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AGRARISSATION VS DEAGRARISSATION: STRATEGIC VECTOR OF RURAL AREAS DEVELOPMENT THROUGH THE LENS OF TRANSFORMATIONAL CHANGES

Purpose. The goal of the study is to determine the transformational changes in agricultural households with different sizes of land plots, with an emphasis on their adaptation to market conditions, introduction of new technologies, and economic practices; to assess the impact of these processes on the socioeconomic and cultural potential of rural regions and formulate recommendations for the Ukrainian government to create favorable conditions for the balanced and sustainable development of rural areas.

Methodology / approach. In the study, a systemic approach was used to analyse the agrarisation and deagrarisation of rural territories in Ukraine, which allows considering these processes as complex and interconnected phenomena. The basis of the research methodology was a set of classical and modern methods of economic analysis. For analysing the trends of rural household development and their role in the agricultural sector of the economy, methods of analysis and synthesis were used. The statistical analysis included the collection, processing, and interpretation of data concerning the agricultural activity of rural households, specifically their land areas and production activities. The application of comparative analysis made it possible to study the experience of other countries and assessing the possibilities of its adaptation under Ukrainian conditions. The study uses an integrated approach that combines both quantitative and qualitative methods of analysis. This ensured an in-depth investigation of the institutional, economic, and social aspects of the agrarisation and deagrarisation of rural territories.

Results. The findings of the study underline the importance of distinguishing between two key processes in the development of rural areas in Ukraine: agrarisation and deagrarisation. It was established that households with an area of up to 0.5 hectares and from 0.5 to 1.0 hectare (78 % of all rural households) show a trend towards deagrarisation, manifested in abandoning agricultural activities and transitioning to non-farming occupations. On the other hand, households with an area of more than 1.01 hectares (22 % of all rural households) demonstrate active agricultural development, characterised by increasing numbers of cattle, pigs, and broiler chickens, implementation of new agricultural technologies, and diversification of activities through growing and selling fruits, vegetables, and seedlings. It was revealed that the majority of the heads of these active households are descendants of dekulakised peasant-farmers of the 1930s, suggesting the presence of a genetic memory among Ukrainian landowners. It is recommended that the Ukrainian government create favorable conditions for the development of rural households with an area of more than 1.01 hectares in order to foster economic growth and preserve the socio-cultural potential of rural areas.

Originality / scientific novelty. The originality of the research lies in a comprehensive analysis of the transformational changes in rural areas of Ukraine, particularly in identifying the strategic vectors of rural development – agrarisation and deagrarisation. The scientific novelty of the work is manifested in determining the interrelations between the sizes of rural households, their choice of

strategic direction agrarisation or deagrarisation), and the economic, social, and cultural factors influencing this direction. The results of the study contribute to a better understanding how historical memory and current market conditions shape the management strategies of rural households. This enables the authors of the article to put forward proposals on the formation of state policy aimed at ensuring the sustainable development of rural areas in Ukraine in the context of their agrarisation and deagrarisation.

Practical value / implications. The practical value lies in the development of recommendations for the formation of effective state agrarian policy in Ukraine. Identifying the strategic vectors of rural development and determining the main factors influencing the agrarisation or deagrarisation of households allows for the design of targeted programs to support and develop agriculture. The results of the study can be used by government authorities to adjust agrarian policy, as well as by local authorities for the development and implementation of regional programs for the development of rural areas. They can also serve as a practical guide for agrarians who are striving to optimize their management in the conditions of market transformations, choosing between the strategies of agrarisation and deagrarisation depending on the specific conditions of their farm and region. Thus, the research contributes to the preservation and development of the socio-economic potential of rural areas in Ukraine.

Key words: agrarisation, deagrarisation, rural areas, transformational changes, agrarian policy, state support, market conditions, agricultural households.

1. INTRODUCTION

The development of rural areas in Ukraine is currently characterised by transformational shifts influenced by both internal (local self-government reform) and external factors (global challenges to agricultural growth). Rural areas are a multifunctional socio-spatial entity that functions as a synergistic unity of human, natural, and economic potentials with their inherent characteristics: open natural space prevails over buildings, rural communities maintain their traditional way of life, and resources are primarily processed into goods and services to meet local needs and promote development [1]. In other words, the core of rural areas is the human potential – the rural population, which is united in rural households. In turn, rural transformation is a process of change occurring in the rural environment that affects its physical, social, economic, and environmental structures. This process involves changes in the rural landscape, land use, economic activity, and well-being of the population [2].

A crucial component of rural development is the participation of rural residents in agricultural production. Agricultural activity of rural population affects the transformation of rural areas both positively and negatively. Currently, rural society is at the crossroads of two development concepts: agrarisation or deagrarisation. Agrarisation involves identifying groups of rural households that are most suitable for efficient agricultural production and then supporting their transformation into farms through cooperative relations [2; 3]. Deagrarisation, on the other hand, refers to a departure from agricultural models of social organisation of labor in rural areas. This includes (i) reorientation of the principles of life of rural residents, (ii) modifying their qualifications, (iii) spatial restructuring of rural settlements, and (iv) their social identification [4]. Deagrarisation is a transitional stage that results in the transformation of rural areas according to one of the following concepts: post-productivism, cultural

economy, global rural areas, and amenity migration [5; 6].

Given this, agricultural production can play both a positive and negative role in rural transformation. Food security and social and economic contributions are among the positive aspects. The economic contribution is that the involvement of rural residents makes it possible to fill the budgets of rural households through the sale of their products. Rural infrastructure development and restoration, as well as employment opportunities for the local population, are examples of social contribution. At the same time, the participation of rural residents in agricultural production ensures the preservation of local traditions and the culture of the rural way of life, which is manifested in the ability of the Ukrainian rural community to preserve its identity. Another positive aspect of the transformation of rural areas is that rural households are actively involved in ensuring food security in Ukraine, and they perform two crucial functions in this process. First, they provide themselves (household members) with food, and second, they act as food suppliers to the country's agricultural market.

The negative aspects of the involvement of the rural population in agricultural production are the imbalance of the food market, uncontrolled environmental impact, and delayed technological development of agricultural production, which is reflected in the high cost of agricultural products manufactured with the involvement of a significant number of working-age people. The food market imbalance is manifested in unstable food supplies to the market and a significant impact of the previous year's product prices on the current year's production volumes. For example, a high price for potatoes in the previous year affects the expansion of the potato cultivation area in the current year, which ultimately results in an increase in production volumes and a significant decrease in prices.

Traditional farming practices in households often do not strictly adhere to crop rotation, optimal fertilisation, and use of plant protection products. This can affect the quality of soil and crops in the long term. Outdated crop cultivation techniques that rely on horse and manual labor and non-optimal animal husbandry under inappropriate conditions can result in higher costs and decreased quality of the final product. However, it is worth noting that, compared to large agricultural enterprises that adopt intensive industrial technologies with significant mineral fertilisation and widespread use of chemicals, households typically use fewer chemicals and more organic fertilizers because they keep a large share of cattle and maintain a more diverse crop rotation that helps preserve the physical condition of soils. Therefore, despite certain problems, such as infrastructure and technology that need to be upgraded, their impact on the ecological condition of the soil and the efficiency of agricultural production is still less severe than that of large-scale industrial farming.

The main research question of this article: what trends in agricultural activity are observed in rural households in Ukraine, and what impact do they have on the transformation of rural areas?

The purpose of the article is to determine the transformational changes in agricultural households with different sizes of land plots, with an emphasis on their adaptation to market conditions, introduction of new technologies, and economic

practices; to assess the impact of these processes on the socioeconomic and cultural potential of rural regions and formulate recommendations for the Ukrainian government to create favorable conditions for the balanced and sustainable development of rural areas.

2. LITERATURE REVIEW

The transformation of rural areas and the role of agricultural production in this process have been studied by many economists from around the world. For example, F. H. Battelle, W. H. Friedland and R. J. Thomas in their work “From Marx and Mao to the market: the economics and politics of agricultural transition” conducted a thorough scientific analysis of the changes in agriculture over the past decades. The authors claim that all the identified changes are based on the adaptation of agricultural producers to global challenges in the form of the globalisation of food markets and the economic growth of transnational corporations. The authors identified the following changes: the decline of family farming and the role of small farming, the industrialisation of agriculture, the concentration of agricultural production within several transnational corporations, the introduction of biotechnology and other cutting-edge technologies into the production process, and the increasing significance of international trade in agricultural products. At the same time, the authors point out that all these changes have had a negative impact on the overall development of agriculture, as evidenced by the displacement of small farmers; environmental degradation of agricultural land; concentration of economic power in the hands of several transnational corporations; and increased vulnerability of agricultural producers to market fluctuations. In general, the authors emphasize that global restructuring is the main challenge for the future of agriculture [7].

