinsey "7S" model, created a model of the influence of "personnel" on the flexibility of implementing changes in business structures using fuzzy modelling logic. O. Penkova et al. (2021) stated that the marketing strategy of agribusiness enterprises is the most important element of the management system for the survival of the population and for providing citizens with quality food products.

N. Kravchuk et al. (2021) investigated the tools for eliminating the causes of socio-economic decline in the infrastructural provision of rural areas; revealed the state of the modern level of socio-economic development of rural areas; revealed the interdependence of the development of rural areas with infrastructural support. O. Semenenko et al. (2021) identified the basics of the military-economic importance of agriculture for the use of food resources for military purposes and developed recommendations regarding the importance of agricultural development indicators in the formation of the military-economic potential of the state. O. Semenenko et al. (2021) conducted an analysis of the impact of the armed conflict on the development of business entities and changes in the average prices of agricultural products; determined the relationship between the change in the sale price of products and financial costs for defence needs; established a connection between the change in the volume of military expenditures, the gross collection of grain and leguminous crops, the harvested and threshed area, and the levels of their productivity.

N. Trusova et al. (2021) developed a model for assessing the stability parameters of the anti-crisis development potential of agrarian business entities; revealed the features of the matrix for choosing an alternative scenario of self-financing; revealed scenarios of resource provision for anti-crisis development of an agrarian enterprise. I. Vinichenko et al. (2021) revealed the criteria for evaluating the components

of the efficiency of using the resource potential of business entities in agriculture; determined the integral indicator of efficiency (quantitative and qualitative characteristics of the involved resources, productivity, and efficiency) of the main types of activity of economic entities on agricultural lands.

A. Bitkowska et al. (2022) revealed the mechanism of business process management; substantiated the need to increase the sharpness of management from the point of view of Agile Business Process Management due to the use of an adaptation system for making optimal decisions; established that the adaptation process is a component of the Agile BPM concept; have proven that the implementation of the Agile BPM concept allows for a more effective response to market changes and the implementation of radical changes in the business environment. O. Zinchenko et al. (2022) proved that in the system of adaptive strategic management, the use of indicative management decision-making tools is actualized; discovered in the mechanism of implementation of the adaptive strategy subsystems of implementation of the strategic scenario, optimization of strategy options, diagnostics of the state of strategy implementation.

► Materials and Methods

The information base of the study is the laws and regulatory acts of the Verkhovna Rada of Ukraine (2019); materials of the Ministry of Agrarian Policy and Food of Ukraine (2022), and the Ministry of Finance of Ukraine, (2022). Also, the National Bank of Ukraine (2022), publications of national and international information agencies, in particular, the National Academy of Sciences of Ukraine (2022), and the Agrarian Information Agency (2022). The data of the Ukrainian Future Institute (2022), the Razumkov Center (2022), and the Centre for Food and Land Use Research (KSE) were used in the Centre for Food ..., 2022. Materials from Agroportal (2022), UkrAgroConsult (2022), and Economic Foresight (2022) were significant contributions to the conducted research. Works of Ukrainian and foreign scientists regarding the development of processes of adaptation of business entities of the agrarian sector of the economy of Ukraine to activities in wartime conditions (Gerasymenko et al., 2022; Kazak & Obelets, 2022; Shpychak et al., 2022); the results of own research (Development of agricultural..., 2019; Kravchenko et al., 2022; Malik et al., 2022). Calculations were made using modern computer technologies (Microsoft 365 programs for business; Web versions of Word, Excel, and PowerPoint) and analysis methods. The research was implemented in 4 stages: analysis of statistical and informational and literary sources; study of historical Ukrainian and foreign experience; development of adaptation processes of business entities of the agrarian sector of the economy to functioning in wartime conditions; formulation of research conclusions and recommendations.

The main provisions of institutional economic theory and system analysis served as the theoretical

and methodological platforms of the study. The systematic method was applied to determine the historical experience of the development of agrarian entrepreneurship subjects, where the peculiarities of their functioning and the economic characteristics of separate integration structures and agricultural holdings were considered. Abstract-logical methods were used to determine the essence of the processes of adaptation of business entities of the agrarian sector of the economy of Ukraine to functioning in wartime conditions. To carry out empirical assessments and identify trends of change and development of business entities, monographic, graphic, and normative methods approaches to generalizing results for formulating conclusions and recommendations, establishing cause-and-effect relationships in the characteristics of the development of individual groups of business entities were used. Trend analysis was used in the construction of the forecast for 2025 of annual changes in the capitalization of agricultural holdings. The forecast for the development of business entities is based on the number of agricultural holdings that produce commercial products. Provided that there will be state support for such business entities, they can change their status and create integrated structures – cooperatives, clusters, agricultural holdings, and simple partnerships.

► Results and Discussion

Subjects of agrarian entrepreneurship are quite sensitive to extreme conditions of the economic system, transformational upheavals, and wartime conditions. When observing the main aspects of the market environment, the model of adaptive behaviour chosen by the business entity in the environment of functioning in wartime conditions is of great importance. For an individual business entity in the agricultural sector of the economy, adaptation processes are revealed at the level of response to external changes (Kravchenko et al., 2022).

When an entrepreneurial entity of the agrarian sector of the economy faces a new (for its activity) type of wartime instability in market conditions, its staff implements the process of adaptive change management. Under certain socio-economic and political circumstances, the problem of the survival of the business entity is the loss of its market niche capacity. But, if the management of the business entity is ready for operational appropriate actions, then it implements the process of adaptive management of the changes that occurred in the course of military operations. An adaptive approach to management in the languages of wartime is connected with the development and application of strategies for reflecting the effects of the consequences of the war by the subject of entrepreneurship and its structures. In the management decision-making system to ensure the adaptive status of the business entity, optimal management strategy options are selected (Malik et al., 2022).

The development of integrated structures can become the main driver of the economy. Among the

short-term tasks that will arise after the war will be the following: the question of providing benefits for the development of livestock breeding should be reviewed; repurpose the program of available loans to stimulate the technical re-equipment of production and the development of enterprises for the production of agricultural products of agriculture in farms and small farms (in the field of animal husbandry); to prepare business entities for the production of animal husbandry products for adaptation to the sanitary norms of the European Union and norms of technical regulation (Ukrainian Institute..., 2022).

The draft order "On the Approval of the Concept of Stimulating the Development of Entrepreneurship in Rural Areas Until 2030" proposes to actualize attention to the formation of the agricultural advisory system. In addition, attention is focused on long-term support for the development of small agrarian business entities and the activation of the creation of family farms (Concept of stimulation..., 2022). The general goal of the strategy for the development of entrepreneurship and integration processes in the countryside in the post-war period is the formation of an environment capable of ensuring the employment and growth of the incomes of the able-bodied rural population, rural households, and communities, the development of rural areas based on entrepreneurial initiative, personal peasant farms (Lupenko, 2021).

The main strategic goals of the development of entrepreneurship and integration processes in the war and post-war period in the countryside, taking into account the stated goal, are: ensuring food security. Also, the implementation of strategic directions for the development of business structures includes meeting the socio-economic needs of product manufacturers; provision of economic entities with technical and material resources, as well as basic means of production; increasing the competitiveness of product manufacturers; additional funding for personnel development; formation of associations for the development of rural areas and communities (Strategic directions..., 2020).

Inflationary pressure is intensifying in the world, but consumer inflation is accelerating in Ukraine. The main factors of its increase remain violations of production capacities, logistics routes, destruction of infrastructure, occupation of territories, and high energy prices. Inflation in Ukraine will harm economic dynamics and will not allow us to hope for investment expansion in the next 2-3 years. This is how subjects of agrarian entrepreneurship assessed the prospects of their economic activity (Results of the monthly survey..., 2022). Low estimates of the business activity of agrarian entrepreneurs were influenced by worsening inflationary expectations, damage to transport infrastructure, destroyed facilities and supply chains, rising production costs of enterprises, blocking of ports, rising prices of energy sources, and continuation of intensive hostilities.

A decrease in the volume of manufactured products, purchases of agricultural machinery, and services provided by agricultural cooperatives is expected; as a reduction of purchase prices for agricultural products. Enterprises lost parts of their agricultural product warehouses; land; capacity for crop storage. Also, in the country, there is an increase in the price of its products (services) and a reduction in the number of employees against the background of a significant increase in the prices of raw materials, lubricants, energy carriers, and suppliers' goods. Logistic links are broken (Results of the monthly survey..., 2022).

It was established that adaptation is a form of reflection on the active subject of agrarian entrepreneurship and its structures of the mechanisms of environmental influence in the conditions of military operations. The stability of the agricultural sector balances between export capacity (in particular, the global situation) and readiness to fill domestic markets (to ensure food security). The development of Ukraine's economy in 2022 will depend on the ability and willingness of businesses to achieve positive results, relying on their resources, and supporting the economic capacity of households (Ukraine..., 2022).

In the process of research, it was found that due to the armed conflict as of the beginning of August 2022, according to the estimates of KSE experts (Kyiv School of Economics), the total amount of losses is 27.6 billion dollars. It is substantiated that out of 4.3 billion dollars, there were losses because of destroyed equipment (926 million USD) and unharvested winter crops (1.4 billion USD). And 613 million dollars is the estimated total value of oil and grain crops stolen by the occupier. Also, in 2022, the need for long-term storage of 45% of wheat, 50% of barley, and 30% of corn is expected; a general decrease in the number of grain exports; a decline in grain production. If grain exports are not restored to the level of at least 2021, the country's GDP will lose up to 10% (Agrarian Information..., 2022). In the next marketing year, according to forecasts of the USDA (US Department of Agriculture), the country's indicators for the production of corn will remain unchanged, and wheat will decrease by 2 million tons to 19.5 million tons; wheat export parameters remain stable (Agrarian information..., 2022).

It was established that in 2022, from the position of experts of the Ministry of Agrarian Policy and Food of the country, a decrease in the production of corn (-18%), barley (-31%), sunflower (-32%), wheat (-33%) is expected; other crops (-22%). In animal husbandry, experts estimate total losses of \$682 million. A decrease in livestock in animal husbandry is a decrease in the volume of production by several years. Due to increased production expenses for the agricultural producer, the total losses amount to -859 million dollars. These are the consequences of rising prices for diesel fuel (+39 US cents per litre) and fertilizers (Ministry of Agriculture... 2022). A two-year reduction in livestock production is assumed (Table 1).

Table 1. The number of losses due to a decrease in production in crop and livestock production

Volume of production in 2021	Product	Projected volume after invasion 2022	The amount of losses, million dollars
32.15	Wheat, million tons	21.54	2027
42,11	Corn, million tons	34.70	1296
9.44	Barley, million tons	6.59	564
16.39	Sunflower, million tons	11.16	2427
1.45	Pome crops, million tons	1.42	35
0.53	Stone crops, million tons	0.50	98
0.14	Berries, million tons	0.13	89
71.06	Others crops, million tons	56.06	3315
2704	Cattle, thousands of heads	2409	64
5559	Pigs, thousand heads	4769	327
1089	Sheep and goats, thousands of heads	943	2316
193940	Poultry, thousands of heads	176637	41
2751	Milk, thousand tons	2386.7	0.26
6928.6	Eggs, million pieces	5397.2	247

Source: research given data (KSE Center ..., 2022)

Losses of manufacturers amount to: 378.9 million dollars – from the increase in fertilizer prices; 480.4 million dollars – from the increase in diesel

fuel prices; 11.9 billion dollars – from a decrease in prices for export-oriented crops (wheat, corn, barley, sunflower) (Table 2) (KSE Center..., 2022).

Table 2. The number of losses from blocking ports and the increase in the price of production factors

Estimated volume without ports	Product	Amount of losses, million dollars
From blocking ports		
32.15	Wheat, million tons	2958
42,11	Corn, million tons	4127
9.44	Barley, million tons	670
16.39	Sunflower, million tons	4180
Quantity required in 2022	Product	Amount of losses, million dollars
From the increase in the price of production factors		
3.22	Fertilizers, million tons	379
1228	Fuel, million litres	480

Source: research given data (KSE Center ..., 2022)

Therefore, the total amount of losses due to the reduction of production in crop and livestock production, from the blocking of ports and the increase in the price of production factors is predicted at the level of 23327 million US dollars (KSE Center ..., 2022).

Within the framework of the State Program "Affordable Loans 5-7-9%" during hostilities, the following was issued: UAH 0.413 billion (for the conclusion of 143 credit agreements, the beginning of October 2022); UAH 142.6 billion (for 48,138 loans); UAH 1.23 billion (for 253 soft loans, beginning of October 2022); UAH 52.98 billion (for investment, anti-war and anti-crisis purposes; refinancing of loans already received; for agricultural producers) (Ministry of Finance..., 2022).

Since July 1, 2022, the Cabinet of Ministers has launched 6 state programs for active businesses for

entrepreneurs, farmers, and IT specialists. 600,000 entrepreneurs-individuals reduced their economic activity due to the war. The total budget of the programs is UAH 40 billion from the reserve fund. Resolution of the Cabinet of Ministers dated June 21, 2022 No. 738 "Some issues of granting business grants" provides the procedure for obtaining three grant programs: creation or development of a greenhouse economy; creation or development of horticulture, berry growing and viticulture; starting one's own business or investing in an existing enterprise (Agrarian information..., 2022). The legally defined, structured, and organizationally ensured right of the production organizer to create any types of enterprises and integration structures, to independently determine the program of his economic activity; choose suppliers and consumers; set prices and tariffs for their

products (works and services); freely dispose of income (profit) (Development of agricultural..., 2019).

An important economic problem of the formation of business structures is related to the circulation of land. The real value of the land depends on the income that remains after the costs incurred for production in the course of entrepreneurial activity. This is justified by the fact that the amount of land rent depends on the volume of agricultural production. Due to the change in the exchange rate of the hryvnia to the dollar, the capitalization of agricultural production became negative. Reforming land relations is inseparable from the development of business activities, especially small and medium-sized business structures. It continues the development of land relations: during the time of war, 10341 agreements were concluded, covering an area of 18153 ha. By quantity agreements and the area of land, about whose registered transactions with the most active land market during the war were the following: Vinnytsia (2.2 thousand ha), Dnipro Region (1.3 thousand ha), Poltava Region (2.2 thousand ha), Kirovohrad Region (2.4 thousand ha), Khmelnytskyi (1.8 thousand ha). For the last one in the week of July 2022, 1,317 transactions were concluded within the land market on an area of 2,256 hectares (Agroportal, 2022).

By combining their efforts based on corporatization, cooperation, clustering, and integration, business entities achieve significantly better results in production volumes, namely cost reduction. In the period of post-war reconstruction, the main factor in the development of the economy will be the union of peasants into cooperatives and simple societies. In their activities, the peasants understood that their existence can be ensured only based on mutual aid (Malik, 2021).

Large agricultural enterprises or their associations (agricultural holdings) functioned effectively alongside state enterprises, farms, private enterprises, and business associations. Such trends of

preservation of large-scale agrarian business management reflected the processes of market reforms in the field of agricultural production (Lupenko & Kropyvko, 2013). The agrarian structure of agriculture reflects the functioning of the individual labour sector (ensuring internal food security); the corporate sector (large agricultural enterprises and agricultural holdings; expansion of monoculture and export).

During wartime, the largest players – agricultural holdings with access to external financing are radically transformed (foreign management; audited reporting; investment resources of banks and foreign exchange funds; pressure on family farms; unfair competition, and reduced profitability of enterprises). Large corporate structures risk more. The stagnation of agricultural holdings began even before the war (land banks were shrinking; less than 15% of agricultural land was controlled; EBITDA indicators (Earning Before Interest, Depreciation, Taxes, and Amortization) had average values; minimization of mandatory payments is limited. We have a shortage of working capital; the growth of the dollar against the background of a commodity surplus; decline in assets; disruption of logistics chains, environmental disasters on livestock complexes, blocking of sales markets; rent; blocked export or risks of large-scale export of raw materials (three main export-oriented crops – wheat, corn, sunflower); external obligations; sowing and harvesting campaigns under fire; lack of prospects for participation in recovery programs (the maximum size of the land bank of aid recipients is 250-1,000 hectares); shortage of labour force, professional development, and training of personnel in the long term; the advantages of niche production are updated high-margin crops (chickpeas, peas, berries, mustard, medicinal herbs), for which there is variability in logistics, etc.) (National Academy..., 2022). Capitalization is also decreasing (Table 3, Fig. 1) (Agroportal, 2022).

