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## Post-war restructuring of the agricultural sector of Ukraine: elimination of distortions to achieve stability and well-being

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► **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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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 of 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. Burkovskiy 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.

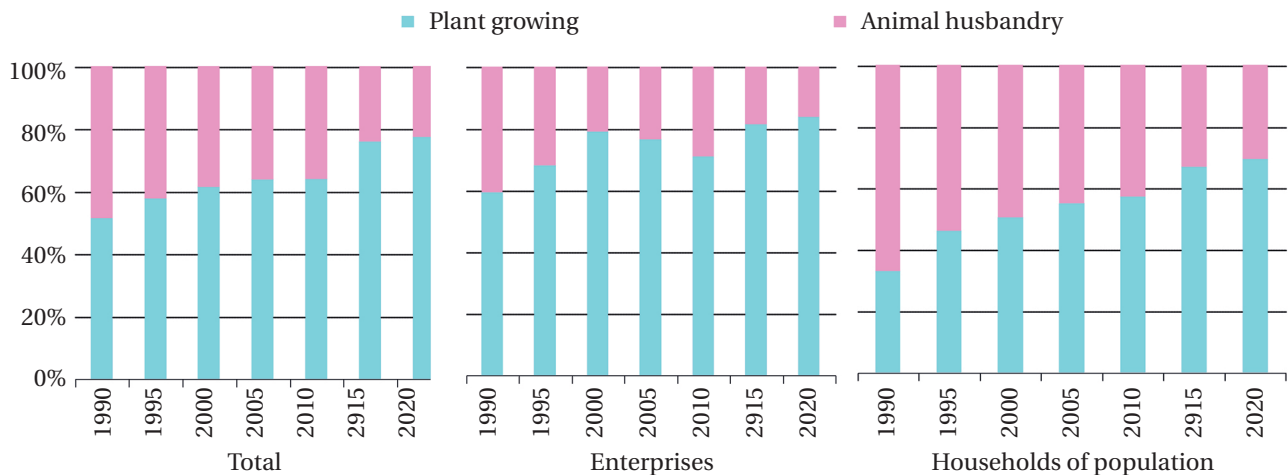
### ► Results and Discussion

#### *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.

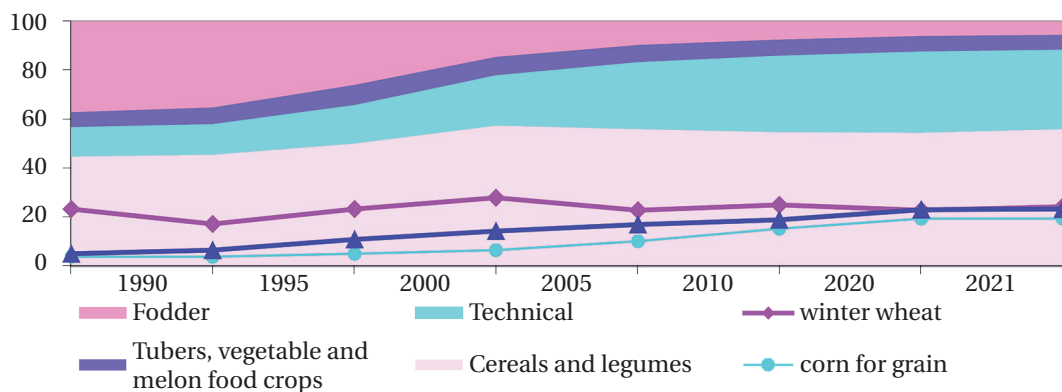


**Figure 1.** Structure of gross agricultural output in constant 2016 prices for 1990-2020, as a percentage of the total  
**Note:** here and after, the data are from 2015 without the temporarily occupied territories of the Autonomous Republic of Crimea, the city of Sevastopol, and certain districts 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

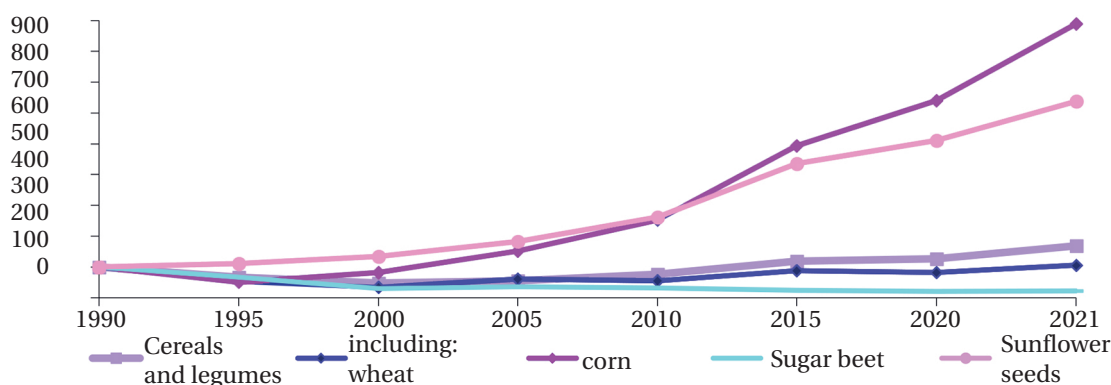
crop rotations and technologies. The tax burden (the ratio of tax payments to gross income) on agricultural enterprises in 1998 reached 20.8%, although the level of payment of direct taxes was only 43.3%. Two-thirds of enterprises ended this year with losses totalling 4,537.5 million UAH, with negative 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.