Important aspects and trends in the transformation of rural areas are explored in the scientific work by J. Douwe van der Ploeg. The author emphasizes that the transformation is influenced by a number of factors, such as the globalisation of agriculture, the rise of industrial agriculture, the decrease in state support for agriculture, and the growing commodification of agriculture. The author highlights the negative impact of these factors on the development of the peasantry, which has resulted in peasant migration to urban areas, the consolidation of agricultural enterprises with their eventual transformation into agricultural holdings, the growing degradation of agricultural land, and the vulnerability of small agricultural producers to market fluctuations. The author concludes by emphasising the need for governments of different countries to pursue policies aimed at mitigating the adverse effects of the above factors and ensuring sustainable agriculture [8].

Another important scientific work in the field of rural transformation is R. Vos' article, which provides a thorough examination of the agricultural and rural transformations that have occurred in Asia over the past 60 years. The author points out that the transformation processes have dramatically affected the agricultural activity of rural residents. The author identifies a set of factors that have intensified agricultural and rural transformations in Asian countries, such as the green revolution,

which has significantly increased agricultural productivity, the growth of non-agricultural employment, which has resulted in a decreased share of the rural labor force, urbanisation, which has led to a decrease in the rural population, and the globalisation of the agricultural sector, which has caused the increased competition and the need for farmers to introduce new technologies. At the same time, the author highlights the benefits of these transformations and focuses on the following effects: the displacement of small farmers, the concentration of agricultural production in the hands of several large farms, the environmental degradation of agricultural land, the increased vulnerability of agricultural producers to market fluctuations. The author concludes by emphasising the necessity for state funding of investment programs to support the development of small agricultural producers in the Asian region [9].

Interesting from a scientific point of view is the study by M. P. Todaro and S. S. Smith regarding the agricultural transformation and rural development. The authors focused on the direct effects of transformation on rural development rather than the transformation process itself. The researchers emphasised the need to support the transformation process to ensure rural development. The primary factors of rural transformation include increased investment in agricultural research and development, better access to agricultural resources like fertilizers and pesticides, enhanced agricultural extension services and agricultural infrastructure (roads and irrigation canals), and the development of agricultural markets. However, the authors also stress that the transformations in agriculture can have negative consequences for rural development, such as the displacement of small agricultural producers and the consolidation of large ones. The authors emphasize that governments should regulate the transformation of agriculture and ensure sustainable development of rural areas by increasing agricultural production and productivity [10].

In their work "Structural transformation and rural change revisited: challenges for late developing countries in a globalising world", a group of World Bank researchers provided a significant additional contribution to the justification of the directions and outcomes of rural transformation. The study addresses the issues faced by developing countries in the process of structural transformation of rural areas under globalisation challenges. The authors stress that the transformation of rural areas in developing countries is a prerequisite for enhancing economic growth and reducing poverty. However, a regulated transformation of rural areas is a complex and comprehensive process that requires the involvement of not only the government but also international organisations. The authors list several problems that developing countries face in achieving structural transformation, such as poor institutional support for rural development, a low level of human capital development, imperfect infrastructure, a high level of stratification in rural society, access to markets, etc. At the same time, the authors state the transformation of rural areas as a controlled socioeconomic phenomenon, according to policy and state control, can resolve these issues by investing in human capital development, strengthening public administration and regulation institutions, developing infrastructure, ensuring equal access to the market, and providing a state guarantee of compensation for the consequences of risks [11].

Based on the review of sources, we can identify the following previously unresolved aspects of the general problem, which will be discussed in this article:

1. The relationship between agrarisation and deagrarisation: most previous studies have focused on various aspects of agrarisation and deagrarisation of rural areas.
2. Genetic memory and farming strategies: one of the distinctive features of the paper is the identification of a connection between the genetic memory of farmers and their development strategies.
3. Practical recommendations and state support: the article goes beyond theoretical analysis by providing specific recommendations for the formation of an effective state agricultural policy.

3. METHODOLOGY

The study is based on the analysis of trends in the development of agricultural activity of rural households using indicators that make it possible to determine further directions of development: agrarisation or deagrarisation. The next stage is to study the primary signs of transformation of the main actor in rural areas, i.e. rural households, using the pertinent indicators that best characterize their condition. Subsequently, econometric models showing how trends in the development of agricultural activity of rural households depend on the key indicators of rural transformation will be constructed. Such a model will make it possible to carry out scenario modeling of further development of rural areas.

Trends in the development of agricultural activity of rural households are long-term and reflect the main economic aspects of such activity development. Based on the analysis of statistical data from the State Statistics Service, the following indicators were selected: 1) the share of crop and livestock output produced by rural households; 2) rural household income from agriculture; 3) the cost of consumed products obtained from private farming; 4) the cost of operating a private farm.

Various socioeconomic changes that occur in rural households are signs of rural transformation. Groups of indicators that characterize the state and dynamics of transformation of rural households were selected based on the literature analysis on the research topic, with each indicator being available in the State Statistics Service. These indicators include:

a) indicators characterising the change in the demographic composition of the rural population: the number (share) of pensioners, children, and people of working age;

b) indicators that show the change in agricultural land use by rural households and reflect the process of changing the way land is used. The indicators in this group include those that characterize the structure of agricultural land by actual use in rural households separately for all households with a land area of 0.5 ha or less, 0.51–1.00 ha, and 1.01 ha or more: share of arable land, perennial plantations, orchards, vineyards, berry gardens, hayfields and pastures, fallow land;

c) indicators characterising the agricultural activity of rural households in the field of animal husbandry: the share of rural households keeping farm animals separately

for all households with a land area of 0.5 ha and less, 0.51–1.00 ha and 1.01 ha and more: cattle, cows, pigs;

d) indicators characterising the structure of agricultural production by rural households: cereals and legumes; industrial crops; potatoes; outdoor vegetables and cucurbits; fodder crops; and the share of arable land that was not sown;

e) indicators that describe the technological component of agricultural production of rural households: the share of households with machinery in the total number of households (separately: plow; seeder; harrow; cultivator; tractor; combine; separator; grinder; truck).

4. RESULTS

4.1. Role of the agricultural sector for the country's economy. The overall trend of Ukraine's economic development indicates a change in the structure of the economy (Figure 1). An analysis of the gross domestic product (GDP) structure in Ukraine during its independence shows the following aspects: 1) "Industry (including construction), value added (% of GDP)": in 1992, industry and construction made up 52.15 % of GDP; however, this figure gradually dropped, reaching 23.46 % in 2021, suggesting a decrease in the importance of the industrial sector in the economy; 2) "Services, value added (% of GDP)": the service sector gradually grew over the period from 29.43 % of GDP in 1992 to 51.84 % in 2021, which shows the expansion of the service sector and its significance in Ukraine's contemporary economy; 3) "Agriculture, forestry, and fishing, value added (% of GDP)": in 1992, the agricultural sector accounted for 20.85 % of GDP; however, throughout the independence period its share has decreased to 10.63 % in 2021, indicating a decreasing significance of agriculture, forestry, and fishing in the country's economy.

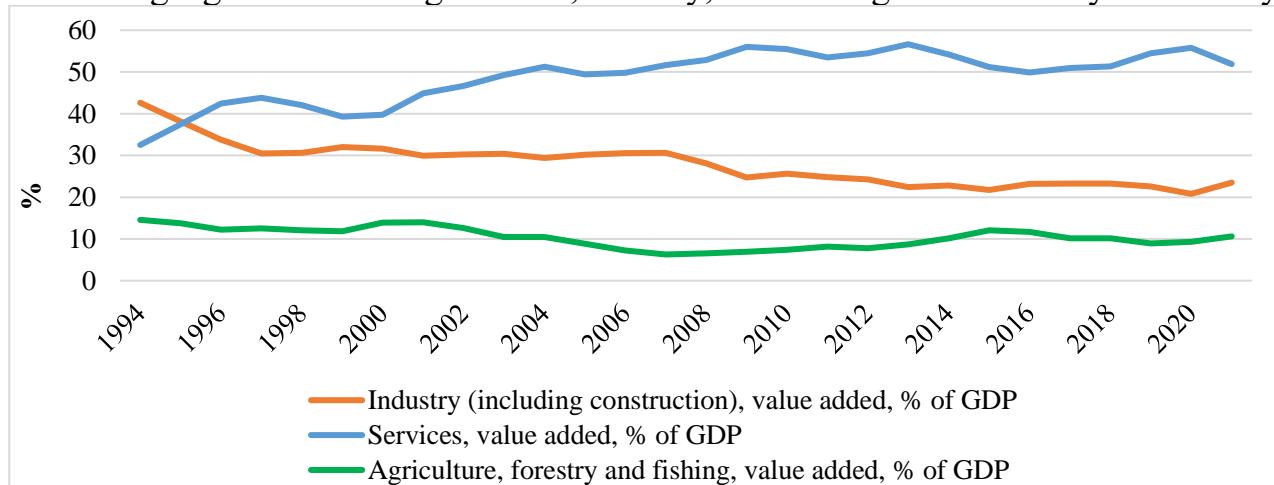


Figure 1. Dynamics of changes in the share of the main sectors of Ukraine's economy in the GDP composition

Source: based on data from [12].