Table 3. Change in the capitalization of agricultural holdings in the period April-November 2022, million euros

Agricultural holdings	04/25	05/09	06/20	06/27	07/04	07/25	08/29	09/26	11/21	11/28
Kernel Holding Sa	512.06	406.84	335.65	346.37	335.96	447.00	376.53	300.55	314.59	306.17
Mhp Se	415.08	356.78	418.69	377.77	415.93	420.48	410.88	389.98	361.79	336.01
Astarta-Kyiv	138.06	120.25	115.92	112.29	98,91	129.71	108.69	115,16	116.51	110.25
Imc Sa	124.00	109.25	120.28	113.54	115.18	112.69	112.63	116.20	113.23	108.95
Agroton Public	23,33	23.01	17.54	15.95	15.63	18.31	15.50	17.59	17.52	16.57
Agro Generation	3.82	3.12	3.82	3.44	3.37	4.25	3.82	3.58	3.02	3.26
KSG Agro	8.23	7.50	6.99	7.07	6.73	8,19	6.87	7.38	7.18	7.27
Ovostar Union	58,13	53.38	57.70	58,38	55,64	56,67	53,44	55,53	57.20	55.87
Agroliga Group	6.91	6.17	6.02	6.52	6.53	6.63	6.54	7.01	6.53	6.72

Source: research based on data from UkrAgroConsult (2022)

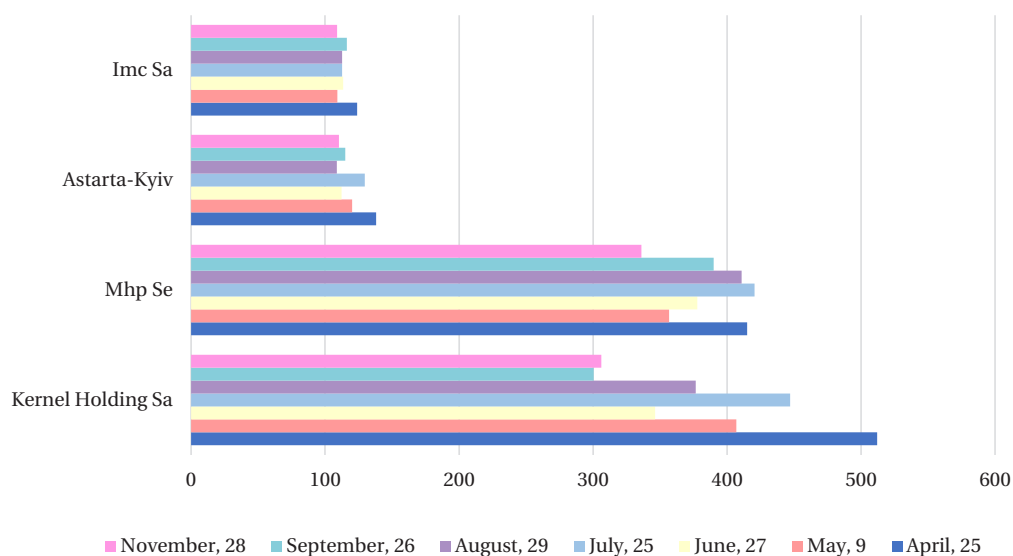


Figure 1: Change in the capitalization of agricultural holdings Kernel Holding Sa, Mhp Se, Astarta-Kyiv, Imc Sa in the period from April to November 2022, million euros

Source: research given data from UkrAgroConsult (2022)

The structure of crops is changing area, namely magnification square under oily cultures, rapeseed, and soy. The enterprises of agricultural holdings in the Luhansk region remain in the occupied territories (Agroton Public), Donetsk region (Mhp Se, HarvEast), Zaporizhzhia region (HarvEast), Kherson region (Mhp Se, Privat Agro Holding), Crimea (Mhp Se, HarvEast).

The full-scale invasion of Russia partially limited the potential of new opportunities for the socio-economic development of the country and the activation of the activities of the subjects of agrarian entrepreneurship. Due to the uncertain nature of the development of the war, high risks of socio-economic development will remain. This will restrain the inflow of capital into the country's economy and agriculture.

Diversified companies with assets abroad have the greatest ability to adapt and survive. We have negative consequences of the agricultural holding model of Ukrainian agriculture (Government Courier, 2022). Programs that are already being implemented in Ukraine by FAO (Food and Agriculture Organization) and other donors, implement a farmer-centric model in agriculture. The trend for self-sufficiency, the practice of gardening, and homestead farms for personal needs are being updated (Economic foresight, 2022).

The main role in the preservation and development of local markets and food supply chains is played by farmers and individual peasant farms. Farmers and private peasant farms function for the sake of the existence of the producer himself, and not for profit and rent. The development of farmers and personal peasant farms will contribute to ensuring the adaptation of the agrarian structure of Ukraine to the EU (National Academy..., 2022).

In the course of my research, it was established that the change in the forms and methods of survival

is connected with the improvement of the parameters of the main components of the adaptation of the economic mechanism of the functioning of the subjects of agrarian entrepreneurship. It is substantiated that the main components of the system for diagnosing the adaptive state of business entities in agriculture are subsystems of adaptive risk management of agricultural production, planning, modelling, and forecasting. In contrast to the existing positions of other researchers, it was found that: an adaptive approach to management is related to the implementation of forms of reflection by the economic entity and its structures of environmental influences; the most effective method of diagnosing adaptive processes is economic and mathematical modelling (Kravchenko et al., 2022; Malik et al., 2022).

Priority measures for organizational and economic support for the formation of integrated structures based on the principles of sustainable development of rural areas (Strategic directions..., 2020) in wartime conditions include the following: restoration of the lost material and production base and creation of institutional support conditions – encouraging the activities of business structures to implement programs to ensure sustainable development of rural areas; state institutional and economic support for the development of cooperation in the countryside to strengthen the integration ties of small forms of business; support of cooperative and integration initiatives in the field of non-agricultural business in the countryside to promote the implementation of social and economic projects; development and implementation of cooperative projects for the implementation of “green” initiatives; strengthening the institutional capacity of integrated structures to implement measures in the context of the UN Sustainable Development Goals for the period up to 2030 (Verkhovna Rada..., 2022);

formation of an effective mechanism of institutionalization of industry associations; implementation of program measures to solve the production and marketing problems of small agricultural producers; support for the development of cooperation of peasant farms to ensure their emergence from the shadows, functioning in the conditions of war and post-war recovery; development of voluntary associations for representation and protection of interests (simple societies, cluster associations).

The study of the theoretical, methodological, and practical principles of adaptation of business entities of the agrarian sector of the economy to functioning in wartime conditions is an urgent problem. Some economists considered these questions in various integrations.

J. Lopes and S. Gomes (2022) investigated the potential of innovative and sustainable strategic management in the mechanism of development of small and medium-sized enterprises to expand the competitive advantages of the enterprise; developed adaptive sustainable management strategies; adaptation processes were classified as mechanisms for the realization of social and environmental benefits for the enterprise. N. Krasnostanova et al. (2022) substantiated specific types of financial stability of agricultural business entities (budget crisis, normal state, unstable financial state, absolute stability); identified opportunities for improving the procedure for conducting financial reporting.

O. Kazak, T. Obelets (2022) assessed the introduction of bitter forms of personnel adaptation and their employment in the production process as a short-term strategy of adaptation of the business entity in extreme conditions; the need to change the conditions of work organization is substantiated. N. Bondarchuk et al. (2022) implemented a marketing approach to uncovering the personnel motivation system, developing ways to increase personnel motivation, establishing quantitative and qualitative indicators of personnel selection, personnel audits, training programs, job profile optimization, labour market monitoring, etc. A. Gerasymenko et al. (2022) established that one of the directions for the recovery of agricultural production after the war and the growth of employment and welfare of the rural population is the development of cooperation; determined ways of further development of agricultural service cooperatives.

V. Rudenko et al. (2022) revealed the influence of the fiscal mechanism on the investment activity of households; calculated the tax burden on individuals; established the need to improve the fiscal functioning mechanism. L. Kononenko et al. (2022) substantiated the feasibility of optimizing the taxation of small-scale business entities and creating innovative integrated structures by involving employees of Advisory Services in the accounting and analytical work of small-scale agricultural producers.

D. Dabrowski (2022) focused on market turbulence and its connection with commercial efficiency of functioning, labour productivity, market

infrastructure, the novelty of innovative products, suppliers, and buyers; argued that the introduction of innovative products has a double effect on the commercial efficiency of production. I. Dmytriiev et al. (2022) substantiated that the creation of a marketing strategy for subjects of agrarian entrepreneurship is characterized by lower prices for raw materials and labour; a lower level of innovativeness of business structures; a higher level of aggressiveness in capturing markets. O. Shpychak et al. (2022) proposed a gravity model of the integrated level of export potential of agribusiness enterprises; established that the main part of exports is grain and oil crops, vegetable (sunflower) oil; determined tariff quotas for duty-free exports of crops, livestock, and processing products.

Yu. Lupenko et al. (2022) revealed the priority areas of development of business entities in agriculture; which justified the need to increase the investment potential of Ukraine. S. Kovalenko and N. Bykovets (2022) determined that the formation of cross-border innovation clusters is the most effective survival mechanism for enterprises under martial law. R. Dymczyk et al. (2022) evaluated the factors of social capital formation using the example of agricultural holdings.

► Conclusions

When considering the issue of adaptation of business entities in wartime conditions, it was determined that great attention should be paid to the peculiarities of the structure of agricultural production in Ukraine, namely, the export orientation of agricultural production, the structure of business entities in the agrarian sphere (this is the presence of different size and organizational and legal status of entrepreneurial structures), their specialization and areas of sales activity. It is characteristic that in the structure of production of agrarian products, a significant share (up to 40%) of the private entrepreneurial sector, which is mainly aimed at the personal satisfaction of needs and provision of the domestic market. Therefore, the possibilities of adaptation to extreme conditions of the personal entrepreneurial sector have certain advantages compared to other specialized economic structures.

The data obtained from the conducted research indicate that the institutional uncertainty of the state in the conditions of military operations regarding the ability to provide support for the development of agrarian entrepreneurship leads to a decrease in production volumes. The capitalization of agricultural business entities is also decreasing as a result of losses from military operations. The main problems that arise in the process of adapting business structures to functioning in wartime conditions are the disruption of sales channels for agricultural products and the breakdown of logistical connections both in large and small business entities.

Small business structures are more adapted to activities in wartime conditions. Therefore, in the future, the development of small business structures

and family farms should be promoted, which are represented by niche products and ensure the preservation of jobs and the protection of the surrounding environment. In the conditions of martial law, the perspective of the institution of self-sufficiency and the provision of food aid to other citizens increases, and the development of rural social capital becomes a priority.

The results of the study showed that there is a need to achieve the goal of accelerated entrepreneurship development in the most promising areas

that will provide a significant increase in added value. This is the field of processing of agricultural raw materials, innovative renewal of production, and infrastructure. In further research, there is a need to clarify the strategic directions and principles of entrepreneurship, to accelerate the integration of the domestic agricultural sector into the world economy, to develop the content and terms for intensifying the participation of entrepreneurial structures in the restoration and acceleration of the post-war development of the Ukrainian economy.

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Адаптація суб'єктів підприємництва аграрного сектору економіки до діяльності в умовах воєнного часу

Микола Йосипович Малік¹, Світлана Анатоліївна Кравченко²,
Олександр Григорович Шпикуляк³, Лариса Миколаївна Малік⁴,
Валентина Андріївна Южикова⁵

¹Д-р екон. наук, професор. ORCID: <https://orcid.org/0000-0001-9198-4460>.

Національний науковий центр «Інститут аграрної економіки», 03127, вул. Героїв Оборони, 10, м. Київ, Україна

²Д-р екон. наук, професор. ORCID: <https://orcid.org/0000-0001-5541-4495>.

Національний науковий центр «Інститут аграрної економіки», 03127, вул. Героїв Оборони, 10, м. Київ, Україна

³Д-р екон. наук, професор. ORCID: <https://orcid.org/0000-0001-5257-5517>.

Національний науковий центр «Інститут аграрної економіки», 03127, вул. Героїв Оборони, 10, м. Київ, Україна

⁴Канд. екон. наук. ORCID: <https://orcid.org/0000-0001-6020-7335>.

Національний науковий центр «Інститут аграрної економіки», 03127, вул. Героїв Оборони, 10, м. Київ, Україна

⁵Аспірант. ORCID: <https://orcid.org/0000-0001-9109-7618>.

Національний науковий центр «Інститут аграрної економіки», 03127, вул. Героїв Оборони, 10, м. Київ, Україна

► **Анотація.** Необхідність виходу суб'єктів господарювання з екстремального стану активізує розвиток процесів адаптації суб'єктів підприємництва до функціонування в умовах воєнного часу. Мета статті – обґрунтувати теоретико-методологічні засади, соціально-економічні та правові проблеми адаптації підприємницьких структур до діяльності в екстремальних умовах. За методологічну основу дослідження слугували положення системного аналізу та інституційної економічної теорії. Використано нормативний, графічний, абстрактно-логічні методи та підходи узагальнення результатів. Визначено перспективи розвитку підприємництва. Встановлено, що в період відновлення економіки проблемними будуть питання матеріально-технічного та фінансового забезпечення виробничих потужностей, логістичних шляхів. Розкрито економічні труднощі великих корпоративних структур (руйнування активів, розрив логістичних зв'язків, блокування ринків збуту). Обґрунтовано сутність адаптації суб'єктів підприємництва до діяльності в умовах збройного конфлікту функціонування в умовах воєнного часу та інтеграційно-кооперативних структур з точки зору системності.

Уточнено поняття «адаптація» суб'єктів підприємництва як процес розробки й застосування стратегій відображення підприємством і його структурами впливів наслідків війни в системі прийняття управлінських рішень для забезпечення конкурентності та ефективності функціонування. Встановлено, що адаптація суб'єктів підприємництва до ризикових умов у повоєнний період сприятиме розвитку інтеграційних структур (кооперативів, простих товариств, кластерних об'єднань), росту самостійності у визначенні програм своєї господарської діяльності, забезпеченню інтересу селян як товаровиробників на правах формальних носіїв підприємницького статусу задоволенню своїх економічних і соціальних потреб. Виявлено, що найбільш адаптованими до кризових умов, пов'язаними з воєнними діями, є фермерські і особисті селянські господарства. Результати дослідження можуть бути враховані при розробленні програм визначення пріоритетів розвитку суб'єктів аграрного підприємництва, зокрема, інтеграційно-кооперативних структур; розробці нормативно-правових актів для формування і розвитку кооперації і інтеграції в аграрній сфері економіки

► **Ключові слова:** суб'єкт підприємницької діяльності, адаптація до умов воєнного стану, сільськогосподарський кооператив, інтеграційно-кооперативні структури, інтеграційні об'єднання, механізм інтегрованих структур, інтегративні формування, агрохолдинги, кластери



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The state and prospects of investing in the development of agriculture in conditions of instability

Oleksandr Zakharchuk¹, Mykola Kisil², Veronika Nechytailo^{3*}

¹Full Doctor in Economic Sciences, Professor. ORCID: <https://orcid.org/0000-0002-1734-1130>.

National Scientific Centre "Institute of Agrarian Economics", 03127, 10 Heroiv Oborony Str., Kyiv, Ukraine

²PhD in Economic Sciences. ORCID: <https://orcid.org/0000-0003-1505-3079>.

National Scientific Centre "Institute of Agrarian Economics", 03127, 10 Heroiv Oborony Str., Kyiv, Ukraine

³PhD in Economic Sciences. ORCID: <https://orcid.org/0000-0002-7098-0441>.