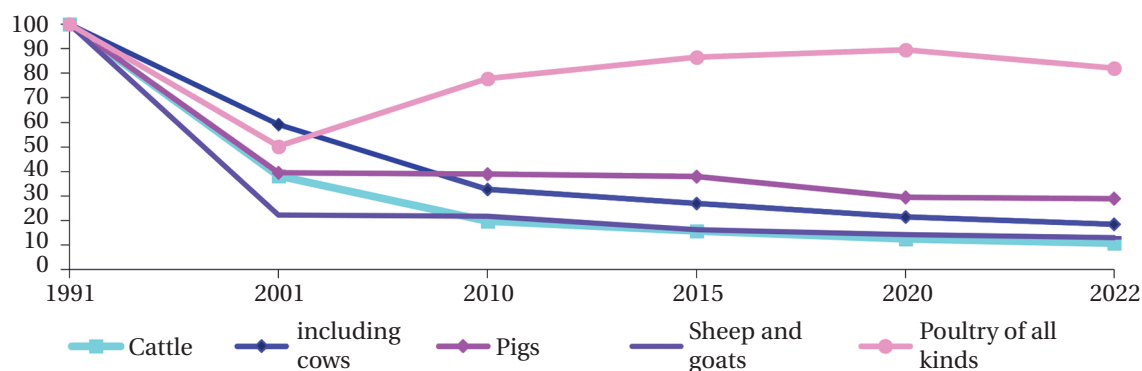
The fourth. The sale of lands among the peasants and their transfer to rent deprived the reformed enterprises of fodder resources.

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).

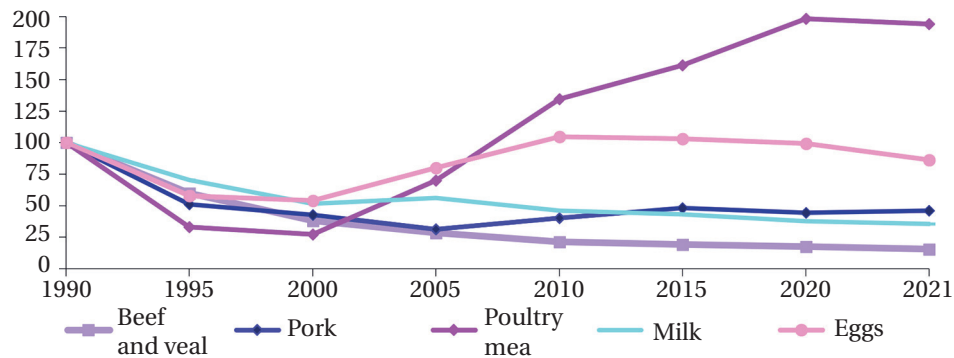


**Figure 4.** Indices until 1991 and the number of livestock of agricultural animals and poultry in all categories of farms, as of January 1; million heads

**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

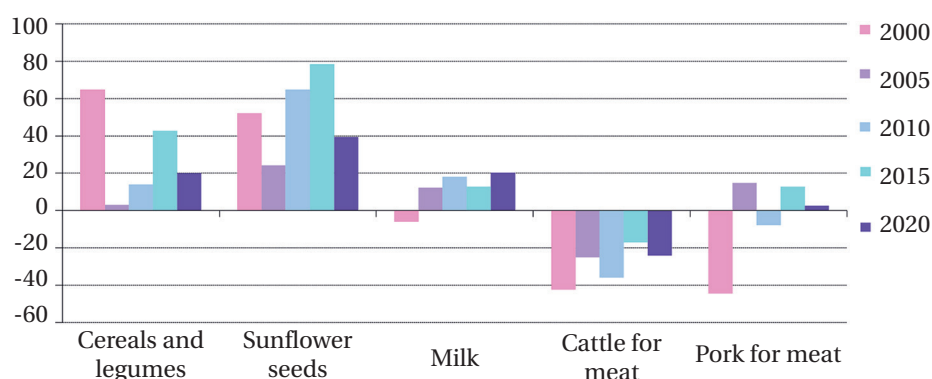
granted the status of a candidate for membership in the European Union since June of this year.

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 <sup>2</sup>	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 (Gajuduky, 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, s 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

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► **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 добросовісних 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