Despite considerable structural changes, the agricultural sector continues to play a key role in Ukraine's economy, accounting for 11 % of GDP in 2021, employing 14 % of the working population, and generating 41 % of foreign exchange earnings from exports. Ukraine holds leading positions in the global agricultural market, being

a key exporter of wheat, corn, sunflower oil, soybeans, and rapeseed.

However, according to studies and reports by international organisations, including the UN and FAO [13], this well-known leadership – achieved through highly specialised and often monoculture production – carries some risks, including social and environmental challenges that may have a long-term impact on future generations. In particular, the focus on oil crops has resulted in a situation where the share of acreage under these crops in Ukraine is three times higher than the standards set by research in agronomy and plant protection and the practice of European and North American countries, which violates the fundamental principles of agriculture.

4.2. Role of rural households in the agricultural sector development. Rural households play a key role in generating the country's gross domestic product, since they account for a significant share of agricultural production. Nonetheless, an analysis of the last decade reveals a consistent decline in this share by 16 percentage points (Figure 2). Many reasons have contributed to this trend, including the migration of rural residents to urban areas, an increase in labor migration, changes in consumer preferences, and technological advancements in agricultural enterprises. In addition, it is impossible to overlook the effects of losing the ability to combine work in agricultural enterprises with managing a personal farm. Rural residents lost the ability to combine these activities after leaving their jobs in rural areas and moving to work in cities. This resulted in a decrease in the production volume in their households. Moreover, foreign labor migration plays a significant role. Although it was not listed as one of the reasons for the decline, it undoubtedly affects the situation by reducing the number of workers who would be engaged in local agricultural activities.

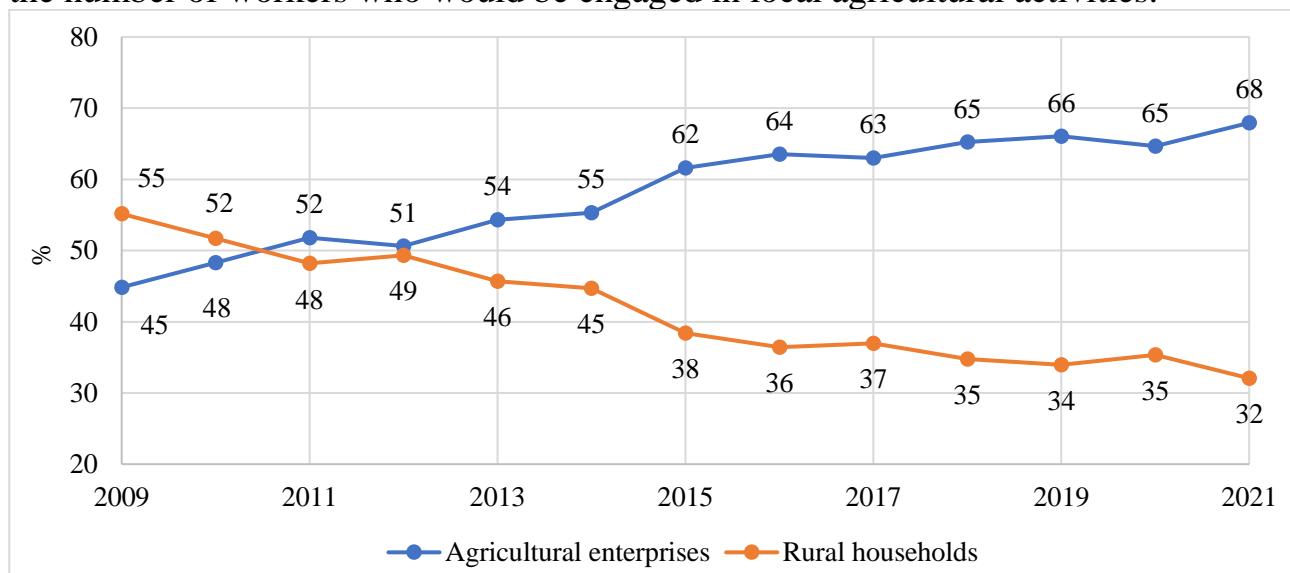


Figure 2. Dynamics of changes in the share of gross agricultural output by agricultural enterprises and rural households

Source: based on data from [14].

However, it should be highlighted that rural households still perform a number of crucial functions, such as providing food to the population (production for themselves, for relatives, and for the market), employing a significant part of the rural labor force,

helping to maintain the infrastructure in rural areas in a satisfactory condition, and preserving traditions and cultural heritage.

4.3. Analysis of trends. In 2021, households made up 29 % of the gross crop production structure, while agricultural enterprises accounted for 71 %. The largest share of households contributing to the value of crop production was recorded in 2005 (60 %). In the overall dynamics, there is a gradual decrease in the share of households in crop production (Figure 3a). It should also be noted that agricultural enterprises specialize in growing crops that are in demand on foreign markets, such as cereals, corn, soybeans, and sunflower, accounting for 90 % of all harvested areas. On the other hand, agricultural enterprises focus on growing potatoes and root crops, vegetables and cucurbits, and fodder crops.

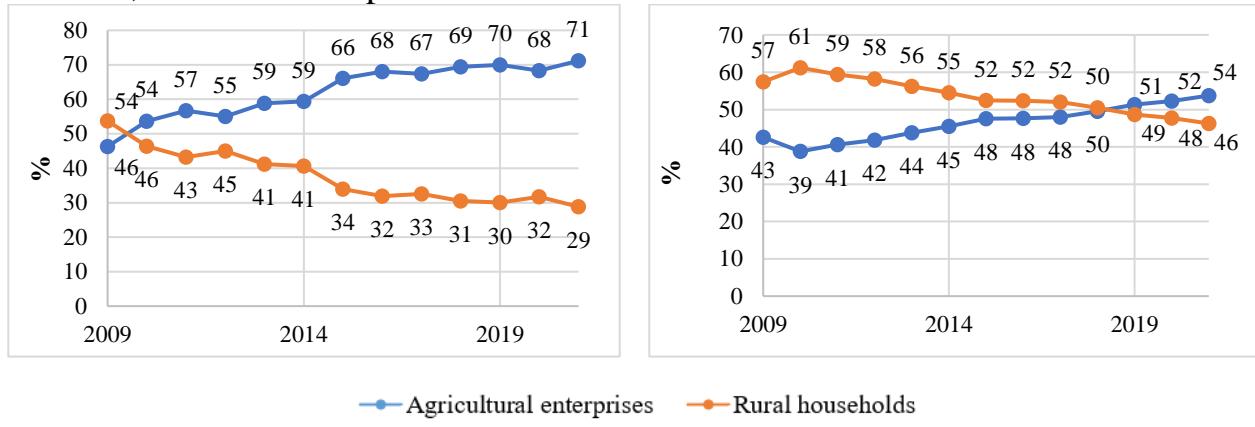


Figure 3. Dynamics of changes in the share of gross crop (a) and livestock (b) production by agricultural enterprises and rural households

Source: based on data from [14; 15; 16; 17].

Until 2018, rural households produced a larger share of animal goods than agricultural enterprises (Figure 3b). However, in 2021 that share dropped to 46 %, indicating the increasing dominance of agricultural enterprises in the market. The peak of production by rural households was in 2010, accounting for 61 % of the market. A number of factors contributed to the balance shifting in favor of agricultural enterprises. On the one hand, it is the growth of livestock production in agricultural holdings due to the development of a closed production cycle – from growing fodder to creating their own distribution network. Agricultural holdings, however, do not show significant growth in the milk production sector, which is presently dominated by traditional enterprises independent of agricultural holdings. On the other hand, the cost price of livestock production in rural households is higher, which makes their products less competitive on the market. Thus, rural households are more likely to grow food for their needs, and as their number decreases, their total production falls.