National Scientific Centre "Institute of Agrarian Economics", 03127, 10 Heroiv Oborony Str., Kyiv, Ukraine

► **Abstract.** To achieve positive changes in the economy and society, it is necessary to constantly intensify the investment process in agriculture, which affects the development of most types of economic activity in the state. The purpose of the article is to investigate the trends of quantitative and qualitative changes in investments for the development of agriculture in Ukraine in conditions of instability. Such methods were used in research: dialectical, abstract-logical, correlation-regression, strategic planning, project analysis, tabular, graphic, and forecasting. According to the results of research carried out using methods of correlation and regression analysis, it was found that capital investments in agriculture in conditions of instability were the most important factor in the growth of not only commodity products and profits in agriculture, but also the gross domestic product of the state. The dynamics of investments and sources of their financing, which have been unstable in Ukraine for a long time, have been analysed. A significant differentiation of levels of investment in the development of agriculture in the regions was revealed. A conclusion was made regarding the cyclic nature of investment processes in the agri-food sectors of the economy and their investment attractiveness, and the periods of its favourable and unfavourable phases for agriculture were clarified. The efficiency of capital in agriculture, which changes under conditions of cyclical investment processes related to investment attractiveness, is studied. In order to create conditions for achieving sustainable development of agriculture, the necessity of forming an investment-oriented agricultural policy based on principles tested by world practice is substantiated. The results of the forecast of capital investments in the development of agriculture in conditions of instability for the period up to 2030 are presented. The results of the research are of practical importance for the formation of an investment-oriented investment policy of the state, investment strategies of agricultural formations, and the development of the state economy in conditions of instability

► **Keywords:** capital investment in agriculture, instability, investment dynamics, sources of investment financing, cyclicity of investment processes, investment efficiency, investment policy

► Introduction

Investments are the most important factor in the economic and social development of Ukraine. They are especially important in agriculture, the products of which are used in most sectors of the economy, which creates multiplier effects in them. It is especially important to ensure the stability and growth of investment processes in agriculture in a period of instability when the normal course of economic and other life support processes is disrupted. In conditions of instability, investments in agriculture allow not only to restore but also to increase the production of agricultural and food products, preserve

the food security of the state, increase the level of efficiency of the entire economy, and significantly increase the gross domestic product.

Given the multifaceted nature of investment issues in agriculture, great attention should be paid to scientific research and the practice of investment management at all levels, solving problems related to the preservation and strengthening of the positive impact of investments in agriculture on the entire economy. This will be facilitated by measures to overcome the investment slump, intensifying the investment activity of agricultural producers of all

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*Corresponding author

forms of management at the expense of their own and involved sources of financing, smoothing, as well as the implementation of an investment-friendly agricultural policy.

Given the importance of investment issues, it is actively studied. Foreign scientists M.V. Donckta, Ph. Chanb, and A. Silvestrinic (2021) studied the aggregate flows of capital investments and capital in agriculture, forestry, and fisheries using the example of 189 countries for the years 1995-2017, the long-term dynamics of the relationship between investments and added value in agriculture, and also summarized global and regional trends in gross accumulation fixed capital in agriculture. N. Akber, K.R. Paltasingh, and A.K. Mishra (2021) investigated how public policies encourage private investment in agriculture in India. A. Eskesen, R. Agrawal, and N. Desai (2014) – paid considerable attention to the impact on investments of macroeconomic factors and proposals for their improvement. A. Eskesen, R. Agrawal, and N. Desai (2014) – researched investment support in small and medium-sized agribusinesses and directions for its solutions.

Ukrainian scientists, in particular, Yu.O. Lupenko, O.V. Zakharchuk (2018), N.P. Reznik, A.M. Slobodanyk, V.O. Kotlyarov (2018), and M.I. Kisil (2021), studied the problem of investing in the development of agriculture. Aspects of investment support for rural development were studied by V. Ilchuk, T. Shpomer (2017) and O. Shubravskaya (2012), regional investment – N.I. Mezentsseva, I.M. Frost (2011). Investment methodology was studied by N.P. Reznik (2008), and certain aspects of the state and prospects of investing in the development of agriculture – O.V. Zakharchuk, M.I. Kisil, V.V. Nechytaylo (2022). Investigating directions of state regulation of investment activities in agriculture, Yu.M. Dzyurakh and O.O. Drugov (2018) identified its main direction – the formation of a complete system of its mechanisms and tools.

However, in the conducted studies, the connection between investments in agriculture and the results in the economy was not revealed, the investment process in its dynamics and components was not systematically evaluated, and the directions of activation in conditions of instability were not determined.

For the correct choice of options for the development of agriculture in the national economy in conditions of instability, this article highlights the results of scientific assessments of the state and prospects of investment and participation in it. The purpose of the study is to assess investment processes in the agricultural economy of Ukraine and their impact on the state economy, as well as to determine the most important directions for their activation in conditions of instability.

► Literature Review

The works of many foreign scientists are devoted to various aspects of the state and prospects of investing in the development of agriculture in conditions of instability, namely: Nicolas Büttner, Michael Grimm, and Sidiki Soubeiga (2022) on the example

of Burkina Faso, the influence of political instability and social conflicts on economic results and investments studied. It was concluded that instability, especially caused by armed conflicts, will lead to a decrease in investment and efficiency.

A.Ye. Gyapong (2020) used the example of Ghana to study the impact of large-scale investments on population employment and the consequences of investments in land grabbing as well as the concentration of land for employment. The negative consequences of large-scale agriculture on employment have been revealed. A conclusion was made regarding the need to improve the distribution of benefits from investments in land.

X. Qian (2021) investigated a farmer's investment in a service cooperative to better provide the necessary resources. A multi-period model of the justification of investment decisions is considered, in which the farmer first studies the feasibility of joining the cooperative, and then solves the task of making additional investment contributions to the cooperative based on profitability criteria.

P.L. Billon and M. Sommerville (2017) investigated investment processes in large-scale agricultural and mining projects. The authors found out that the investment processes in such projects take place in the context of different ontologies, evaluations, and options for land use by investors, who combine and compete to create new spaces and subjectivities. A conclusion is drawn regarding the need for investments in the infrastructure of agriculture and to counteract the growth of tension and contradictions in the conditions of the open land market for investments in their capture.

Zh. Liu, L. Long, B. Hu, L. Shi, B. Huang, and Yu. Zhao (2021) studied investment decisions that lead to carbon emissions and other negative environmental impacts in agriculture that produce instability. The authors developed a game model for comparing optimal solutions and profits to choose the optimal investment options for reducing emissions by the manufacturer, as well as decentralized and centralized decision-making. A conclusion was made regarding the need for investment and cooperation of agricultural producers and market intermediaries in the production and sale of products, increasing profits, as well as protecting the environment.

V.H. Thu and D. Goto (2020) studied the relationship between the security of land tenure and investment in agriculture using the example of Vietnam. The authors provided evidence that as agricultural land use terms increase, farmers' investments increase, primarily in irrigation, soil conservation, water conservation, and organic fertilizer application, which curbs the manifestations of instability.

Ukrainian scientists pay considerable attention to the problems of investments in conditions of instability. Thus, researching ways to intensify investment activity in the conditions of the economic and political instability of Ukraine, R.S. Chorny, N.P. Chorna, I.I. Berdei (2018) proposed a set of measures to

overcome the crisis, attract investments, promote the development of the national investment market and its integration into the global space.

I.S. Kramarenko (2016) studied the causes of Ukraine's economic instability and the ways out of it. He substantiated the conclusion that a scientifically based investment policy, a favourable investment climate, and the attraction of foreign investors are necessary for the exit of the national economy from the crisis and further stable development.

The state and prospects of investment activity in Ukraine in conditions of economic instability, research by N.P. Tanasienko and V.Yu. Rud (2017). They identified factors that positively affect the investment climate and contribute to investment activity.

Studying the effectiveness of the use of land resources, N. Gvozdei (2022) found out that the main condition for the growth of agricultural production in conditions of instability is the improvement of the credit situation of farmers. At the same time, all sources of financing must ensure investments in the expanded reproduction of capital.

Yu.B. Kolupaev, S.S. Zalyubovska, and I.O. Melnychuk (2018) studied the problem of attracting investments in conditions of instability and substantiated the need of the national economy for financial investments and measures to improve the investment climate. It was found out that to revive investment and innovation activities and improve social conditions on this basis, comprehensive and consistent reforms are needed, the goal is to release entrepreneurial initiative, create a competitive environment and stimulate investments.

Studies of investment problems in conditions of instability, conducted by foreign and Ukrainian authors, mainly concerned the entire economy. There were also separate studies on agriculture. V.V. Lavruk and L.M. Budniak (2020) studied the task of investment support for the development and increasing the competitiveness of agricultural production. The authors proposed to consider investment efficiency as the main criterion of product competitiveness, systematized indicators of investment efficiency, identified priority areas of investment, and also substantiated proposals for intensification of the processes of reproduction and modernization of the material and technical base of agriculture.

The investment problems of agriculture in conditions of instability, which were significantly increased due to the war, were not thoroughly investigated. Firstly, this concerns the mechanisms for overcoming the investment recession and crisis, investment support for the sustainable development of agriculture, as well as strengthening the positive impact of agricultural investments on food security, increasing export potential, and the development of the entire economy.

► Materials and Methods

The basis of the research methodology is the dialectical method of scientific knowledge (when learning about investment processes and phenomena),

a systematic approach (for studying the state and prospects of investing in the development of agriculture in conditions of instability); abstract-logical (when substantiating theoretical provisions regarding the formation of investment efficiency); correlation-regression (to study the relationship between capital investment in agriculture in the regions of Ukraine and the volume of its marketable products, profit, and gross regional product with a lag of one year for 2015-2020). As well as strategic planning methods (when choosing strategic investment goals) (Kisil, 2018); project analysis (in investment efficiency assessments) (Kisil, 2021); the tabular method of calculating the average annual rates of growth, increase, and decrease (in estimates of the dynamics of capital investments); tabular and graphic (with the visual display of research results in the form of figures and tables); forecasting (for the forecast of capital investments in the production of agricultural products of Ukraine for the period up to 2030).

Adhering to the dialectical method of scientific knowledge, the authors investigated the process of investing in the development of agriculture as an object of management at all levels in the interdependence and interdependence of all its components, signs, characteristics, and investment results. The results of these assessments were used in the assessment of trends in the dynamics of investments and investment prospects for the development of agriculture. Given the dialectic of the relationship between a specific investment and public institutions, considerable attention is paid to institutional factors affecting efficiency.

Since the investment process takes place over time and is continuous, and in conditions of instability its scale is constantly changing, the study was started with estimates of the dynamics of capital investments in the production of agricultural products, clean of the impact of price changes on investment goods and services. For this purpose, statistical indicators of volumes and indexes of capital investments up to the previous year were used, which were used to calculate the real dynamics of investments for some years (Capital investments (2010-2021); Indices of capital investments..., 2011-2021).

To achieve the representativeness of the sample for the correlation-regression analysis, statistical indicators of the gross regional product were used, which collectively reflect the gross domestic product (Gross regional product ..., 2004-2020). For this purpose, correlation-regression models were calculated using the standard Microsoft Excel computer program, for each of the years 2015-2020, with subsequent averaging of the obtained calculation results. The elasticity coefficient was analysed as an indicator that most fully takes into account the close relationship between capital investment in agriculture and the gross regional product.

The investment cycle of Simon Kuznets was studied by the dynamics of the relationship between capital investments in agriculture and the food industry for the period 1990-2020 using a parabola of the fifth order.

In the assessment of the efficiency of investments, the methodology of macroeconomic investment analysis and theoretical and methodological work on the assessment of the efficiency of agribusiness investments were used (Kisil, 2015).

In the evaluations of the investment orientation of the agricultural policy in Ukraine and the justifications of proposals for the formation of this policy for the future, data from the OECD monitoring (Producer Support (PSE)..., 2000-2021) were used.

The results of this study are summarized in an analytical report submitted in 2022 to the Ministry of Agrarian Policy of Ukraine and the National Academy of Agrarian Sciences of Ukraine (State and prospects of investment..., 2022).

► Results and Discussion

The economy of Ukraine has been developing for a long time in conditions of instability, which is

characterized by alternating periods of recession and intensification of investment processes in agriculture. Particularly unfavourable conditions for investments arose in connection with the military aggression of the Russian Federation, which negatively affect investment activity in all sectors of the economy.

In conditions of instability in the state, it is especially important to prevent investment decline in agriculture. The results of research carried out by the authors using methods of correlation and regression analysis show that in conditions of instability, capital investment in agriculture was the most important factor in the growth of not only marketable products and profits in agriculture but also the gross domestic product of the state. It was found that there is a close relationship between the volumes of capital investments and indicators of agricultural output, which is close to functional: averaged over all the analysed models, the multiple $R = 0.92$, and $R^2 = 0.84$ (Table 1).

Table 1. Correlation-regression relationship between capital investments in agriculture in the regions of Ukraine and the volumes of its marketable products, profit, and gross regional product with a lag of one year, 2015-2020

Item No.	Regression options	The value of the regression coefficients between the capital investment of the corresponding year (X and) and the performance indicator of the next year (X and+1)					
		2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	In general, for the period
1	Y1 – production of agricultural products; X1 – capital investment in agriculture						
1.1	Multiple R1	0.92	0.89	0.91	0.95	0.93	0.92
1.2	Coefficient of determination (R^2)	0.84	0.78	0.83	0.90	0.86	0.84
1.3	Coefficient of elasticity (E1)	1.01	0.85	0.98	0.94	0.78	0.91
2	Y2 – profit from agriculture; X2 – capital investments in agriculture						
2.1	Multiple R2	0.88	0.91	0.90	0.24	0.72	0.73
2.2	Coefficient of determination (R^2)	0.77	0.83	0.81	0.06	0.52	0.53
2.3	Coefficient of elasticity (E2)	1.05	1.05	1.09	0.75	0.72	0.93
3	Y3 – gross regional product; X3 – capital investments in agriculture						
3.1	Multiple R3	0.43	0.51	0.47	0.35	0.31	0.41
3.2	Coefficient of determination (R^2)	0.18	0.26	0.22	0.12	0.09	0.17
3.3	Coefficient of elasticity (E3)	0.53	0.61	0.62	0.41	0.31	0.50

Source: calculations of executors according to the data of the State Statistics Service of Ukraine (Gross regional product ..., 2004-2020; Profit before taxation of..., 2014-2020; The volume of produced..., 2014-2020)

A great dependence between indicators of capital investments and profit was also revealed: $R = 0.73$, $R^2 = 0.53$. The calculated coefficient of elasticity (E), the most acceptable for measuring the tightness of the correlation-regression relationship, shows that other things being equal, changes in capital investments lead to a variation in the volume of

agricultural products by 91%, profit by 93%, and gross regional profit by 50%.

Although the gross domestic product is formed by all branches of the economy, half of the changes in its volumes are determined by capital investments in agriculture, the share of which in their total investments in the state is only 10%. Therefore, in

conditions of instability, it is expedient to increase investments in agriculture as a factor in achieving stability and development of the entire economy of the state through various measures of state economic policy.

However, the dynamics of the regression coefficients given in Table 1 in recent years indicate unstably, and in recent years, even reverse phenomena, which in 2019-2021 are characterized by a decrease in the impact of investments on changes in agricultural profits and gross regional product. This is due to the crisis-related decrease in investments and net income, as well as an increase in capital and current costs. In the conditions of martial law, these negative phenomena objectively increased.

If capital investments in agriculture do not increase in the short term, we should expect a slowdown in growth rates or a decrease in the volume of commercial agricultural products, the profit of agricultural producers and their sources of investment financing, as well as a decrease in the gross domestic product of the state caused by the investment downturn, which, in the end, will lead to further deterioration of the economic and social situation in the state.

The development of agriculture in Ukraine has been predominantly influenced by external factors, which cause the instability of its development. According to the results of the study of changes in the conditions of investment activity during the period

of Ukraine's independence, it was found that the first deep and long-term investment crisis in agriculture occurred in 1991-2001 when the principles of socialist property relations were still preserved in agriculture, and reforms on the formation of market economies took place slowly and unsystematically. The consequence of the investment crisis in agriculture was a significant ageing of the material and technical base of enterprises, a decrease in production capital, and a slowdown in the pace of development of both the agricultural and the entire economy. After the massive reorganization of collective agricultural enterprises into private agricultural formations in 2001, capital investments in agriculture began to grow annually at rates that in some years exceeded 50%. The vast majority of these investments were directed to technical and technological innovations and the formation of market infrastructure, in particular export logistics. Investment growth in national agriculture stopped in 2008-2009 due to the global financial crisis. The financial crisis, which began in 2008, and already in the following year, 2009, caused a double decline in investments in agriculture. After overcoming the consequences of the financial crisis, investors partially used deferred investments, which caused the effect of the post-crisis surge in capital investments. Due to this, their volume in 2011 compared to the previous year increased by 39.4% (Fig. 1).

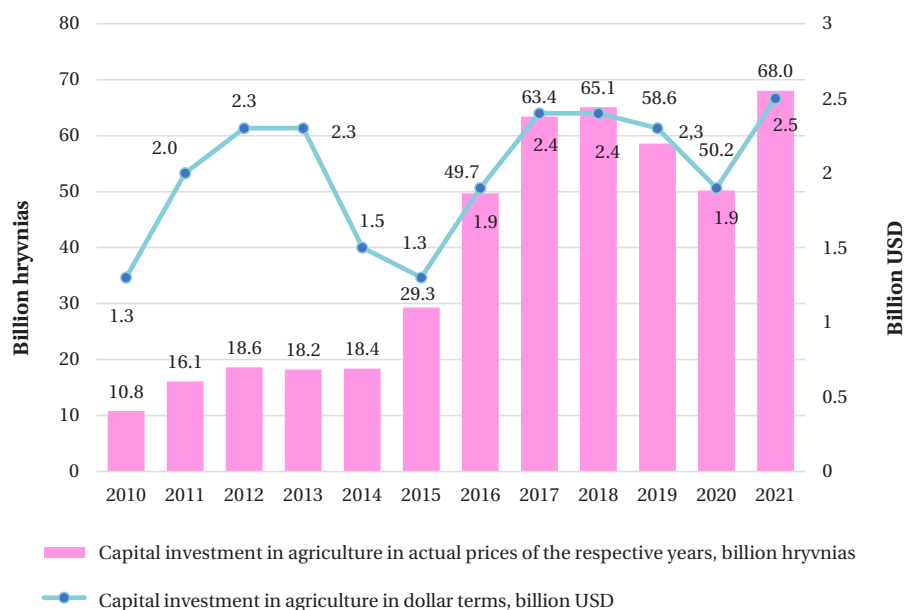


Figure 1. Dynamics of capital investments in agriculture in actual prices and in US dollars, 2010-2021

Source: data of the State Statistics Service of Ukraine (Capital investments, 2010-2021) and calculations by the executors

In the following years 2012-2015, which were unfavourable due to the political crisis in the state and the military aggression of the Russian Federation against Ukraine, the number of investments in agriculture changed slightly in the range of UAH 32-41 billion. When, after a certain stabilization of the military situation in Donbas, the activities of

national investors resumed, capital investments in agriculture in 2016-2017 increased by 47.6 and 31.4%, respectively, in comparative terms. But already in the following 2018, investors' expectations worsened, the rate of growth of capital investments until the previous year was only 7.4%, in 2019 they decreased altogether, and in 2020, the investment

slump turned into a crisis. This crisis was overcome in 2021, in which capital investment increased by 23.5% compared to the previous year. According to preliminary estimates of the authors, large-scale aggression against Ukraine in 2022 caused a particularly deep investment crisis in agriculture.

Investment activity in agriculture in 2010-2021 was generally low and unstable, the average annual growth rate of capital investments amounted to only 11.5% or UAH 2.8 billion in 2020 prices. The peak values of capital investments in agriculture, which were reached in 2012-2013, 2017-2018, and 2021 did not exceed \$2.3-2.5 billion, and during the recession in 2010 and 2015 – up to \$1.3 billion. If it

were not for the crisis periods for investments 2013-2015 and 2019-2020, the volume of capital investments in agriculture in 2020 prices would increase by an average of 11 billion UAH per year. Factors of instability, which arose due to various crisis phenomena in the period 2010-2021, annually caused the loss of capital investments for the development of agriculture in Ukraine in the amount of \$0.5-1 billion.

Studies of the structure of sources of financing capital investments in agriculture in conditions of instability revealed that the possibilities of agricultural enterprises to attract additional sources for their financing are significantly limited (Table 2).

Table 2. Structure of sources of financing of capital investments in agriculture for January-December 2018-2021, in percentage

Year	Total number of sources	Including at the expense of:			
		state and local budgets	own funds of enterprises	bank loans	other sources
2018	100.0	0.2	86.7	12.9	0.2
2019	100.0	0.4	90.9	8.6	0.1
2020	100.0	0.0	90.8	8.7	0.5
2021	100.0	0.1	90.9	8.9	0.1
Average for 2018-2021	100.0	0.2	89.8	9.8	0.2

Source: calculated by the executors according to the State Statistics Service of Ukraine (Capital investments by sources ..., 2010-2019)

From the data presented in Table 2, it can be seen that the average annual share of own sources of financing capital investments of agricultural enterprises was 89.8% on average for 2018-2021, and bank loans – 9.9%. At that time, only 0.3% was accounted for by budget financing and foreign sources. There were no fund and other financial sources at all. The lack of attracted sources of investment financing restrains the development of agriculture and the economy in general. It is advisable that the share of

borrowed and otherwise involved sources of financing capital investments should be 25-30%, but not exceed 1/3 of their total volume, which corresponds to the conditions of financial independence and sustainable development of agribusiness.

A negative feature of the investment process in national agriculture in the conditions of its instability and limited sources of financing was the decrease in the participation of small agribusiness in it (Table 3).

Table 3. Dynamics of the structure of capital investments in agriculture by large, medium and small enterprises, 2010-2021

Year	Capital investments of agricultural enterprises in % of their total indicator				
	Total	in particular			
		large	medium	small	of them, micro-enterprises
2010	100	5.6	75.2	19.2	3.5
2011	100	k	k	–	–
2012	100	15.3	57.4	27.3	7.0
2013	100	12.1	58.8	29.1	6.9
2014	100	9.4	58.6	32.0	8.4
2015	100	13.1	49.6	37.3	8.8
2016	100	5.4	50.3	44.3	12.1
2017	100	6.9	50.2	42.9	10.1
2018	100	12.4	50.1	37.5	9.3
2019	100	18.4	49.1	32.5	5.7
2020	100	13.6	54.6	31.8	1.4
2021	100	15.8	51.6	32.6	2.1

Source: calculated by the executors according to the State Statistics Service of Ukraine (Capital investments of enterprises..., 2010-2021)

Note: k – data of 2011, which were not made public in order to ensure the requirements of the Law of Ukraine “On State Statistics” regarding the confidentiality of statistical information (primary and secondary blocking of vulnerable values)

If the share of small enterprises in the total volume of capital investments in 2016 was 44.3%, in 2017 it was 42.9%, in 2018 it was 37.5%, and in 2019-2021 it slightly deviated from 32%. During this period, the share of investments in micro-enterprises decreased especially sharply (from 10-12% in 2016-2017 to 1-2% in 2020-2021). Conversely, the corresponding share of large and medium-sized agricultural enterprises increased. A decrease in the level of investment activity of small enterprises in agriculture is caused by the deterioration of the conditions of their economic activity, a reduction in the amount of state support, and a decrease in their own and attracted sources of investment financing. Small enterprises sell the majority of their products to market intermediaries at relatively lower prices. They have higher risks of losing products and property due to raiding, and smaller possibilities of lending and receiving state support.

Support and stimulation of investment activities of small agribusiness entities in conditions of instability should be one of the most important tasks of the state's agricultural policy. This support should be provided through partial compensation of the cost of domestically produced agricultural machinery and equipment, especially for small agricultural producers, credit support for investment projects of small and medium-sized agricultural commodity producers in the amount of 50-70% of the credit rate of an authorized commercial bank, and through other economic and financial mechanisms and organizational measures.

Manifestations of instability in investment have distinct regional features. Therefore, the activity of investment processes in the agriculture of Ukraine differs significantly by region (Table 4).

Table 4. Amounts of capital investments in agriculture in the context of regions of Ukraine, 2016 and 2021 year

Region	Capital investments for 1 ha of land, UAH		2020 in % until 2016
	2016	2020	
Vinnitsia	2641	2353	89.1
Volyn	3053	3959	129.7
Dnipro	2574	1933	75.1
Donetsk	812	1372	169.0
Zhytomyr	2184	3245	148.6
Zakarpattia	1970	2932	148.8
Zaporizhzhia	1931	1594	82.5
Ivano-Frankivsk	3903	4751	121.7
Kyiv	2706	3411	126.1
Kirovohrad (Kropyvnytskyi)	2908	2353	80.9
Luhansk	1729	1277	73.9
Lviv	4293	3929	91.5
Mykolayiv	2535	1597	63.0
Odesa	2213	898	40.6
Poltava	2697	2804	104.0
Rivne	1907	4125	216.3
Sumy	2098	2532	120.7
Ternopil	3195	44170	139.9
Kharkiv	2501	2037	81.4
Kherson	2551	2141	83.9
Khmelnyskyi	2056	3006	146.2
Cherkasy	2730	3129	114.6
Chernivtsi	1842	1389	75.4
Chernihiv	2135	3624	169.7

Source: calculations of executors based on data from the State Statistics Service of Ukraine (Capital investments, 2010-2020)

The average amount of capital investment per 1 ha of agricultural land in 2020 in the Poltava region (\$100/ha) largely depends on the regional structure of production. In 2020, the largest amounts of capital investment in agriculture per 1 ha of land, which

is more than \$150, were in the Ivano-Frankivsk, Ternopil, and Rivne regions. At the same time, Odesa, Luhansk, Donetsk, and Chernivtsi oblasts are distinguished by a particularly low level of investment in agricultural development, where capital

investment did not exceed \$50 per hectare of land. The extreme values of the series of indicators of this indicator differ by 5 times. In most of the unstable eastern, southern, and other regions characterized by a low level of investment in the development of agriculture, the deepest investment decline took place in 2016-2020. In the conditions of war, this decline increases instability not only in these regions but also in the entire state. Priority measures are needed to support investments in agriculture in

regions freed from occupation, affected by war and investment crises.

The investment cycle of Simon Kuznets is manifested in the agriculture of Ukraine, in which the priority of investing in the development of agriculture and the food industry alternates (Zakharchuk, Kisil, Nechytaylo, 2022). The peculiarities of this cycle in the agri-food sectors of the economy of Ukraine in the period 1990-2020 are characterized by the data shown in Figure 2.

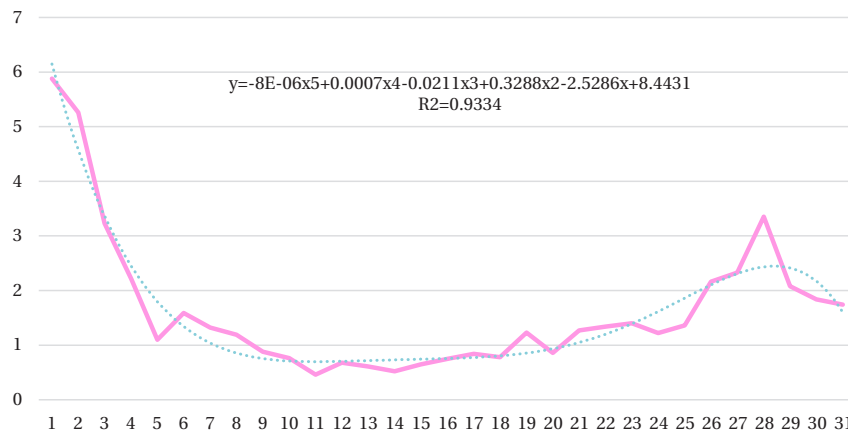


Figure 2. Actual amounts of capital investments in the food industry in hryvnias given the corresponding investments in agriculture per hryvnia in 1990-2020 according to actual indicators and a parabola of the fifth order, hryvnia/hryvnia

Source: calculated by the executors given the data of the State Statistics Service of Ukraine (Zakharchuk, Kisil, Nechytaylo, 2022; Capital investments, 2010-2020; capital investments by types..., 2010-2020)

Notes: *Numbering on the abscissa axis from 1 to 31 years corresponds to the sequence of years from 1990 to 2020, and on the ordinate axis – the size of the analysed indicator in dynamics

**The broken line in the figure reflects the dynamics of actual indicators of capital investments, and the curve – their values aligned by a parabola of the fifth order

The duration of the full investment cycle of Simon Kuznets in the agro-food sectors of the Ukrainian economy is 26-28 years, and the phases of this cycle that are favourable for agriculture or the food industry are 13-14 years. The last phase of the investment cycle, favourable for agriculture, began in 2009-2010. According to the algorithm of the course of this cycle, it should be expected that the priority of investments in agriculture, which was the highest in 2017, will gradually weaken and continue until 2024-2025. The investment priority will be given to the food industry, which will contribute to the growth of the export potential of agri-food products with high-added value. Taking this into account, national agri-food companies should already

focus on the formation of strategies, programs, and projects to increase the capacity for processing agricultural raw materials and the production of food and other products with high added value. Such investment strategies, programs, and projects should be given an export orientation.

The cyclicity of investment processes in the agri-food sectors of the economy is caused by changes in the levels of their investment attractiveness, which is related to the efficiency of capital investments. If the total amount of fixed and working capital in agriculture amounted to \$63.6 billion in 2013, it decreased to \$35.2 billion in 2015. Conversely, the level of capital profitability during this time increased from 5.2% to a peak of 16.7% (Fig. 3).

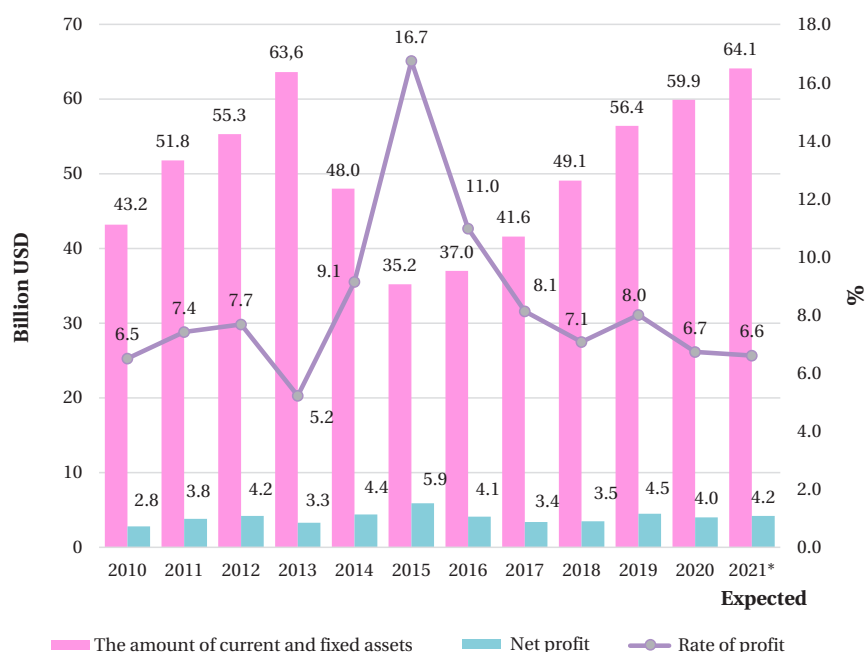


Figure 3. Dynamics of fixed and working capital, net profit and return on capital in the agricultural economy of Ukraine in 2010-2021, billion USD

Source: calculated by the executors based on the financial statements of the State Statistics Service of Ukraine (Profit before taxation of enterprises, 2014-2020; Fixed assets, 2010-2020; Statistical Yearbook of Ukraine, 2021)

In the following 2016, the level of the indicator of profitability of capital in agriculture decreased to 6.6%. In the future, we should expect a gradual decrease in the profitability of capital in agriculture due to relatively lower rates of growth of financial results of agricultural enterprises.