An important element of the trend analysis in rural transformation is the examination of the economic nature of the inputs and outputs that rural households receive from agricultural activity. The economic outputs include the indicator “average monthly income of rural households from agriculture” that is suggested to be analysed in 2017 and current prices, and “share of total household income” (Figure 4, green

line). Income in current prices shows an upward trend with a minor decline of 5 % in 2020 and a notable positive leap of 48 % in 2021 (Figure 4a). The main cause of this fluctuation is the effects of COVID-19, which resulted in quarantine restrictions isolating the majority of rural residents in their villages. These measures prevented rural residents from selling their products in urban areas. The notable increase in agricultural income in 2021 was caused by a substantial rise in the price of goods like meat (+28 %) and dairy products (+25 %). However, analysing the dynamics of income in current prices does not allow us to estimate real income. Therefore, we calculated the GDP deflator (based on 2017 GDP) and real income in 2017 prices by dividing the value of income in current prices by the corresponding GDP deflator. The result is slightly different dynamics (Figure 4b), which indicates a gradual decline in real incomes of rural households from agricultural activities, with a considerable increase of 48 % in constant prices in 2021, leveled off to 16 % in real prices. At the same time, the indicator describing the share of agricultural income in total rural household income shows somewhat similar dynamics to real income.

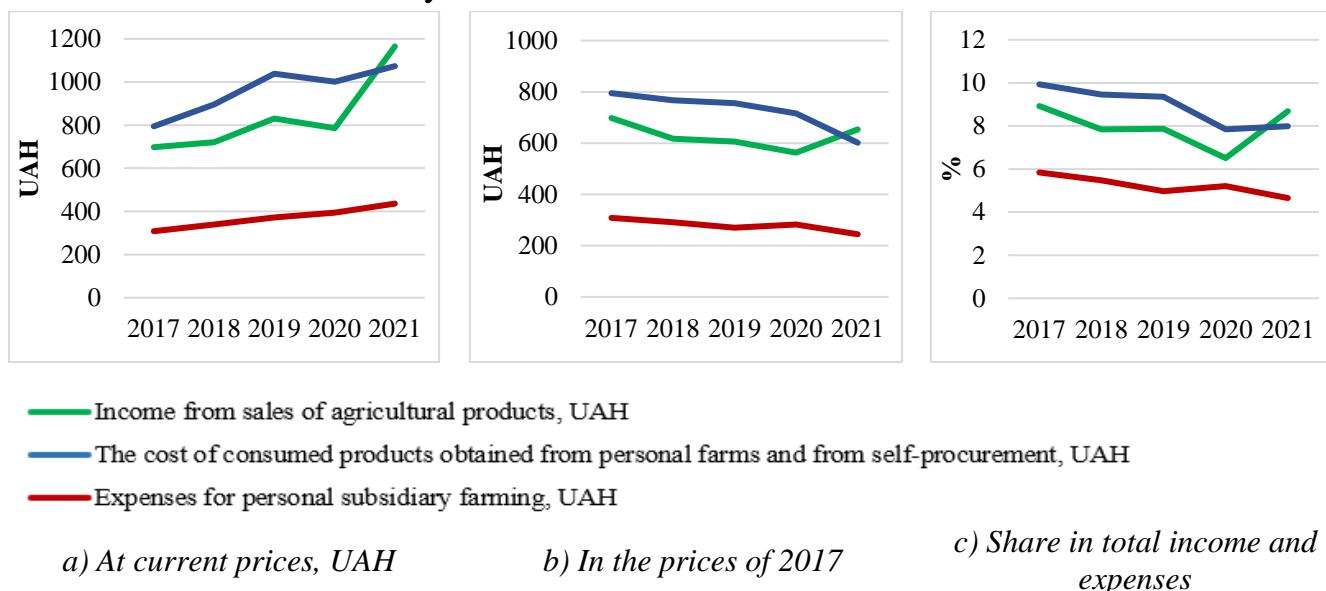


Figure 4. Average monthly incomes, expenses for economic activity and the cost of consumed agricultural products by rural households

Source: based on data from [14–17].

The cost of consumed products obtained from personal farms is another indicator that characterizes the outputs of agricultural activity carried out by rural households (Figure 4, blue line). First of all, it should be mentioned that in 2021, the value of consumed products from private households was less than the income of rural households from agricultural activities for the first time since Ukraine's independence. Such trends suggest a decrease in the role of personal subsidiary plots for rural households in food supply. The declining importance of personal subsidiary plots for agricultural households indicates that an increasing number of agricultural products are obtained through commercial activities rather than self-sufficiency. This could be the result of rising living standards, changes in consumer habits, and the development of market relations in agriculture. It is noteworthy that these trends do not imply that

private subsidiary plots will no longer be a source of food for rural people. Many families still grow part of their food themselves, and their contribution to total production remains significant.

The cost of operating personal subsidiary farms is the next indicator that characterizes the inputs needed by rural households to maintain their agricultural activity (Figure 4, red line). Overall, the analysis of this indicator shows a gradual increase in the cost of operating personal subsidiary farms over the reviewed period. In our opinion, this increase is primarily caused by the prices for goods and services growing faster than the overall inflation rate, for example, prices for fertilizers, seeds, fuel, and other necessities for operating personal subsidiary farms [17]. The fall in the share of total expenditures may indicate a decreasing role of personal subsidiary farms in the total expenditures of rural households. This could be the result of the growing importance of commercial agriculture or other sectors of the economy that generate income for rural households.

In general, the analysis of the trend in the development of agricultural activity carried out by rural households shows that in terms of agrarisation or deagrarisation, rural areas in Ukraine are heading for deagrarisation. This is because the share of households in crop and livestock production is decreasing, while income obtained by rural households from agricultural activities is going up. This suggests that rural households are less and less dependent on agriculture as a source of income and more and more rely on non-agricultural sources of income.

4.4. Analysis of transformation signs. Trends in rural development indicate that rural households are gradually stepping away from agricultural activities. This requires a closer examination of specific socioeconomic changes and characteristics occurring in these areas by analysing the signs of transformation of the primary actor in rural areas: rural households.

The first set of changes arising from the rural transformation was examined using indicators that characterize the change in the demographic composition of the rural population: the quantity (share) of pensioners, children, and people of working age (Figure 5). During the period of Ukraine's formation as an independent state and the transformation of socioeconomic relations, the number of people living in rural areas decreased by 25 % or 4.2 million people. This suggests that depopulation processes in rural areas have intensified. The largest reduction was in the 0–14 age group, falling by 39 % or 1.4 million, while in the composition of the rural population, this group decreased by four percentage points, which is reflected in the closing of some rural schools. As for schools in Ukraine, their total number fell by 7.0 thousand between 1991 and 2021, amounting to 14.9 thousand. The 21 % decline in the working-age population – 2.2 million people – was mostly caused by the migration of rural residents to urban areas and abroad, particularly after school. At the same time, the share of this population increased by four percentage points due to low birth rates. Also noteworthy is the number of people aged 65 and older, which decreased by 0.7 million people, or 24 %, while their share in the composition remained the same. Thus, the change in the demographic composition of rural areas as a sign of rural transformation is manifested

in the gradual depopulation of rural areas, a decline in the birth rate, increasing migration processes, and the likelihood (10–15 years) of significant aging of the rural population.

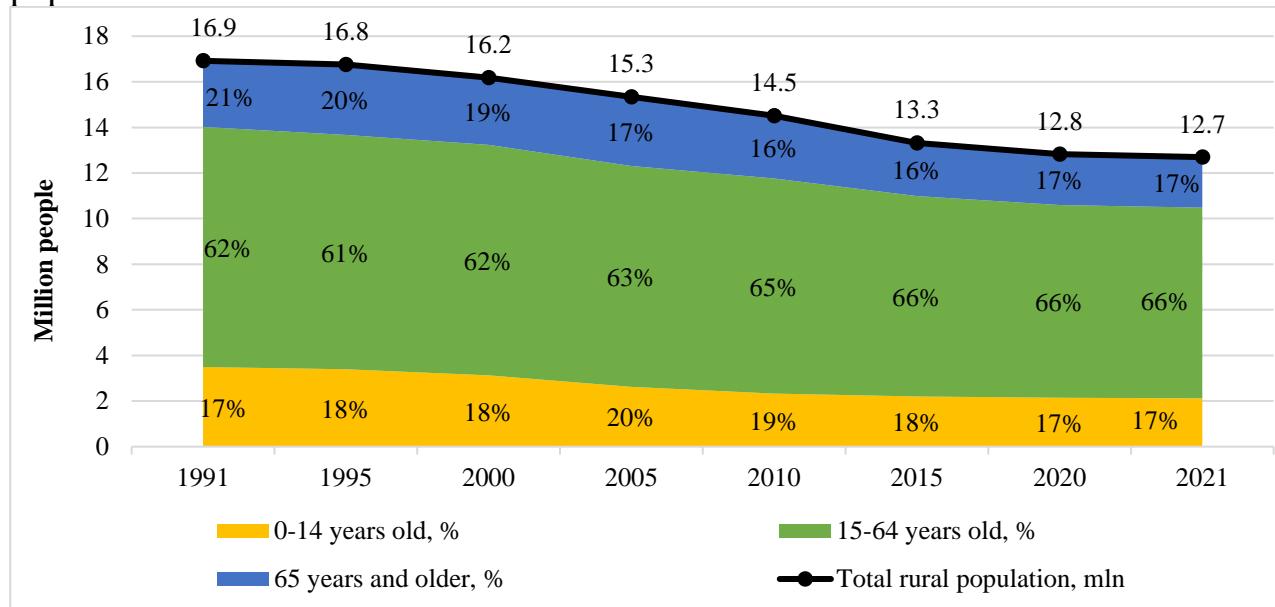


Figure 5. Number and composition of the permanent rural population by main age groups

Note. *Since 2014, not including temporary occupied territories.

Source: based on data from [14–17].

Another set of changes brought about by the transformation processes in rural areas is examined through indicators that characterize the change in agricultural land use by rural households and reflect the process of changing the way land is used. The indicators from this group include those that characterize the amount, area, and composition of agricultural land that rural households use, broken down into three categories: households with a land area of 0.5 hectares or less, 0.51–1.00 hectares, and 1.01 hectares or more (Figure 6).

After a thorough analysis of each household category by land area, the causes and characteristics of rural transformation were examined through the prism of agrarisation and deagrarisation. The decline in the number of households with a land area of up to 0.5 hectares can be linked to the migration of the rural population to urban areas and the low efficiency of small-scale production. The shrinkage of agricultural areas for these households indicates a deagrarisation process, as rural areas are losing their agricultural identity. For households with a land area from 0.51 to 1.00 hectares, similar trends in the number of households may be due to the same migration processes and the incapacity to maintain production on a limited area of land. Deagrarisation is also indicated by the decline in both the average and total area under this category. In contrast to small households, households with 1.01 hectares or more show an increase in number, which may indicate the consolidation of land resources into more efficient and larger households, reflecting the process of agrarisation. This may suggest a concentration of activities in large, productive households that could serve as prototypes for future farmers.

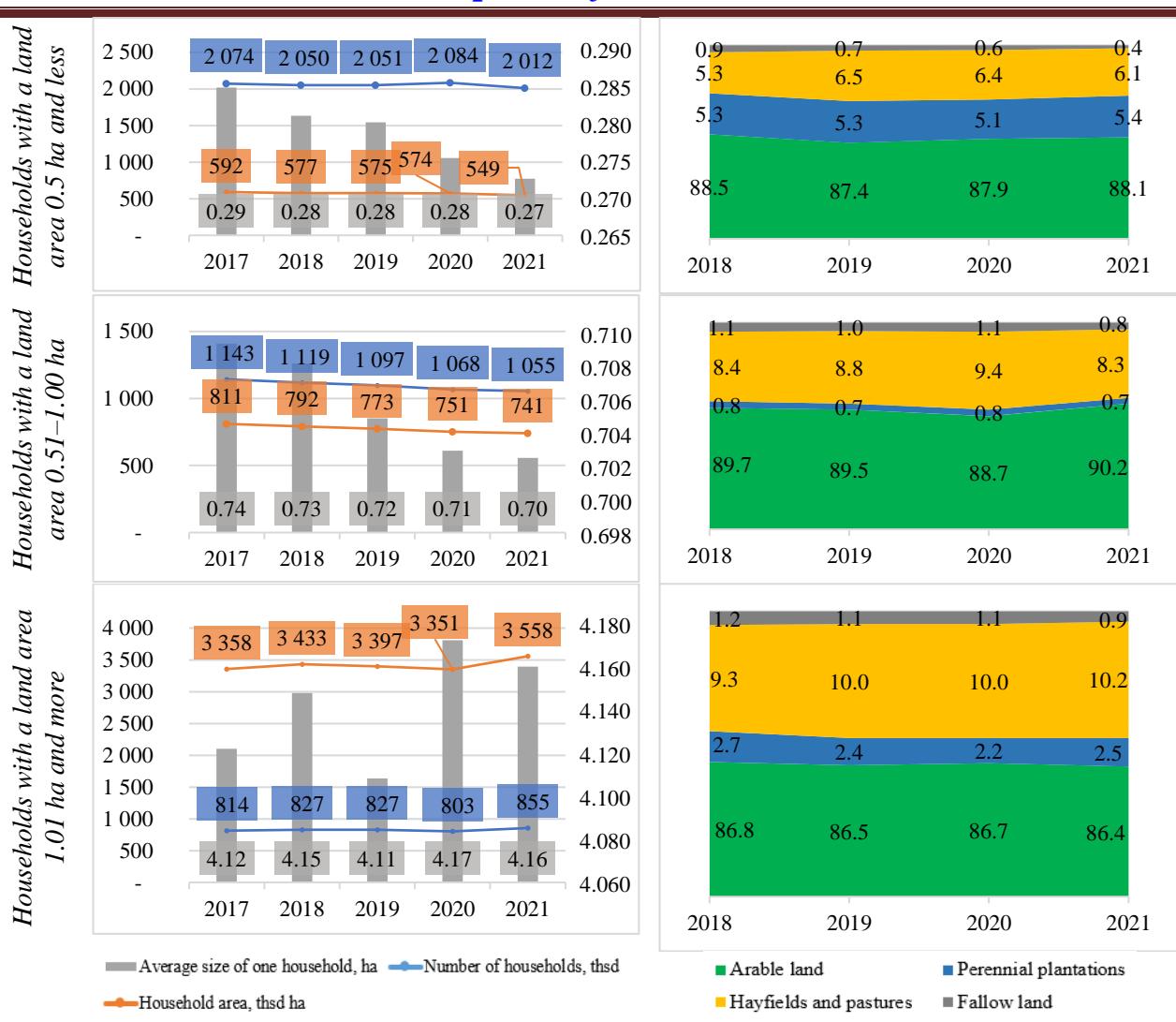


Figure 6. Amount, area and composition of agricultural land used by rural households

Source: based on data from [14–17].

The overall trend shows a decrease in the number of all categories of households, although with different reasons and manifestations of transformation: households with smaller plots are experiencing deagrarianisation, whereas those with larger plots are experiencing agrarianisation. It should be mentioned that one of the major causes for the fall in the number of small households and their production is the concentration of land in large agricultural enterprises that are being transformed into agricultural holdings. At the same time, the entry of transcontinental corporations seeking to maximize profits by specialising in export products plays a significant role. In the context of Ukraine, these processes have resulted in the specialised production of grains and sunflower with highly mechanised monoculture features.

The following changes, which are crucial when studying transformation processes in rural areas, reflect indicators that characterize crop production and the area where rural households harvest their crops (Figure 6).

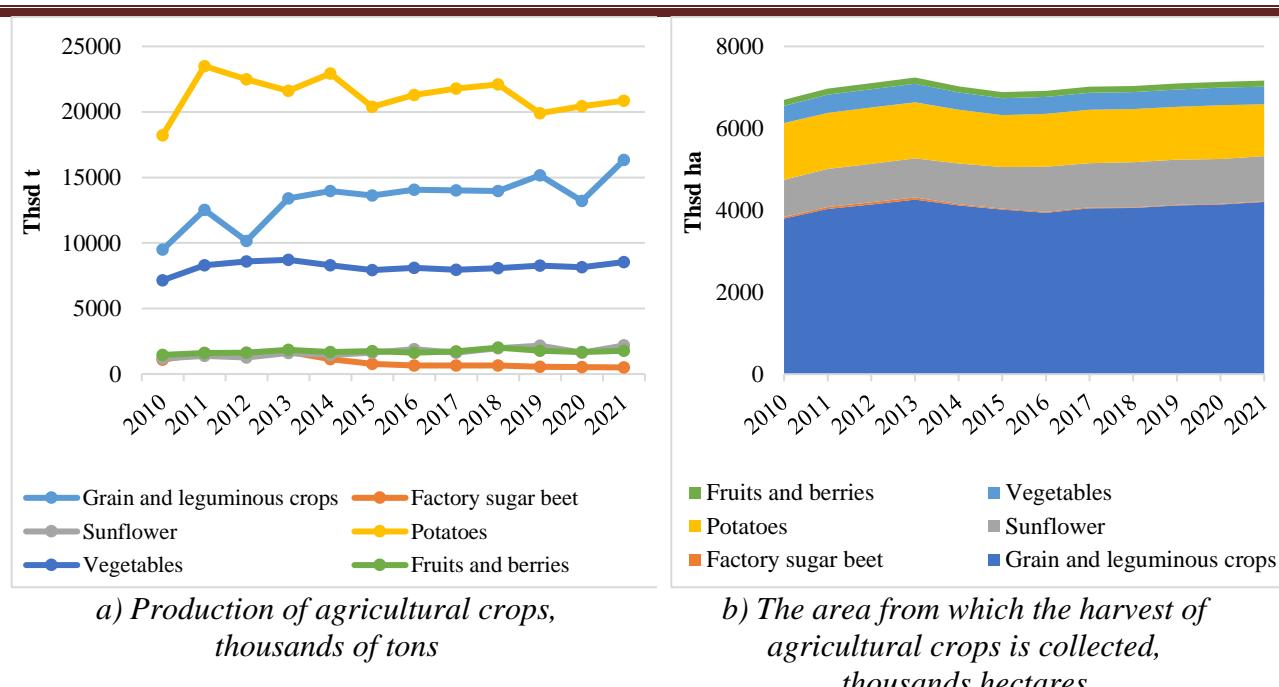


Figure 7. Cultivation of crops and areas harvested by rural households

Source: based on data from [14–17].