The dynamics of the structure of the financial result of the activities of agricultural enterprises of various sizes for 2010-2021 reflects the contradiction

between changes in the share of large farms in the total volume of capital investments and a decrease in their share in the financial result. Thus, if the share of large enterprises in the total capital investments in agriculture increased during this period, the financial result, on the contrary, significantly decreased. For medium and small, especially micro-enterprises, in this period, the opposite trend of changes in the specified indicators is observed (Table 5).

Table 5. The structure of the financial results of large, medium, and small enterprises in agriculture in 2010-2021, in percent

Year	Total amount of sources	including			
		large	medium	small	in particular, micro-enterprises
2010	100	15.1	71.4	13.5	1.0
2011	100	k	k	–	–
2012	100	19.8	50.8	29.4	7.1
2013	100	25.6	46.0	28.4	7.3
2014	100	24.3	42.8	32.9	6.9
2015	100	24.3	42.3	33.4	9.2
2016	100	13.4	47.0	39.6	11.3
2017	100	11.7	51.2	37.1	6.0
2018	100	15.8	53.9	30.3	7.0
2019	100	5.4	73.5	21.1	6.3
2020	100	10.7	49.3	40.0	13.2
Average over the years					
2012-2013	100	22.7	48.4	28.9	7.2
2014-2018	100	17.9	47.4	34.7	8.1
2019-2021	100	8.1	61.4	30.5	9.8

Source: calculated by the executors according to the State Statistics Service of Ukraine (Financial results before taxation..., 2010-2021)

Note: k – the data were not made public in order to ensure the requirements of the Law of Ukraine “On State Statistics” regarding the confidentiality of statistical information (primary and secondary blocking of vulnerable values)

Probable reasons that generate similar atypical structural shifts in investments and financial results can be the concealment of their income by large and other business structures, the channelling of their potential benefits into intermediary formations, the decrease in profits, or the unprofitability of state corporations, the implementation of their investment projects with long payback periods, etc.

Achieving sustainable investment development requires overcoming the factors that produce instability and implementing a set of investment-oriented measures of state importance based on an effective agrarian policy. However, the current state of implementation of such a policy in Ukraine indicates its absence rather than its presence. The practice of forming the agricultural policy of developed countries shows that it is expedient to implement it not only by using budget funds but also by

using other economic and organizational mechanisms. For example, support for commodity producers in the member countries of the Organization for Economic Cooperation and Development (OECD) begins with measures aimed at ensuring that prices for agricultural products sold by commodity producers exceed the input prices for their production resources. At the same time, production output and consumed resources are estimated at world market prices. In the absolute majority of countries in the world, the ratio between the output and input prices of agricultural producers for products and resources, as well as the share of their support, is now more than one, which allows producers to form their sources of investment financing for expanded capital reproduction, and only in Ukraine this ratio is minimal or even unsatisfactory (Table 6).

Table 6. The share of support to agricultural producers (PSE) in % of their gross receipts, 2000-2021

Year	OECD	EU	Ukraine
2000	30.07	30.33	2.25
2001	26.84	28.20	3.40
2002	28.05	30.83	-4.71
2003	26.92	31.13	-0.26
2004	26.91	30.48	0.71
2005	25.81	28.58	8.61
2006	23.94	27.32	8.82
2007	20.05	22.33	2.12
2008	19.02	20.60	-2.65
2009	20.79	22.67	6.94
2010	19.17	19.334	5.25
2011	17.75	17.77	-3.64
2012	18.19	19.06	-0.24
2013	16.87	19.64	-0.02
2014	16.39	17.46	-1.44
2015	17.04	19.04	0.54
2016	17.81	19.64	-1.45
2017	16.86	18.78	-0.81
2018	17.61	19.69	2.10
2019	18.13	19.54	2.85
2020	18.23	19.25	1.41
2021	15.88	17.57	1.14

Source: OECD monitoring data (Producer support (PSE)...., 2000-2021)

If the excess of the income of agricultural producers from the sale of products, valued at world prices, over the consumed resources at the same prices in the OECD countries on average for 2000-2020 was 20.6%, in the EU – 22.5%, then in Ukraine – only 1.4%. Grain export prices from Ukraine are currently almost 10% lower than the world average.

With the existing economic relations, the lion's share of net income from the sale of agricultural

products of agricultural producers through the price mechanism flows into intermediary structures, in particular export-oriented transnational companies, which narrows the opportunities to form sources of investment financing. In these conditions, agricultural producers try to achieve cost recovery by maintaining relatively low levels of wages for workers and rent rates for used land plots of citizens, who bear the main burden of distorted economic relations. In

the conditions of the war, price gaps in economic relations increased. With the world price of wheat at \$340 per 1 ton, its purchase price in the ports of Ukraine is \$220, and from commodity producers in the Cherkasy region – \$140 per ton (Financial results before taxation..., 2010-2021). A similar pricing practice on the markets of agricultural products, which is widespread in Ukraine, does not meet the goals of agricultural development or national security, and therefore needs to be corrected.

8.0 provided in the state budget for 2022 billion hryvnias, but in reality, 4.6 billion hryvnias are insufficient to support farmers. Given world practice, this level of state support for agriculture in Ukraine (\$14 per 1 ha of land) does not have a significant positive value. If this situation continues, existing and new threats to the state's economy and society will intensify.

In connection with the above, in Ukraine, similar to the practice of OECD members and other countries, measures should be taken to form an agricultural policy that would provide the necessary support and stimulation of investments in agriculture (Zakharchuk, Kisil, Nechytyaylo, 2022). This provision must be enshrined in national legislation. It is advisable to supplement the national economic development strategy and the state regional development strategy with provisions on agricultural policy, investment support, and its priorities, monitoring system, and indicators. The goal of this policy

should be not only to increase budget funds for the support of agriculture but also to ensure an increase in the income of business entities. The formation of an effective agricultural policy and giving it an investment-oriented character should be considered one of the most important tasks of the state agrarian policy in conditions of instability.

When forming the national agricultural policy, it should be taken into account that, despite the complexity and insufficiently favourable conditions, the trend of the dynamics of capital investments in agriculture has been upward for a long time. This should be expected in the future as well. Given this, as well as taking into account the growing global and national demand for agri-food products and certain positive changes in the dynamics of capital investments for 2021, it was found in their previous forecast made in January 2022, that at the prices of the previous year could amount to 72 billion UAH (Kisil, 2022). However, the risks of the war fundamentally changed the investment situation. According to the optimistic and realistic scenarios of the forecasts, it was found that capital investments in the agriculture of Ukraine in 2022 before the previous year can be 40 or 32 percent, respectively. At the same time, their value in 2022 in the prices that are compiled may be: according to the optimistic prognosis – 31 billion UAH, and realistic one – 24 billion UAH (Table 7).

Table 7. Forecast of capital investments in the production of agricultural products of Ukraine for the period until 2030

Year	Capital investments of the corresponding years according to the scenarios forecast					
	optimistic			realistic		
	Change (+, –) before the previous one year, %	billion UAH	billion USD	Change (+, –) before the previous year, %	billion UAH	billion USD
2021 (fact)	+23.5	68	2.5	+23.5	68	2.5
2022	-5.5	31	1.1	-6.5	24	0.9
2023	+20	37	1.4	+20	29	1.1
2024	+30	48	1.8	+30	37	1.4
2025	+35	64	2.3	+35	50	1.8
2026	+40	90	3.3	+40	70	2.6
2027	+30	117	4.3	+30	91	3.3
2028	+25	147	5.4	+25	114	4.2
2029	+20	176	6.4	+20	137	5.0
2030	+15	200	7.3	+15	158	5.8

Source: the calculations of the executors given the data presented in Figures 1-3 and Tables 1, 2, 6 of this article, and the authors' expert predictions regarding investment conditions for the development of agriculture in the future. The basis for calculations was: capital investments (2010-2021); capital investment indices (2011-2021)

According to the realistic scenario of the forecast, investment in agricultural development in 2023-2030 will be affected by factors of instability and investment risks, the mitigation of which will largely depend on the course of the war, the possibilities of its completion, and the reduction or complete elimination of other risks. It should be expected that

in 2024-2025, the investment risks associated with the war will significantly weaken. Most of the other negative investment factors that took place until 2022 may persist. Investment activity can also be restrained by low domestic demand and difficulties with exports, a sharp increase in the price of resources, political instability, regular elections, corruption,

insufficient amounts of state support for commodity producers, high credit rates, and other factors. Under the conditions of the functioning of the full land market, part of the investment resources of agribusiness will be diverted to purchase land plots. There will remain investment risks, insufficient capital protection mechanisms, and the influence of large agribusiness on decision-making regarding the use of budget funds for its benefit. The possible lack of transparency in the allocation of budget funds will deter investment support for small and medium-sized agribusiness. In a period of instability, one should not count on a significant attraction of foreign investments and stock market resources to agriculture. The lowest point of the investment decline will likely occur in 2022-2023.

Investments in agriculture will be facilitated by: the priority of agriculture in the investment cycle of Simon Kuznets, possible reduction of war risks, the effect of the post-crisis "surge" of investments, strengthening of international support for Ukraine's security, reduction of threats of the COVID-19 pandemic, rising prices for the main types of agri-food exports, etc. Given that the demand for investment goods falls during the period of investment crises, in 2022-2023 there will be no significant increase in the prices of investment goods, and the growth rate of resource prices will be lower than the corresponding indicator for agricultural products. The increase of investments in agriculture will likely become possible already in 2023-2024. In 2025-2030, we should expect active post-war reconstruction of the economy, weakening of the cumulative effect of negative investment factors, and average growth rates of investments for the development of agriculture.

Taking into account the growth trends of capital investments in agriculture during periods of past investment crises, the forecast for 2025-2030 predicts a cyclical change in their growth rates in the range from 20 to 40% with a further gradual decrease to 15% in 2030 p.

The data of the forecast of capital investments in agriculture, shown in Table 7, show that after the decline in 2022, the volume of capital investments will increase in the following years and, under optimistic and realistic scenarios, will amount: to 52 and 43 billion UAH in 2025; 2030 – 165 or 135 billion hryvnias. If additional investment risks or advantages arise in the forecast period, the indicators of the forecast of capital investments for the production of agricultural products will be different.

In conditions of instability, it is most important to ensure the needs of agricultural producers in investment loans from commercial banks. With the provision of 20-25% of the total volume of capital investments according to the real scenario of the forecast, the need for loans in 2023 will be 5-6 billion UAH, in 2025 – 10-11 billion, and in 2030 – 27-34 billion UAH. However, interest rates on bank loans for investment projects in this period will in most cases exceed their rate of return, therefore, given the efficiency, their implementation will become

impractical. In this regard, for the specified investment needs of agribusiness, especially small ones, it is advisable to gradually increase the filling of the state program "Affordable loans 5-7-9", which in 2022 provides for investment loans of only 0.9 billion UAH or other special programs with credit support.

Therefore, investments in agriculture determine not only its pace of development but also the entire economy. The state of investment in agriculture is unstable, although the dynamics of investments for these purposes are growing at a moderate pace. The activation of the process of investing in the development of agriculture is restrained mainly by external factors, among which the most influential is the military factor. The nature of the future investment development of agriculture in conditions of instability will largely depend on the elimination of war risks, the creation of a favourable investment climate for private investments, the introduction of responsible investments in compliance with the principles of inclusiveness in approaches to balancing economic relationships between participants in investment projects and based on capital efficiency indicators.

Many researchers study the theoretical, methodological, and practical aspects of investing in the development of the economy in periods of instability, which due to various reasons is constantly manifested in individual states, in particular in Ukraine, or groups of states. Common to all studies is the conclusion that instability negatively affects investment activity in all sectors of the economy. And this paid attention to N. Büttner, M. Grimm, and S. Soubeiga (2022), who, using the example of B. Faso, found that instability, especially caused by armed conflicts, causes a decrease in investment and a decrease in the level of efficiency. N. Akbar, K.R. Paltasingh, and A.K. Mishra (2021) investigated how public policies encourage private investment in agriculture in India. It was found that the small agricultural producers of India do not have enough funds for agricultural activities. The effectiveness of alternative government expenditures for the support of agriculture and the promotion of private investments was evaluated. It was concluded that irrigation subsidies strongly stimulate private investment in agriculture, both in the short and long term. Factors driving private investment in agriculture include institutional credit, favourable terms of trade for producers, and optimistic expectations of future food demand. The authors recommend that politicians better orientate and rationalize state agricultural support programs, cancel unproductive subsidies for fertilizers and electricity, and direct the freed funds to state investments in India's agriculture.

Ukrainian scientists pay special attention to the problem of instability and measures to intensify investment activity. R.S. Chorny, N.P. Chorna and I.I. Berdei (2018) suggested creating favourable conditions for investment attraction given instability, although their proposals for lobbying the interests of investors are debatable. I.S. Kramarenko (2016) substantiated that: economic instability leads to a

decrease in the volume of attracting foreign direct investments; to bring the national economy out of the crisis and its further stable development, a scientifically based investment policy of the state and regional authorities should be implemented; to intensify investment activity, it is most important to create a favourable investment climate and attract foreign investments. Studying the problems of attracting investment resources to the economy of Ukraine, Yu.B. Kolupaev, S.S. Zalyubovska, and I.O. Melnychuk (2018), concluded that revitalizing the economy, in particular, investment activity, and improving social conditions can only be done by activating entrepreneurial initiative, creating a competitive environment, and stimulating the economy.

The authors generally share the results of the above-mentioned studies, although they concern the entire economy and do not take into account the specifics of agriculture. Regarding the attraction of foreign investments, it should be taken into account that this task is not set in most countries of the world, since in the absolute majority the subjects of investments in agriculture are national commodity producers united in infrastructure projects. The capture of a significant part of the export-oriented segments of the agricultural infrastructure of Ukraine by transnational corporations gives rise to their monopolization, disruption of economic relations, and the unprotected state of agricultural producers in the product markets, as well as a shortage of their sources of financing investments.

Several authors investigated the relationship between investments in the development of the agricultural sector of the economy and its performance indicators. In particular, M.V. Donckta, P. Chanb, and A. Silvestrinic (2021) used the example of 189 countries of the world to study the long-term dynamics of the relationship between investments and added value in agriculture. It is impossible to carry out a similar study on the example of one country due to the small sample of analysed indicators. In this regard, the authors of this study on the conditions of Ukraine for the first time proposed an approach to the correlation-regression analysis of the relationship between capital investments in agriculture and the gross regional product.

Investigating the investment aspects of land use in conditions of financial instability, N. Gvozdei (Gvozdei, 2022) concluded that the main condition for conducting expanded agricultural production in conditions of instability is credit support for agricultural producers. The results of these studies confirm this conclusion since credit support for agricultural agro-producers in conditions of instability and limited possibilities of state and regional budgets remains the main mechanism of their support. Although this support is currently mainly provided for the formation of current and not investment costs of agricultural producers.

Some authors have studied separate component problems of investment activation: V.V. Lavruk and L.M. Budnyak (2020) identified the peculiarities

of the dynamics of capital investments by types of economic activity in Ukraine; V.G. Chernyshev, D.V. Okara, and I.L. Kovalyov (2020) found out that the phenomena of instability in investment have distinct regional features, one of the strategic priorities of the development of Ukraine in the conditions of globalization and taking into account the key trends of the world economy should be to increase the importance of regions in attracting and increasing investments; S.M. Bortnik (2022) substantiated the conclusion that small and medium-sized entrepreneurship is the social basis of economic reforms and the basis of economic stabilization in the post-war period and also revealed its functioning features, advantages, and weaknesses; N.O. Yurina and D.V. Gormai (2013) studied the impact of small entrepreneurship on the economic growth of Ukraine and found that small entrepreneurship contributes to the activation of investment activities and the development of the state's economy. Such scientists as M.D. Bilyk and T.O. Bilyk (2012) found atypical structural shifts in investments and financial results of large, medium, and small, in particular micro, enterprises. The results of research conducted on the economy of the state generally coincide with the corresponding conclusions of the authors of the article on agriculture.

Forming an effective agricultural policy and giving it an investment direction should become one of the most important tasks of the state. Similar conclusions were obtained by R.S. Chorny, N.P. Chorna, and Burdei I.I. (2018). Having studied the possibilities of intensifying investment activity in Ukraine in conditions of economic and political instability, they found that as a result of destabilization processes at the macroeconomic level in the state, it is necessary to develop and implement several complex measures to overcome the crisis based on investments.

In comparison with other works, the research carried out by the authors highlighted for the first time such little-studied aspects of investing in the development of agriculture as the quantitative relationship between capital investments in agriculture and the gross domestic product of the state, reflected in the analysed correlation-regression models by the indicators of the statistical sample of the gross regional product for a series years; assessment of the dynamics of capital investments by quoting their actual and forecasted indicators in the prices of the last year of their analysed series; the duration and features of the actual and projected investment cycle of Simon Kuznets for the conditions of Ukraine. Taking into account the latest changes in investing in the development of agriculture, the periods during which its nature changed, as well as the main factors of these changes, were identified.

► Conclusions

Investments are the most important factor in the growth of the Ukrainian economy. In agriculture, they determine more than 90% of changes in output

and profit, and in the state – 50% of gross domestic product. Due to instability, the investment potential in 2010-2021 was imperfectly used in the amount of UAH 11 billion per year on average.

Agricultural enterprises do not have sufficient sources of financing capital investments. In their structure, almost 90% is occupied by their sources, the other part is loans, and there are practically no borrowed funds. The conditions for the development of small agribusiness are particularly unfavourable. Its share in capital investments for 2016-2020 decreased from 44 to 32%. Support and stimulation of small agribusiness investments should be one of the most important tasks of the agricultural policy of the state.

Significant differences in investment support for the development of agriculture in the regions. The lowest amount of capital investment in 2021 was in Odesa (898 hryvnias/ha), and the highest was in the Ivano-Frankivsk region (4751 hryvnias/ha). Over the past 5 years, there has been a significant investment decline in the southern and eastern regions, which causes instability and negatively affects the security of the state. Priority measures are needed to support investments in agriculture in regions freed from occupation and affected by war.

The insufficient level and instability of investment in the development of agriculture in 2010-2021 take place even with the current favourable phase of the Simon Kuznets investment cycle for agriculture, which began in 2009-2010 and will end in 2024-2025. After that, the Food Industry will become an investment priority. Therefore, national agribusiness should develop new investment strategies and

integration projects with the production of export-oriented food products.

Insufficient investment activity and instability are largely caused by inappropriate agrarian policy, which does not promote investment. Forming an effective agricultural policy and giving it an investment direction is one of the most important tasks of the state economic policy.

It should be expected that the volume of capital investments in 2023-2030 will be affected by factors of instability and investment risks, the mitigation of which will depend on the course of the war, the possibilities of its end, the formation of an appropriate agricultural policy and Ukraine's acquisition of EU membership. According to a reasonable forecast, capital investment in agriculture during this period will grow by an average of 26-27% per year, and under optimistic and realistic scenarios in 2025 will be 52, respectively, and 43 billion UAH, and in 2030 – 165 or 135 billion hryvnias.

It is advisable to continue the results of these studies in the direction of substantiating proposals for the formation of investment-oriented agricultural policy in conditions of instability, conducting investment activities of agribusiness based on ESG principles. It is also advisable to carry out a scientific substantiation of the strategy and programs of investment support for the development of agriculture in the system of the national economy, as well as the priority of investment development of small agribusiness, exemplary investment projects for their dissemination in business practice, forecast of capital investments, etc.

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Стан і перспективи інвестування розвитку сільського господарства в умовах нестабільності

Олександр Васильович Захарчук¹, Микола Іванович Кісіль²,
Вероніка Володимирівна Нечитайло³

¹Д-р екон. наук, професор. ORCID: <https://orcid.org/0000-0002-1734-1130>.

Національний науковий центр «Інститут аграрної економіки», 03127, вул. Героїв Оборони, 10, м. Київ, Україна

²Канд. екон. наук. ORCID: <https://orcid.org/0000-0003-1505-3079>.

Національний науковий центр «Інститут аграрної економіки», 03127, вул. Героїв Оборони, 10, м. Київ, Україна

³Канд. екон. наук. ORCID: <https://orcid.org/0000-0002-7098-0441>.

Національний науковий центр «Інститут аграрної економіки», 03127, вул. Героїв Оборони, 10, м. Київ, Україна

► **Анотація.** Для досягнення позитивних зрушень в економіці та соціумі необхідно постійно активізувати інвестиційний процес у сільському господарстві, яке впливає на розвиток більшості видів економічної діяльності в державі. Мета статті – дослідити тенденції кількісних і якісних змін в інвестиціях на розвиток сільського господарства України в умовах нестабільності. У дослідженні використано методи: діалектичний, абстрактно-логічний, кореляційно-регресійний, стратегічного планування, проектного аналізу, табличний, графічний та прогнозування. За результатами досліджень, здійснених з використанням методів кореляційно-регресійного аналізу, виявлено, що капітальні інвестиції у сільське господарство в умовах нестабільності були найважливішим чинником зростання не лише товарної продукції і прибутку в сільському господарстві, а й валового внутрішнього продукту держави. Проаналізовано динаміку інвестицій і джерела їх фінансування, які в Україні тривалий період нестабільні. Виявлено значну диференціацію рівнів інвестування розвитку сільського господарства регіонів. Зроблено висновок щодо циклічного характеру інвестиційних процесів у агропродовольчих секторах економіки та їх інвестиційної привабливості, з'ясовано періоди його сприятливої і несприятливої для сільського господарства фаз. Досліджено ефективність капіталу в сільському господарстві, яка в умовах циклічності інвестиційних процесів, пов'язаних з інвестиційною привабливістю, змінюється. З метою створення умов для досягнення сталого розвитку сільського господарства обґрунтовано необхідність формування інвестиційно спрямованої сільськогосподарської політики на засадах, випробуваних світовою практикою. Наведено результати прогнозу капітальних інвестицій у розвиток сільського господарства в умовах нестабільності на період до 2030 р. Результати досліджень мають практичне значення для формування інвестиційно спрямованої інвестиційної політики держави, інвестиційних стратегій агроформувань і розвитку економіки держави в умовах нестабільності

► **Ключові слова:** капіталовкладення в сільське господарство, нестабільність, динаміка інвестицій, джерела фінансування інвестицій, циклічність інвестиційних процесів, ефективність інвестицій, інвестиційна політика



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Foreign trade in poultry meat of Ukraine in the context of integration processes

Nadiia Kryvenko*

PhD in Economic Sciences. Senior Research. ORCID: <https://orcid.org/0000-0003-3439-432X>.

National Scientific Centre "Institute of Agrarian Economics", 03127, 10 Heroiv Oborony Str., Kyiv, Ukraine

► **Abstract.** Foreign trade is of particular importance for the economic development of agri-food products and for food security. The increase in the export of poultry meat is noticeable. The purpose of the work is to substantiate the prospects of Ukraine's foreign trade in poultry meat, taking into account production, the situation on the world market, and participation in integration processes. Economic-mathematical, graphic, analysis, etc. methods were used for this purpose. The main suppliers (most of whom are members of the most developed integration groups) and importers have been identified, the share of the latter in the world market is smaller than the former. The trade balance for the main suppliers is mostly positive, but there is an exception for the countries of the European Union, which are significant importers. Trade is developing, as can be seen from the foreign trade turnover. Production is concentrated in Asia, North America, and Europe. The growth of Ukraine's exports and its entry into the top ten exporters is noticeable. Exports had a positive effect on the increase in production. The largest importers are the countries of Asia and Europe, and African countries are among the buyers. In 2021, meat was exported to about 100 countries, but this is less than its main exporters. Among the groupings and countries with which regional trade agreements have been concluded, the most exported in recent years were to the European Union, Turkey, and Azerbaijan, which indicates competitiveness in these markets. The export market concentration index indicates the diversification of the geographical structure of exports. In the conditions of growing demand for poultry meat, taking into account the quality advantages and consumption by the majority of the population, except for vegetarians, it is worth increasing production and export. This should be facilitated by improving quality, diversifying the geographical structure of exports, taking into account the characteristics of consumers in countries, the production of kosher and halal products, the demand for which is growing, and the growth of the population of countries where it is consumed, especially kosher products. Taking into account the export potential of Ukraine and existing trends, there are prospects for increasing exports. Of practical importance is the determination of export expansion directions, taking into account the characteristics of markets and main competitors, etc.

► **Keywords:** export, import, poultry meat, regional trade agreements, international economic integration

► Introduction

For thousands of years, foreign trade helps satisfy demand, contributes to the growth of well-being, is a key to economic development, and is one of the determining factors in the development of international economic integration (IEI). Taking into account the deepening of the international division of labour, the significant importance of trade for the economic development of countries, the appearance of some new products, and the disappearance of some relatively old ones, we note that agricultural products do not leave their positions on the world market as a result of the influence of scientific and technical progress, but on the contrary find consumers in significantly distant regions of the world, which contributes to the development of international economic relations between countries.

Moreover, as Vijayapri (2013) pointed out, in the modern world there is an interdependence of different national economies, and it is difficult to find an example of a closed one. But although all economies have become open, the degree of openness varies from country to country. In the modern world, no country is completely self-sufficient, although there is also a difference between them. At the same time, issues of regional and international specialization are no less important. Taking into account and using specialization, the development of foreign trade is often a powerful tool for solving some problems, and not only concerning meeting the demand for a particular type of product.

During the study of foreign trade in poultry meat, scientific works of foreign and Ukrainian scientists

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*Corresponding author

were used on the development and influence of foreign trade, in particular, M. Miller et al. (2022) regarding the expectation of poultry meat on the world market, V. Chatellier (2021) – the main trends in international trade over the last decades and EU countries, S.S. Diarra (2017) on the problems and prospects of poultry farming in the South Pacific region, I. Salkova (2017) – analysis of the situation of poultry meat in Ukraine, Sydorova A. (1998), T. Tsygankova et al. (2003), I. Gurova (2009), analysis of the development of international trade, etc.

The importance of foreign trade, geographical concentration, and openness are evidenced by the presence of several indicators, as well as their impact on the economic development of countries. It is worth noting the relevant research, in particular, whether trade openness and foreign direct investment in the Middle East and North Africa are driving factors for human development. Thus, according to the obtained results, the development of human potential in the short term is influenced by direct foreign investments (Hamdi & Hakimi, 2022). The solution to the problems of lack of resources and the possibility of getting out of critical situations, etc., depends on the participation of countries in international trade. For example, to overcome the global economic crisis, Portugal tried to increase the degree of internationalization of the economy. A significant obstacle to the expansion of exports with new goods or access to new markets (the extensive margin) or increasing exports to current trading partners (the intensive margin) is the incompleteness of information (Pacheco & Matos, 2022). This should also be taken into account for agri-food products of Ukraine, which already have a permanent consumers, but there are still significant untapped opportunities for new products and new markets.

In 2015, under the auspices of the UN, the international community adopted the Agenda for Sustainable Development for the period until 2030, which provides, in particular, measures aimed at creating favourable conditions for the successful development of global trade. This summons should be taken as a basis for developing trade policy for the specified period. Thus, modern global economic uncertainty and the need to develop inclusive and more sustainable development strategies require the strengthening of political commitments at the national and international levels, and this leads to consideration of the most important questions, whether the rules and agreements in force in the field of international trade meet the specified goal or need to be strengthened. Since it is impossible to slow down with the implementation of measures to achieve the goals specified in the Agenda for Sustainable Development, progress in improving the trading system must not affect only indicators of economic growth, but also ensure comprehensive and sustainable economic growth, reducing the scale of poverty and increasing well-being (International trade..., 2017).

At the same time, in addition to the importance of foreign trade in general, trade in agricultural products deserves special attention, which contributes to

solving the issue of food security in the world. It is worth emphasizing its importance for Ukraine because according to the calculations of the International Trade Center (ITC) (Trade statistics for international..., n. d.), the share of agri-food products in total exports in 2021 exceeded 40%. Although Ukraine is one of the largest producers and exporters of grain, there is interest and research in the export of livestock products, particularly poultry meat. After all, there is a trend of growth in the volume of its production and export. There are several advantages regarding its production, in particular agroclimatic ones, significant volumes of crop production, and existing positions on the world market, but there are questions about world consumption and its prospects, opportunities to increase and expand export vectors, etc., which determines the feasibility of the study.

The issue of food security does not lose its relevance either at the global level or at the level of an individual country. Although it is difficult to overestimate the importance of cereals, vegetables, and fruits for the health of the population and exports, there is a growing debate about the consumption of livestock products, in particular meat, the number of vegetarians is increasing, particularly in developed countries, but livestock products are produced and exported in significant volumes. This applies directly to Ukraine, so the issue of quality, expansion of positions on the world market, and stability remain relevant. Thus, the advantages of white meat, its presence in the diet of the population of various faiths that consume meat, and a larger share in the export of Ukraine determined the expediency of the study. Therefore, the purpose of the article is to identify the features of foreign trade on the world market and to determine directions and opportunities for increasing the export of poultry meat by Ukraine, taking into account the concluded regional trade agreements.

The task is the study trends and features of foreign trade in poultry meat, analysis of geographical diversification of exports taking into account its production, and concluded regional trade agreements.

► Literature Review

Scientists have been dealing with issues of foreign trade for centuries, which confirm the theories and research of A. Smith (2001), D. Ricardo (1941), P. Samuelson (1997), and others. Studies of trade in agricultural products were carried out even in the classics, and since it has not lost its importance in the world market, it continues even today. Moreover, this is typical for both foreign and Ukrainian scientists, in particular with regard to poultry meat. Poultry is the first meat produced and consumed in the world. It is worth noting that it has a much higher rate of annual consumption than other types of meat, due to the following reasons: the price paid by consumers is lower; the nutritional quality of this lean meat is recognized; this meat is not subject to religious prohibitions like pork in Islam and Judaism or beef in India (Chatellier, 2021).

S.S. Diarra (2017) notes that in the South Pacific, poultry meat and eggs are the most popular livestock

products, but domestic production is small and does not meet demand, so imports are trying to overcome this. Analysing foreign trade in livestock products, issues of its quality deserve special attention.

In addition, studies on international trade and the spread of poultry diseases have become relevant (Awada et al., 2021). For example, in relation to bird flu, according to the information note of the World Bank, it was noted about measures to strengthen borders and control over international trade and international travel (Marces, 2005).

V. Chatellier (2021), researching international trade in livestock products, noted that world trade in livestock products is growing mainly due to the increased consumption of animal proteins in Asia and their difficulties with the development of domestic supplies. In turn, in many importing countries, mainly those that are developing, in particular in Asia and Africa, preference is given to inexpensive goods. The specifics of consumption and the presence of comparative advantages of the regions of the world determine relevant research.

Also, J.M. Radin and others (2017) noted that billions of chickens are shipped thousands of miles around the world each year to meet the ever-increasing demand for a cheap and nutritious source of protein, but international transport can increase the likelihood of introducing zoonotic viruses such as highly pathogenic avian influenza A(H5N1) into new countries. Limiting the trade in live chickens or strengthening infection control measures during the period of infection could be an important step in reducing the spread of H5N1 and other avian influenza viruses, according to the research findings. That is, international trade and the quality of products are of great importance, which determines the volume and geographical structure of the former.

M. Miller etc. (2022) noted that over the past two decades, poultry meat has become the most consumed livestock product in the world, especially in developing markets where production prospects have been relatively limited. Since the demand for poultry products in these markets increased from 2001 to 2021, so did global imports. It is assumed that for the next 10 years, poultry meat will remain a livestock product with a high demand for imports.

As for Ukraine, according to research by I. Salkova (2017), the offer of poultry meat covers domestic demand, so the market is balanced.

So, the trade in poultry meat occupies a significant share in the world trade in livestock products, there is an increase in its consumption, which is mostly not limited by religious beliefs, and based on the prospects and the presence of comparative advantages in terms of production and existing production in Ukraine, the continuation of the study was determined.

► Materials and Methods

Using the method of scientific abstraction, the study of export-import relations was carried out taking into account the peculiarities of the development of globalization processes, identifying the peculiarities

of trade for countries that are members of international integration groups. Issues such as the openness of the economy, the impact of world crises on its development and foreign trade, and the development of international integration processes required consideration.