Grains and legumes, the primary products of agricultural households used as fodder for livestock and raw materials for the food industry, were grown in more than half of the area of rural households, and their production volume is gradually increasing. Potatoes are another crop that is very significant for rural households. Their volume and area have hardly changed over the past decade, indicating the importance of this crop for the rural population (rural residents consider potatoes as “alternative bread”). Sunflower is another crop that is economically significant for rural people. Its average yearly growth rate is 2 %, while the average gross harvest growth rate is 7 %. This gap reflects the advancements in cultivation technology and the rising demand for sunflower seeds as a raw material for oil and biofuel. There is stability in the area and amount of production under berry, fruit, and vegetable crops. The area and production of sugar beet showed a stable downward trend. In general, the analysis of the area and production of crops by agricultural households does not clearly indicate a clear direction of rural transformation in the context of agrarisation or deagrarisation. Different crops may have their peculiarities at the level of households of different sizes.

Taking into account the above, the indicators were examined and, in order to gain a deeper understanding of the pattern of crops planted by agricultural households at the level of three types of land use, data for each type were considered separately (Figure 8). For agricultural households with a land area of up to 0.5 hectares (Figure 8a), there has been an increase in the area under cereals, legumes, and potatoes in recent years. The areas under open-field vegetables and fodder crops have remained stable. In these households, potatoes also account for a significant share of the area, and their share has been increasing steadily. This pattern suggests that the primary function of agricultural activity is self-sufficiency in food. For agricultural households with a land area of 0.51 to 1.0 hectares (Figure 8b), the share of cereals and legumes

has remained stable in recent years, although the share of industrial crops has also changed slightly. The share of open-field potatoes and vegetables tends to decrease, while the area under fodder crops is increasing. This could indicate a certain movement towards agrarisation, as the decrease in the area under vegetables and potatoes could be the result of a change in the way land is used to cultivate commercial crops.

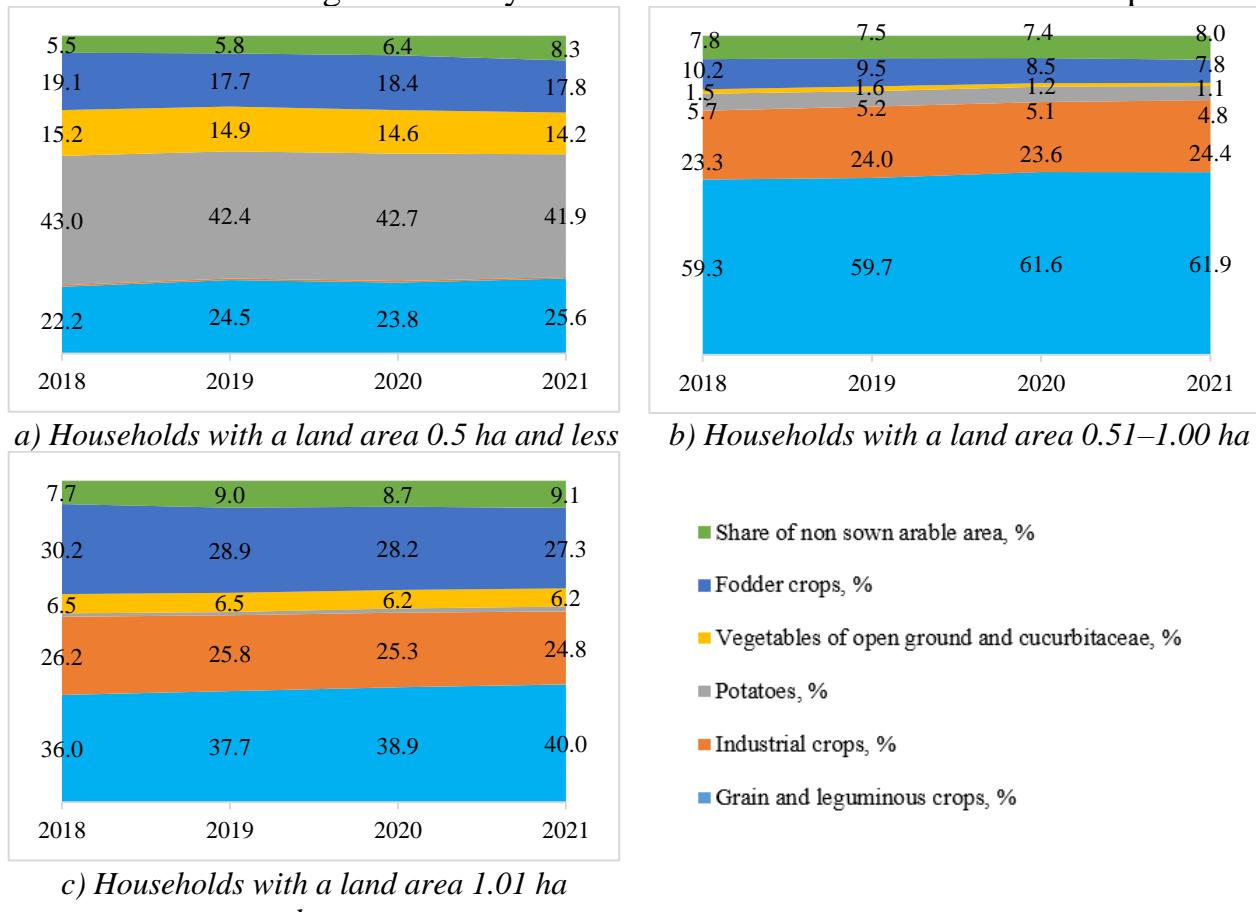


Figure 8. Pattern of the distribution of areas under crops depending on the rural household size

Source: based on data from [14–17].

For agricultural households with more than one hectare of land (Figure 8c), the share of grains and legumes has been rising slightly in recent years, whereas the share of industrial crops has remained stable. The area under potatoes and open-field vegetables has not changed much, but the area under fodder crops has increased noticeably. This may also indicate a certain agrarisation, as the expansion of the area under grain and fodder crops may be connected to commercial production and the supply of fodders for livestock. Overall, the data presented leads to the conclusion that there is a trend towards an increase in the area under grain and fodder crops and a decrease in the area under vegetables and potatoes. These changes may indicate a certain agrarisation in large rural households where land is used for growing industrial and fodder crops for livestock rather than food production for human consumption.

Subsequently, the study examined a set of changes in agricultural activity that occurs in rural households in the course of transformation towards agricultural

livestock development. Specifically, the number and share of farm animals, kept in rural households among all households was investigated (Figure 9). Cattle: over the past decade, there has been a general downward trend in the number of livestock in Ukrainian rural households. The share of cattle in the total number of farm animals has also decreased during this period, which may point to a deagrarianisation process and a shift towards other agricultural sectors. Dairy cows make up two-thirds of cattle; their number has dropped by over 50 %, suggesting a change in husbandry practices. Pigs: the number of pigs decreased by more than half, and the share of pigs in the total number of pigs in the sector reflects the high cost of fodder and volatile pork prices. Overall, the downward trend in the number of farm animals kept in rural households in Ukraine is observed for many groups of animals, which may indicate a deagrarianisation process and changes in the country's agriculture. However, certain groups, such as horses, sheep, and goats, continue to play a significant role in the agricultural sector.