The abstract-logical method was used to determine competitors in the world market, and the main countries-suppliers of poultry meat and its producers were highlighted. To outline the most promising product sales markets, the country's largest buyers were identified and their share in world imports was calculated. The development of intra-industry trade led to the identification of countries that are both the main suppliers and importers of poultry meat on the world market. To achieve the goal, general scientific and special economic methods were used, including analysis and synthesis for the analysis of the world poultry meat market, induction – formulation of conclusions, and abstract-logical – determination of promising directions for the development of foreign trade. The study of the development of foreign trade led to the use of separate economic and mathematical methods, which made it possible to identify the shares of countries in world production, export, and import, reflect trade trends, analyse the diversification of exports, etc.

To determine the role of foreign trade in the economy, volume indicators were calculated, in particular:

– the volume of foreign trade turnover (Sidorova, 1998):

$$3TO = E + I \quad (1)$$

where E is export of products, dollars; I – import of products, USD.

– the saldo of the trade balance:

$$C_T = E_T - I_T \quad (2)$$

where C_T – the saldo of the trade balance; E – cost of commodity export; I – the value of commodity imports, dollars.

The saldo is positive if exports exceed imports and the trade balance is active, otherwise, the saldo is negative, and the trade balance is passive. In the case of a zero saldo, when exports equal imports, a net balance is observed.

Since the absolute dimensions of the balance of the trade balance allow only to rank countries according to this indicator, and it is incorrect to compare the dimensions of the balance by country, since the economic and export potentials of the countries differ, then the index of the state of the balance or the index of coverage of exports by imports is used, which is calculated according to the formula:

$$K = \frac{E}{I} \cdot 100\% \quad (3)$$

where E – the export value; I – the cost of imports.

If the value of the index is greater than 100, then the trade balance has a positive saldo, and in the opposite case, the opposite (Tsygankova, et al., 2003).

To analyse the diversification of the geographical structure of exports, the export market concentration

index was calculated:

$$EMC = 100 \cdot \left[\sqrt{\sum_j \left(\frac{X_{ij}}{X_i} \right)^2} \right] \quad (4)$$

where EMC is the export market concentration index; X_{ij} – export of country i to country j ; X_i – the total export of the country i .

Index values can vary from 0 to a maximum of 100 in the case of one trading partner. Usually, the averaged value over a certain period is used to analyse the dynamics of the indicator, as it is subject to the influence of cyclical fluctuations and changes in relative prices on world markets (Gurova, 2009).

The graphic method was used to fully reflect the trends in the export of poultry meat at the world level and Ukraine, as well as the share of regions in its global production. The method of comparative analysis was useful in the study of foreign trade in Ukraine relative to other countries. In addition, methods of analysis and synthesis, abstraction, etc. were used. for the analysis of export-import flows, the formation of conclusions, and the development of proposals for the further development of trade. The study used statistical data on foreign trade of the UNCTAD/WTO International Trade Center (ITC) for 19 years, from 2002 to 2021 (Trade statistics for international ..., n.d.), to more objectively assess the situation on the foreign market, determine prospects, as well as identify Ukraine's place in it, analyse trends and develop proposals.

The information base of the study also became the materials of the UN FAO (OECD-FAO Agricultural Outlook..., n.d.), regulatory and legal acts of Ukraine, in particular recommendations regarding the principles of healthy nutrition (Order of the Ministry..., 2013), the Bible (1962), international treaties on international economic integration, in particular, the Association Agreement between Ukraine and the EU No. 1678-VII..., 2014), of the International Trade Center (Trade statistics for international..., n.d.).

► Results and Discussion

It is expected that in high-income countries, the

growing public interest in environmental protection and health will contribute to the transition from animal proteins to alternative sources and the substitution of red meat, in particular beef, with poultry and fish shortly (OECD-FAO Agricultural Outlook..., n.d.). The preference for white meat consumption is also confirmed by the Order of the Ministry of Health of Ukraine "On the approval of methodological recommendations for general practitioners – family medicine regarding patient counselling" dated 01.14.2013, according to which patients should be encouraged to consume a variety of foods with a high protein content, in particular low-fat meats such as poultry, low-fat dairy products, eggs, legumes, unsalted nuts, and seeds. Moreover, "recommendations should be provided on the significant limitation of food sources of proteins that simultaneously contain saturated fat or trans-fat, including red meat and technologically processed meat products" (Order of the Ministry..., 2013).

Despite modern trends regarding the increase in the number of vegetarians, appeals to the initial consumption of plant food under the Bible records (Bible, 1962), discussions about the expediency and humanity of meat consumption, and its production continues. It is also worth remembering the need to follow a proper diet, take appropriate vitamins, etc.

Moreover, it is known that food of animal origin is a source of B vitamins (Rodina, 2017). However, according to the Methodological recommendations for doctors, saturated fatty acids, in particular meat, lard, coconut, and palm oil, can contribute to an increase in the risk of coronary heart disease, and colon and prostate cancer (Order of the Ministry..., 2013). The type of meat is of great importance, separately in the order it is noted the increased risk of certain diseases and mortality when consuming mainly red meat in comparison with white meat (Order of the Ministry..., 2013).

The development of foreign trade in poultry meat in the world is growing noticeably. So, only from 2002 to 2021, its exports increased 3.4 times, namely from 8841.7 to 29688.9 million dollars (Fig. 1).

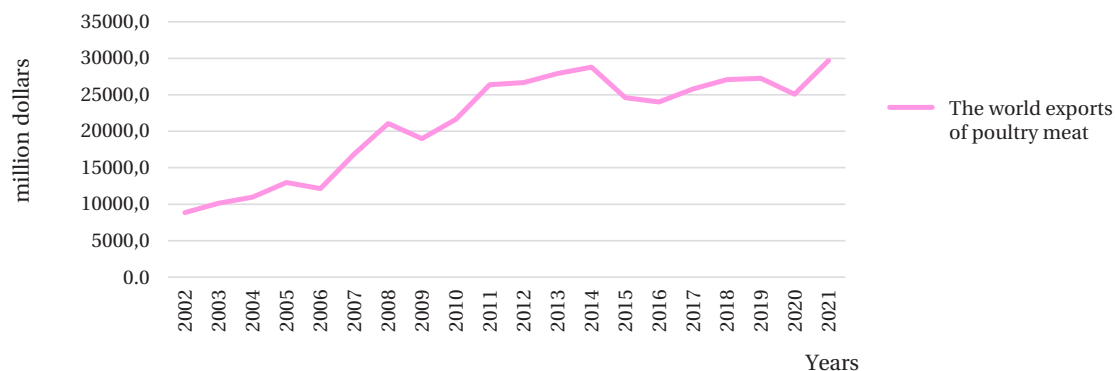


Figure 1. Dynamics of world exports of poultry meat in 2002-2021, million dollars

Source: Compiled by the author, given the data from International trade statistics (n. d.)

In 2021, the number of poultry meat exporters fluctuated around 140, with the five largest – Brazil, the USA, Poland, the Netherlands, and Belgium – accounting for 63.5% of global exports in 2021, and Brazil alone accounted for almost a quarter – 23.4 %, and the first three countries – 50.3%. Ukraine also entered the top ten suppliers, its share was 2.4%, although exports were higher than those of such countries as China, Russia, Spain, Belarus, Argentina, Canada, and others. At the same time, it is worth paying attention to the cost, because in terms of export volumes, Belgium was overtaken by Turkey, and Ukraine took 7th place. In general, poultry meat is produced, consumed, exported, and imported by countries in all regions, including Asia, Africa, Central America and the Caribbean, South America, North America, Europe, and Oceania.

The world's largest importers of this product, include China, Germany, Mexico, France, Great Britain, Japan, the Netherlands, Saudi Arabia, the UAE, and others. It is worth noting that geographically imports are more diversified than exports, in particular, the largest buyer China accounts for 12.1% of world imports, while the share of other countries did not exceed 6.1% (Germany). In addition, in 2021, the top 10 importers imported 51.4% of poultry meat, while the top 10 exporters exported 78.1%, and this trend remained constant from 2002 to 2021, in particular, the value of the indicator of the first ones did not exceed 57.5%, and the latter did not fall below 74.1%. Considering the growth of the poultry meat trade, it is advisable to consider which countries are its main exporters and importers and their share in world volumes (Table 1).

Table 1. The share of the largest exporting countries and importers in the world volume of poultry meat exports and imports, %

Main exporters	Share in world exports				Main importers	Share in world imports			
	Years					Years			
	2002	2010	2020	2021		2002	2010	2020	2021
Brazil	16.3	27.5	22.2	23.4	China	5.0	4.7	14.0	12.1
USA	17.5	17.6	15.3	16.1	Germany	9.9	6.9	6.6	6.1
Poland	1.4	4.4	10.6	10.8	Mexico	2.9	4.0	4.0	5.2
Netherlands	12.0	9.2	10.3	9.8	France	3.2	4.9	4.7	5.1
Belgium	4.9	4.0	3.5	3.5	Great Britain	9.9	7.7	5.1	4.6
Germany	3.9	4.6	3.5	3.3	Japan	11.3	5.6	4.5	4.3
Thailand	6.5	0.3	3.6	3.1	Netherlands	3.5	3.2	3.7	4.1
France	11.5	5.6	3.1	3.0	Saudi Arabia	3.9	6.4	4.5	4.1
Turkey	0.1	0.9	2.2	2.8	UAE			2.8	3.0
Ukraine	0.04	0.2	2.2	2.4	Hong Kong	7.7	8.3	3.9	2.8
In total	74.1	74.5	76.5	78.1	In total	57.2	51.7	53.7	51.4

Source: calculated by the author given International data trade statistics (n.d.)

From the data in Table 1, it can be seen that the countries are trying to maintain their positions on the world market, which is confirmed by the high shares of Brazil, the USA, and the Netherlands during the specified years. However, this does not mean that it is impossible to enter or increase exports in this market, as evidenced by the experience of Poland and Ukraine, whose shares in 2002 were 1.4 and 0.04%, respectively, and in 2021 – respectively 10.8 and 2.4%. At the same time, a decrease is likely, which follows from the data in the table and indicates the need for constant improvement of product quality.

It is worth noting that certain countries are among the largest exporters and importers of poultry meat at the same time, in particular the Netherlands, Germany, and France. This testifies to the development of intra-branch trade of these countries, and once again confirms that it is more characteristic of the member countries of integration groups, in this case, all countries are members

of the most developed trade and economic association of the European Union. It is also appropriate to take into account the difference in consumer preferences depending on their material well-being, the liberalization of trade policy, the territorial proximity of countries, and other factors, and the development of many are influenced by the participation of countries in integration groups.

Regarding the world's 10 largest suppliers, during 2002-2021, the balance of foreign trade in poultry meat was consistently positive for Brazil, the USA, Poland, the Netherlands, Belgium, Thailand, and Turkey, but the opposite situation for Germany. A negative balance in the specified period was observed for France only for 7 years – in 2014 and from 2016 to 2021, and for Ukraine – until 2011 and 2012. That is, this indicates that the main exporting countries can and are also important markets for the sale of products, but it is clear from the above that these are mainly member countries of the most developed integration grouping. At the same time,

this indicates that integration and, accordingly, liberalization of foreign trade can contribute not only to an increase in imports but also to the export of products.

Taking into account that due to the difference in the economic and export potential of the

countries, it is inappropriate to compare the size of the balance, it is recommended to calculate the export-import coverage index (Tsygankova et al., 2003). Therefore, calculations of the latter and the volume of foreign trade turnover of poultry meat of its largest suppliers were made (Table 2).

Table 2. Index of coverage of export with import and the volume of foreign trade turnover of poultry meat of the main supplier countries

The main exporting countries	Index of coverage of export with import, %				Foreign trade turnover, millions of dollars			
	2002	2010	2020	2021	2002	2010	2020	2021
Brazil	145448.1	188171.1	55302.0	45120.6	1438.0	5949.4	5564.6	6968.9
USA	4164.1	2141.7	1410.1	1246.0	1582.0	3994.8	4105.9	5155.9
Poland, poultry meat	610.0	2222.4	3379.4	2642.0	146.2	1000.4	2730.1	3328.3
Netherlands	362.9	302.7	275.7	242.1	1358.1	2646.6	3531.5	4095.6
Belgium	187.3	205.6	159.5	158.6	658.7	1297.5	1416.7	1685.1
Germany	41.0	70.3	53.3	55.2	1178.6	2396.7	2529.5	2739.9
Thailand	83187.6	4045.4	22400.1	19657.7	578.0	70.0	918.7	919.7
France, poultry meat	370.3	122.6	66.5	60.6	1291.4	2211.5	1966.1	2367.2
Turkey	36456.3	23555.9	1464.6	1555.3	11.7	204.2	583.1	898.8
Ukraine	11.8	23.4	1219.1	1215.3	33.2	218.0	600.3	760.4

Source: calculated by the author given ITC data (Trade statistics for international ..., n. d.)

From the given data, it can be seen that the highest values of the export-import coverage index were in Brazil, Thailand, Turkey, and Poland, that is, their exports exceeded imports more than those of other main supplier countries. Foreign trade turnover of poultry meat was the highest in Brazil, the USA, and the Netherlands in 2002, 2010, 2020, and 2021, as well as in Germany, France, and somewhat less in Belgium and Poland. At the same time, according to the index of export-import coverage, only Poland is among the first countries among those that are part of the most developed integration groups, in this case, the EU, which indicates the development of intra-industry trade in its member countries, in particular, in the specified years, Germany had the index was consistently less than 100 in France in the last two years. However, among the countries in which the trade fair was the smallest – Turkey, Thailand, and Ukraine, and for the first two the values of the coefficient of coverage of exports by imports were the highest, and it is worth noting that they are not members of the most developed integration groups. The increase in the maintenance and repair of Ukraine, as well as the growth of exports over imports, is noticeable. In the context of modern trends in the development of international

economic integration, it is worth noting that of the 10 main suppliers of poultry meat to the world market, all except Thailand, Turkey, and Ukraine, which account for 8.3% of exports, are members of the most developed integration groups, in particular, Brazil – MERCOSUR, the USA – the North American Free Trade Agreement, and the rest of the countries – the EU. It should be noted that Ukraine and Turkey have concluded regional trade agreements with the EU, and they seek to deepen integration with this association.

At the same time, it is advisable to pay special attention to product quality and price, because some countries export more poultry meat in terms of volume, but less in terms of value, for example, Turkey and Ukraine, but on the contrary – Germany and France.

It is worth noting that according to calculations according to FAO data (Meat market review..., n.d; p. 10-12) in the total production of meat, the maximum share in 2020 was for poultry meat – 39.5% (133,266 thousand tons), and was higher than for beef – 21.2% (71,408 thousand tons). Most of it is produced in Asia, North America, and Europe, and the former accounts for almost 40% of global production (Fig. 2).

Production of poultry meat by individual regions of the world, 2020

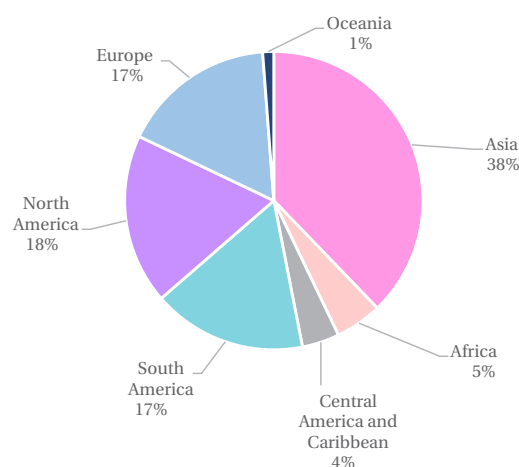


Figure 2. Production of poultry meat by individual regions of the world, 2020

Source: Compiled by the author, given data from International trade statistics (n. d.)

The main producers include China (16.7%), the USA (17.4%), the EU (11.4%) and Brazil (10.8%), with the latter producing only 869,000 tons less meat poultry than the EU. It is worth noting that the largest producers are the largest exporters, but in this case, the determining factors are not only the volume of production, but also the consumption of products. So, although China produced 16.7%

of the world's poultry meat, exports accounted for 2.2%, and its last one exceeded Ukrainian by only 1,739,000 dollars.