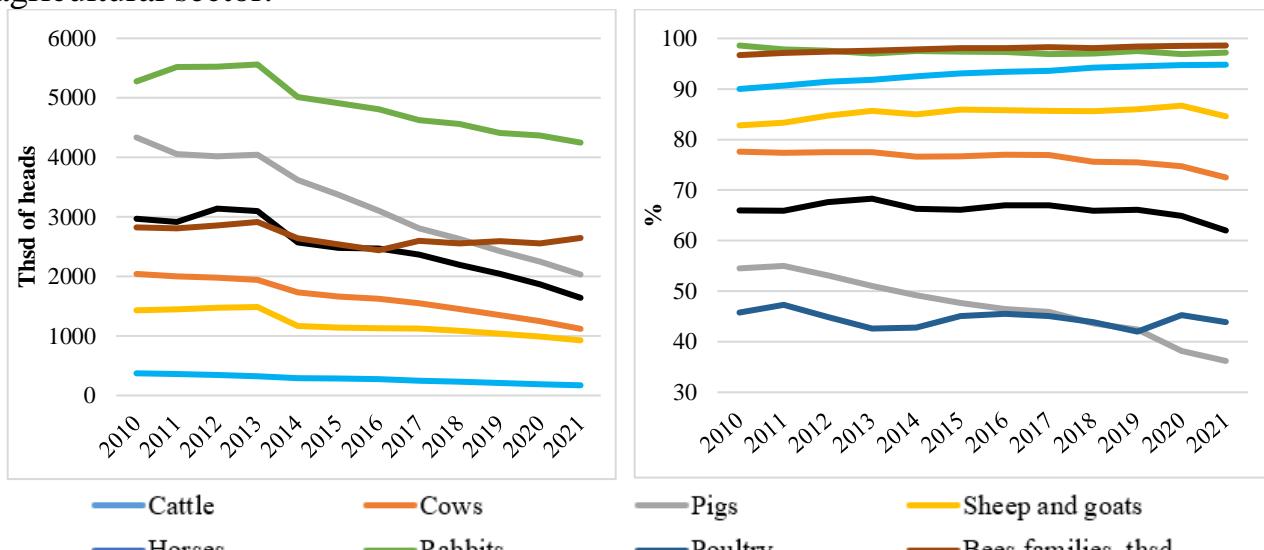


Figure 9. Number and share of farm animals in rural households in Ukraine

Source: based on data from [14–17].

An essential component of the analysis of the state of livestock development at the level of rural households is the examination of the sector's outputs, namely the volume of production and the share of livestock produce manufactured by rural households (Figure 10). Analysing the volume and composition of livestock production in Ukrainian rural households, the following observations can be made for each group of animals. In recent years, meat production in Ukrainian rural households has been generally decreasing. The reduction in the share of meat production by rural households indicates a change in animal husbandry practices or competition from other sources of meat supply. Milk production has also shown a downward trend in recent years. Rural households continuously produce a large amount of milk, but this percentage is declining, which may indicate the development of other industries like industrial and commercial dairy production. In most years, there is an increase in the

amount of eggs produced. The share of rural households producing eggs is also increasing, which may point to the growing popularity of poultry and support for egg production at the household level. The volume of honey production fluctuates over the years, but remains generally high. The share of honey production by rural households is almost 100 %, which indicates a significant contribution of households to honey production. Overall, the analysis shows that rural households in Ukraine are experiencing changes in the volume and structure of livestock production. Certain groups, such as meat and wool, show a declining trend, while other industries, like milk, eggs, and honey, remain important components of the agricultural sector with a high share of farm production.

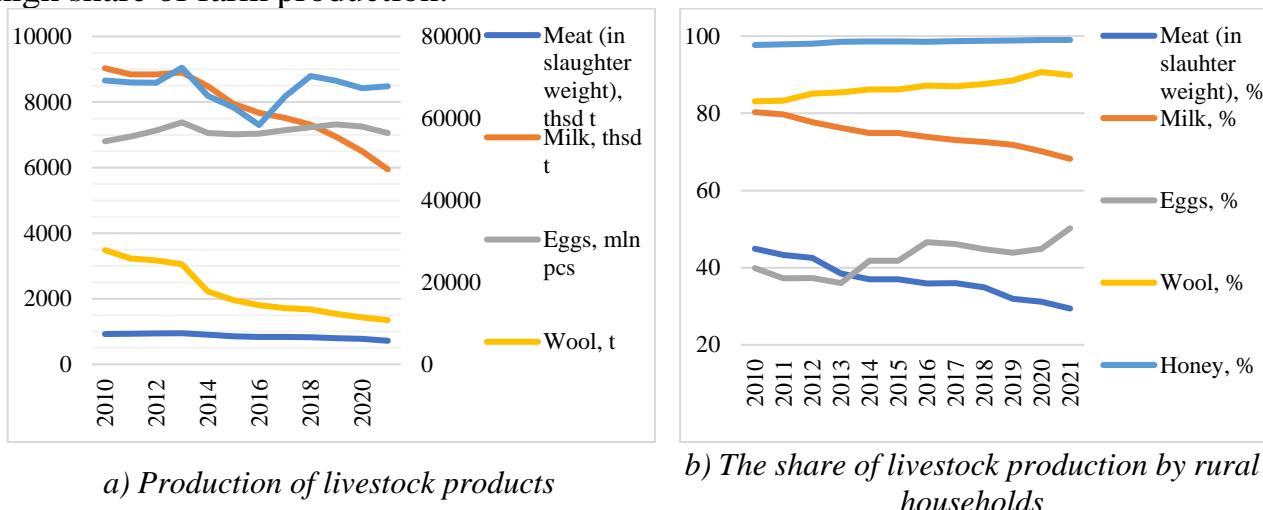


Figure 10. Volumes and structure of livestock production in Ukraine's rural households

Source: based on data from [14–17].

Analysing the share of households that keep livestock and the share of livestock kept in rural households based on the size of household land area, the following observations can be made for each group of animals (Figure 11). In recent years, there has been a general downward trend in the share of rural households keeping cattle and cows. At the same time, in rural households with up to 0.5 and 0.5–1.0 hectares, the share of farm animals kept by households is nearly stable and has been slightly declining over several years. In contrast, households with more than one hectare show two very significant trends: 1) the share of cattle and cows does not coincide (unlike the other two groups), indicating that most beef is produced by these households; 2) there are notable fluctuations in the share of cattle and cows, which indicates that producers in this group adjust to the market price, i.e. households with a size of more than one hectare are fully market-oriented in keeping cattle. A similar trend is observed when analysing the features of pig keeping by rural households.

Therefore, a common feature for all households is a decrease in the share of rural households that keep livestock, while the size of land under cultivation allows for maneuvering with the quantity of such animals, i.e. households with more land have more space to expand and develop agricultural activities, including livestock husbandry. At the same time, households with less land have limited opportunities to

keep animals due to a lack of space for growing fodder. In general, the following conclusions concerning the agrarisation and deagrarisation processes in agriculture can be made by analysing data on livestock keeping in households by land area. Relatively larger households with an area of 1.01 hectares or more have a stable, albeit decreasing, share of livestock, which may be a sign of agrarisation processes and the development of industrial or specialised small (family) farms that specialize in livestock production. At the same time, deagrarisation is observed in smaller farms whose limited land area forces them to curtail their activities.