The value of the export of poultry meat of Ukraine has increased significantly, namely from 3.5 in 2002 to 702.6 million dollars. in 2021, i. e. 200.7 times, and compared to 2011 – up to 79.0 million dollars, i. e. 8.9 times, and the growth was quite rapid (Fig. 3).

Export of poultry meat

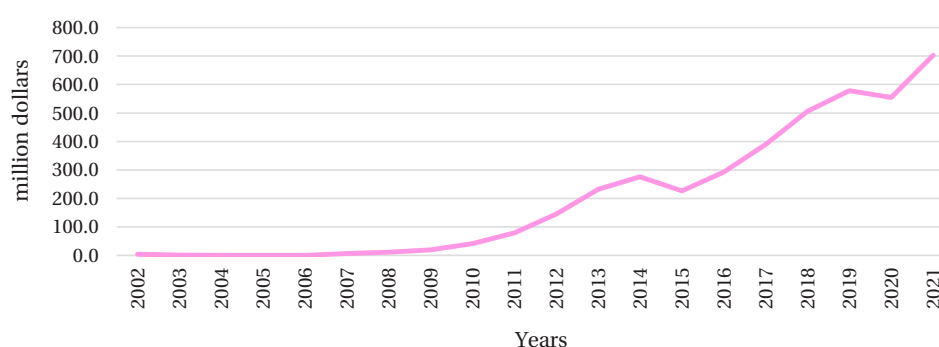


Figure 3. Export of poultry meat by Ukraine, million dollars

Source: Compiled by the author based on data from International trade statistics (Trade statistics for international ..., n. d.)

Production of poultry meat in Ukraine in 2020 amounted to 1,404.7 thousand tons, and compared to 2000, it increased by 7.3 times (Prokopenko, & Vyshnevskaya, 2021). That is, exports have a significant impact on production volumes, and this is the only type of meat whose production has increased, which indicates higher quality and demand for it.

Among the largest importers of Ukrainian poultry

meat are Saudi Arabia, the Netherlands, Slovakia, UAE, Azerbaijan, Turkey, and Kyrgyzstan, which accounted for 66.1% of exports, and 73.7% for the 10 main buyers. The biggest part, almost a third of exports, 27.5% were made to the first country and 18.5% to the second country. Thus, the main buyers of Ukrainian poultry meat are mostly European countries, in particular the EU, and Asia, and sales were

made to some African countries. In 2021, Ukraine exported meat to about 100 countries, the USA – 145, Germany – 90, and Brazil – 150 countries. Therefore, Ukraine should continue to expand its sales markets and increase export volumes.

Taking into account the development of integration processes in the world and Ukraine's conclusion of free trade agreements, in particular with about 50 countries, because as recently as 2017 it had free trade zones with 45 countries (Ukraine has free ..., 2017), it is advisable to consider trading with them. Thus, the share of poultry meat exports to the EU during 2002-2021 varied from 0 to 46.0%, and in 2021 it was 27.0%. It is worth paying attention to the exit and rapid increase of exports to the EU market since even before 2014 its share did not exceed 0.5% (1055 thousand dollars). In 2022, sales were made to many countries of the grouping, but in quite different

volumes, in particular, the Netherlands, Slovakia, and Romania imported the most – respectively 18.5%, 5.6%, and 1.3%. For other countries, the value of the indicator did not exceed 0.5%, but among the importers were Ireland, Belgium, the Czech Republic, Poland, Germany, Estonia, Spain, Denmark, Bulgaria, Cyprus, Austria, Malta, Greece, and Portugal.

In addition, among the countries with which free trade agreements were concluded, the largest importers in 2021 were Azerbaijan, Turkey, Kyrgyzstan, Belarus, Kazakhstan, Moldova, Armenia, Turkmenistan, Georgia, Great Britain, and Uzbekistan, whose share varied from 0.4% to 3.2% (Table 3).

Considering the increase in the volume of poultry meat export, it is advisable to analyse the diversification of its geographical structure, therefore the concentration index of the poultry meat export market was calculated (Fig. 4).

Table 3. Value and share of poultry meat exports of Ukraine to its largest importers from countries with which regional trade agreements have been concluded, 2021

Countries, groups	Export value, thousands of dollars.	Share in the total export of Ukraine, %
EU-27	189.5	27.0
Azerbaijan	22.6	3.2
Turkey	22.4	3.2
Kyrgyzstan	21.6	3.1
Belarus	19.3	2.8
Kazakhstan	17.0	2.4
Moldova	16.8	2.4
Armenia	12.7	1.8
Turkmenistan	7.1	1.0
Georgia	6.0	0.9
Great Britain	5.8	0.8
Uzbekistan	2.5	0.4

Source: calculated by the author given ITC (Trade statistics for international ..., n. d.).

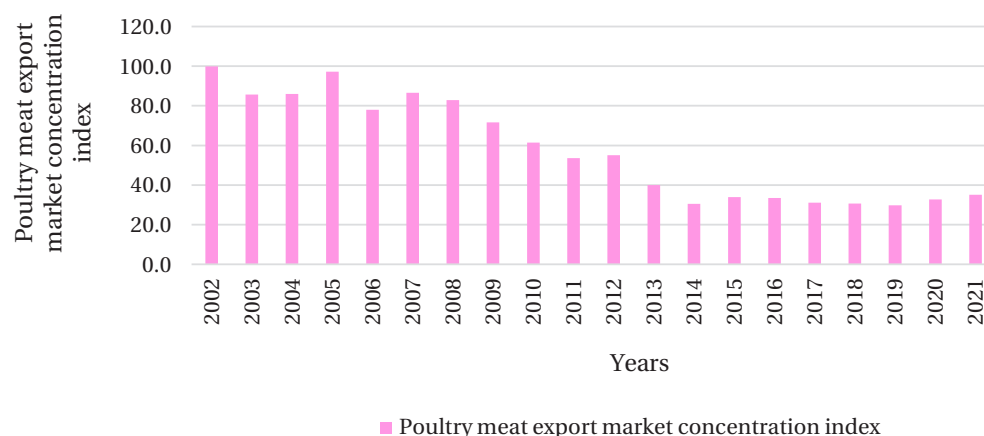


Figure 4. Poultry meat export market concentration index, 2002-2021

Source: calculated and constructed according to ITC data (Trade statistics for international ..., n.d.)

That is, the given data testify to the diversification of the geographical structure of the export of poultry meat in Ukraine. Thus, if the calculated values of the concentration index of the poultry meat export market in 2002-2005 varied from 85.7 to 99.9, then in 2016-2021 – 29.8-35.1. Regarding product quality, it is necessary to take into account some indicators and production technologies today. Currently, due to the growing demand for poultry meat, its production is also increasing. But for it to be of good quality, it must be properly grown, transported, inspected, processed, etc., without causing unnecessary pain and stress to the animals. Thus, proper compliance with animal welfare guidelines and traceability of poultry meat is becoming increasingly important and will soon become mandatory requirements in the poultry industry (Kumar et al., 2022). In addition, according to the recommendations, the bird should have enough space for normal behaviour, in particular, bathing in dust, eating, drinking, etc. Attention is also paid to the number of birds in the aviary, which should depend on their overall size, the weight of the bird, so that each when it is fully grown, has a place to access fresh water and feed throughout its life (Animal welfare for..., n.d.). Therefore, such requirements and recommendations should be taken into account, especially to expand exports to developed countries. It is necessary to take into account the peculiarities of the demand of the population of different regions. For example, unlike North American consumers, who mostly prefer breast meat, global consumers prefer dark meat. This means that exports are very necessary to achieve a better balance of supply and demand for all parts of the chicken (International trade, n.d.).

Considering the importance of Biblical laws, the benefits of clean meat, its consumption mainly in Asian countries, in particular Muslim countries and Israel, as well as by the population belonging to such Abrahamic religions as Christianity – Seventh-day Adventists, Muslims and Jews, who live in almost all it is expedient for countries to promote the increase in volumes and diversification of poultry meat exports in the future. At the same time, it is worth paying attention to their consumption of halal and kosher products, which includes permitted products. From a practical point of view, it is expedient to note that kosher products include the meat of livestock with split hooves that chew the cud, eagles, pelicans, herons, sea eagles, owls, and other types of birds according to their genus are prohibited from poultry products (Bible, 1962) and the use of special slaughter technology. That is, religion affects the development of foreign trade, which is evident from the above and requires study and consideration. After all, the famous scientist A. Marshall, the founder of the “Cambridge School”, in his work “Principles of Economic Science”, which was republished for many decades and was the main textbook of economic science in England and some Western countries, noted that the two great forces that shaped world history, were religion and economy, and religious motives are stronger than economic ones (Marshall, 1993).

At the same time, it is advisable to focus on kosher products, since they will be halal, but not vice versa.

Notably, because production is less directly linked to the land than other productions, such as cattle and sheep, it is easier to develop near urban areas with strong population growth; poultry farming is easier to develop compared to other types of livestock thanks to the “technological packages” that some global companies sell to any local entrepreneur (Chatellier, 2021).

However, according to S.S. Diarra (2017), in most countries in the South Pacific region, the main constraints limiting poultry production are the high cost of inputs, including feed, equipment, and market access. And there is a massive import of poultry products, mainly from the USA, Australia, and New Zealand. The author examines the state of the industry in individual countries of the region, as well as the main challenges and opportunities. Thus, the barriers of some countries are opportunities for increasing the export of others, including Ukraine.

Thus, I. Salkova (2017) notes that the largest enterprises and producers of the industry are located in the Kyiv, Vinnytsia, Dnipro, Cherkasy, and Kherson regions, among which “Myronivskyi Hliboproduct” stands out the most. At the same time, in the domestic market, they have to compete with German and Polish manufacturers. The author notes that the development of the market requires a state strategy and policy of import substitution for the development of domestic production.

It is worth paying special attention to the quality and price of products, the solvency, and the peculiarities of the demand of the population of the countries to which the export is planned. I. Salkova (2017) noted the competitors of Ukrainian manufacturers, in particular from Germany and Poland, but also other major exporters, expanding the geography of exports, can increase exports to Ukraine, which requires increasing the competitiveness of products.

In particular, a number of countries has increased domestic production of poultry meat to meet growing demand. Its biggest exporters are Brazil, the USA, the EU, and Thailand. Moreover, according to forecasts, Brazil will remain in the leading position in 2031, but it is predicted that the USA will lose market share in the coming decade (Miller et al., 2022). Ukraine should also not lose, but expand its position on the world market.

O.V. Rodina (2017) noted the need for state support for the industry, at least for the domestic producer from importing meat, but in this case, the regulation should be well-founded, because Ukraine is among the 10 largest exporters of this product.

► Conclusions

Given the expectations of replacing red meat with white meat due to the population's concern for health and the environment, the demand for poultry meat is increasing, in particular, from 2002 to 2021, exports increased 3.4 times. The total number of exporters in 2021 was about 140, and the largest of

them – Brazil, the USA, Poland, the Netherlands, and Belgium – exported more than 63.5%. It was found that geographically, imports are more diversified than exports, if Brazil accounts for 23.4% of world exports, then the largest importer is China – 12.1%. And the 10 largest importers account for 51.4%, and exporters – 78.1%.

The balance of foreign trade for most of the main exporters has been consistently positive, but the opposite situation for Germany, and there is an exception for France. After 2012, the whole time remained positive for Ukraine as well. This is also confirmed by calculations of the index of export coverage by import, and exports exceeded imports the most in Brazil, Thailand, Turkey, and Poland, mainly in countries that are not members of the most developed integration groups.

It was revealed that among the largest suppliers of poultry meat are members of the most developed integration groups – MERCOSUR, the North American Free Trade Agreement, and the EU. A significant part of meat production is poultry meat, and most of it is produced in Asia, North America, and Europe, in particular in China (16.7%), the USA (17.4%), the EU (11.4%) and Brazil.

There is a significant increase in exports by Ukraine, 8.9 times in just 10 years (2011-2021), which has entered the top ten exporters. The increase in production became noticeable (by 7.3 times in 2020 compared to 2000), which indicates the impact of exports on production volumes and encourages increasing it about other types of products.

Ukraine exported a large amount to Saudi Arabia, the Netherlands, Slovakia, UAE, Azerbaijan, and Turkey, the 10 main buyers accounted for 73.7%. Among the countries and groups with which Ukraine

has concluded regional trade agreements, Ukraine significantly increased exports to the EU (the share was 27.0% in 2021). It is worth spreading positions on this market, since, except for the Netherlands, Slovakia, and Romania, the share of exports to other countries did not exceed 0.5%.

To increase exports, it is necessary to take into account what advantages are given to imports by individual countries. It is advisable to increase the volume of production and export of poultry meat, which due to its properties regarding the impact on health compared to other types of meat, the permission for consumption by representatives of all Abrahamic religions (Jews, Muslims, Christians) and even by residents of India, a significant share exported by Ukraine to Asian countries. It is necessary to promote the production of kosher and halal products, and above all first, which can be consumed by everyone and the demand for which is growing regardless of the religious affiliation of the population.

Special measures must be taken regarding the conditions for raising animals, as this issue becomes more acute when exporting, especially to the markets of developed countries. Taking into account the growth of global demand for poultry meat, its advantages in terms of quality, and consumption by almost all non-vegetarian populations, it is necessary to increase its production and diversify the commodity and geographical structure of exports, taking into account the main importers, as well as countries that are not its main producers.

The issues of expanding positions in the markets of North and South America, Australia, production of kosher and halal products, the creation of a Ukrainian brand for the production of poultry meat, etc., require further research.

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Зовнішня торгівля м'ясом птиці України в контексті інтеграційних процесів

Надія Василівна Кривенко

Канд. екон. наук, старший науковий співробітник. ORCID: <https://orcid.org/0000-0003-3439-432X>.

Національний науковий центр «Інститут аграрної економіки», 03127, вул. Героїв Оборони, 10, м. Київ, Україна

► **Анотація.** Зовнішня торгівля відіграє особливе значення для економічного розвитку агропродовольчої продукцією і для продовольчої безпеки. Помітним є збільшення експорту м'яса птиці. Метою роботи є обґрунтування перспектив зовнішньої торгівлі України м'ясом птиці з урахуванням виробництва, ситуації на світовому ринку та участі в інтеграційних процесах. Для цього використовувались економіко-математичні методи, графічні, аналітичні. Виявлено основних постачальників (більшість з яких є членами найрозвиненіших інтеграційних угруповань) і імпортерів, частка останніх на світовому ринку менша за перших. Торговельне сальдо для основних постачальників переважно додатне, але є виключення для країн Європейського Союзу, які є значними імпортерами. Торгівля розвивається, що видно із зовнішньоторговельного обороту. Виробництво зосереджено в Азії, Північній Америці та Європі. Помітним є зростання експорту Україною та її входження до десятки топ експортерів. Експорт позитивно вплинув на підвищення виробництва. Найбільшими імпортерами є країни Азії та Європи, серед покупців – країни Африки. М'ясо у 2021 р. вивозили близько до 100 країн, але це менше, ніж його основними експортерами. Серед угруповань та країн з якими укладено регіональні торговельні угоди найбільше експортували в останні роки до Європейського Союзу, Туреччини, Азербайджану, що свідчить про конкурентоспроможність на цих ринках. Індекс концентрації експортного ринку вказує на диверсифікацію географічної структури експорту. В умовах зростання попиту на м'ясо птиці, з урахуванням якісних переваг та споживання більшістю населенням, крім вегетаріанців, варто нарощувати виробництво та експорт. Цьому мають сприяти підвищення якості, диверсифікація географічної структури експорту, врахування особливостей споживачів країн, виробництво кошерної та халяльної продукції, попит на яку зростає, зростання населення країн, де вона споживається, причому передусім кошерної. Враховуючи експортний потенціал України й наявні тенденції є перспективи нарощування експорту. Практичне значення має визначення напрямків розширення експорту з врахуванням особливостей ринків і основних конкурентів та ін.

► **Ключові слова:** експорт, імпорт, м'ясо птиці, регіональні торговельні угоди, міжнародна економічна інтеграція

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