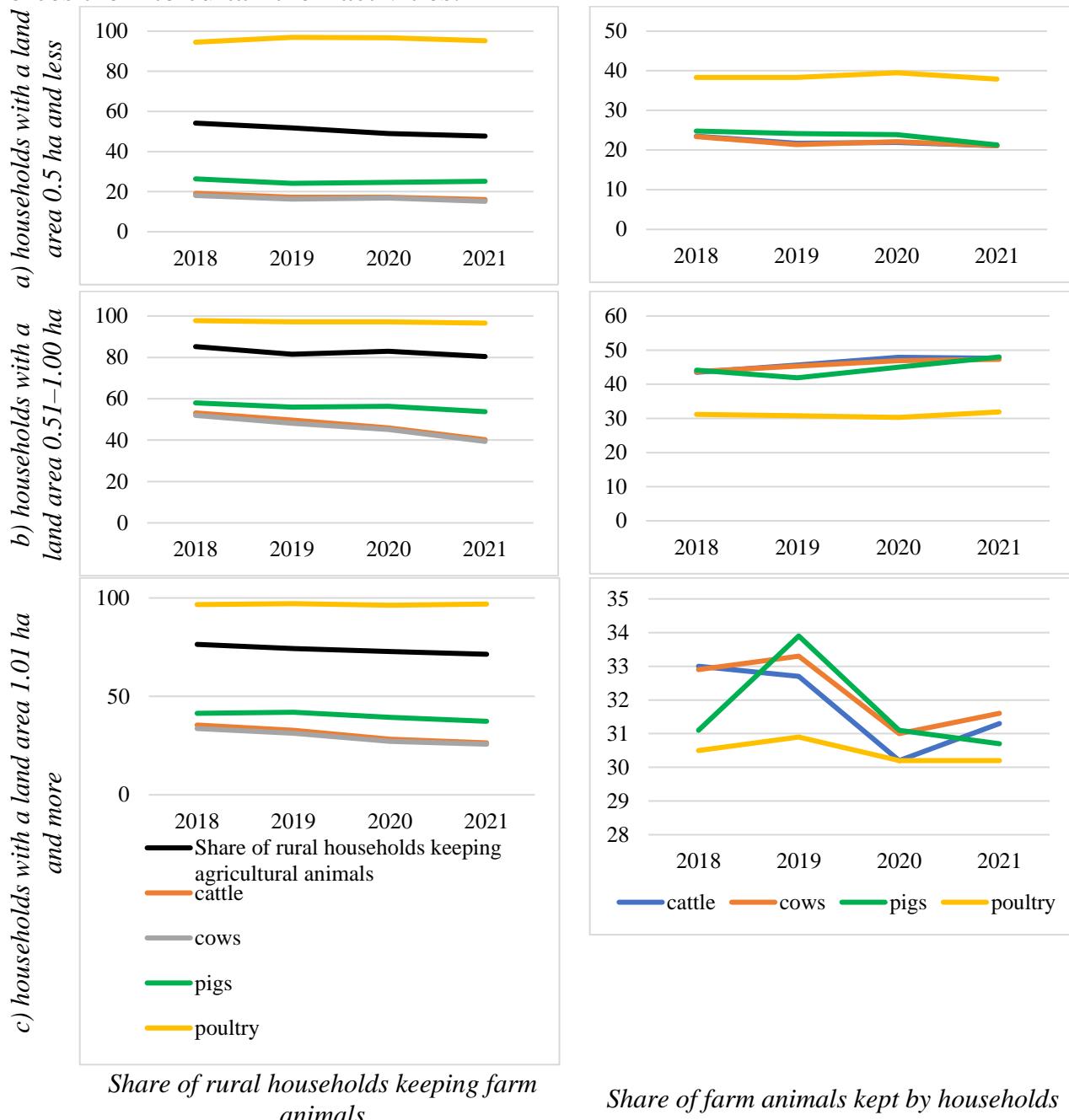


Figure 11. Share of rural households that keep farm animals and their distribution among different types of households (by size of land area of household)

Source: based on data from [19–22].

The advancement of the technological component of agricultural production is a significant sign of the transformation of rural areas. The overall share of rural households owning machinery was gradually decreasing from 2018 (22.6 %) to 2021 (19.9 %). At the same time, the share of households owning a plow, a seeder, a harrow, a cultivator, and a combine harvester also shows a downward trend during this period (Figure 12).

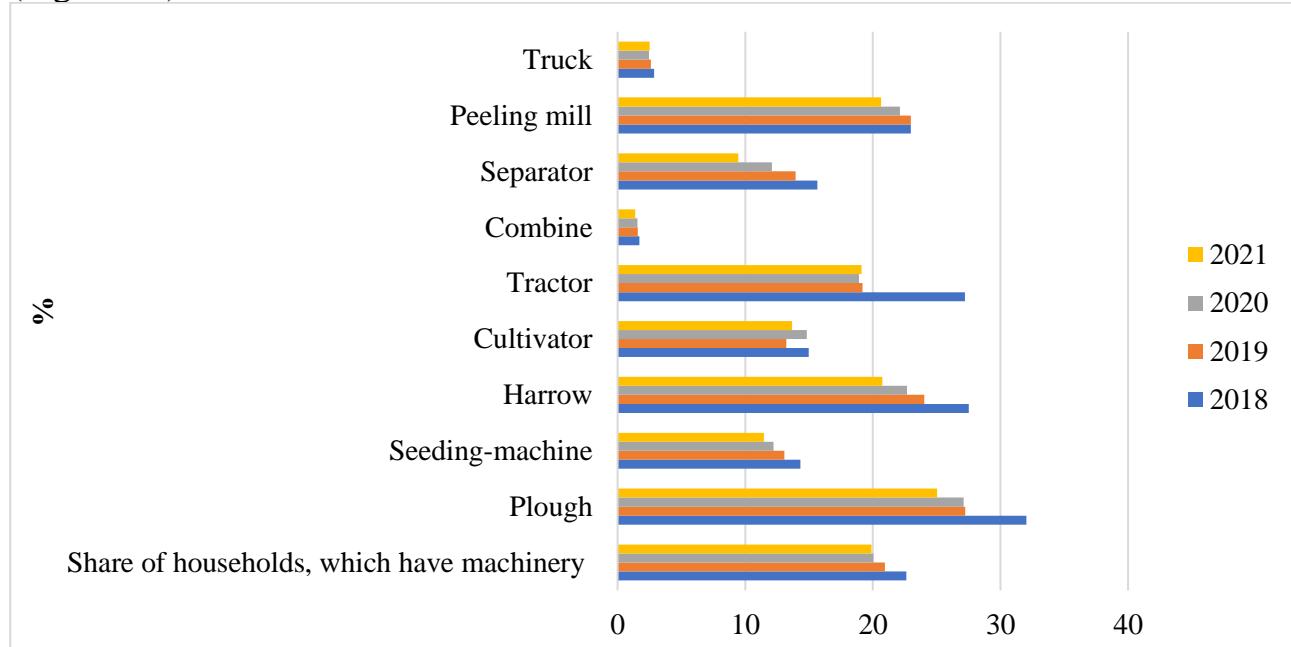


Figure 12. Share of rural households that own agricultural machinery and other equipment

Source: based on data from [19–22].

We believe that the decrease in the share of households owning machinery may indicate the process of deagrarianisation, as fewer and fewer households can afford to keep a full set of agricultural machinery. However, it should be borne in mind that agrarianisation can be manifested in the modernity and productivity of the machinery, not only in its ownership. Some farms replace outdated machinery with more productive and efficient models, which is not necessarily reflected in the overall share. Based on the data provided, we can conclude that there is a decline in the share of households, which own machinery, which may indicate a deagrarianisation process. However, for a more accurate assessment of the situation, other factors, such as the productivity of machinery and the availability of modern agricultural technologies, should be investigated.

It should be highlighted that although the cooperative movement in Ukraine has not become widespread, it cannot be said that it has not taken root at all. The limited growth of agricultural cooperatives was due to shortcomings in the legislative framework, in particular, the Law of Ukraine “On Agricultural Cooperation”, which distorts cooperative principles by commercialising relationships between the cooperative and its members and treats cooperative payments as profits, etc. In addition, the absence of state support and development programs that would be in line with foreign experience also hinders cooperation in the agricultural sector. However,

large agricultural households are efficient not only in cultivating their own land, but are also starting to specialize in servicing other people's land, including combining, tillage, and haymaking, which is turning into an additional source of income. This, in turn, can contribute to the emergence of certain forms of informal cooperation because such specialisation and interaction allow for optimal use of technical resources and may potentially lead to more structured and organised cooperative relations in the future.

5. DISCUSSION

This paper analyses the trends in the development of agricultural activities carried out by rural households and highlights the key signs of their transformation. The analysis of the main trends suggests that the "Soviet village" era has come to an end. Rural areas are currently at the transformation stage and are searching for new directions for their further existence, which is evidenced by the following facts: 1) a stable, gradual decline in the role of rural households in agricultural production and, accordingly, in ensuring the food security of the state; 2) real incomes received by rural households from the sale of agricultural products have a stable downward trend, and the share of such incomes over the past five years has not accounted for more than 10 % of total rural household incomes; 3) the cost of consumed products obtained from personal farms is gradually decreasing and also does not exceed 10 % of total rural household income [19–25].

The above trends indicate that rural households are gradually reducing their involvement in agricultural activity. However, against the background of these general trends, one group of rural households with a land area of more than one hectare stands out. These households are distinguished by the structure of crops under cultivation: grains and legumes occupy more than half of the land, while industrial crops, primarily sunflower, account for one-fourth of the land. At the same time, interviews with the heads of such households showed the following:

1) There is a gradual expansion of such households because they terminate land leases for their land shares and unofficially lease (without concluding a lease agreement) land plots of other households.

2) All these households have their own machinery (in most cases, Chinese mini tractors with appropriate equipment), with which they cultivate their land and provide paid services (or as payment for land lease) to other households for agricultural operations.

3) These households learn to adapt to market conditions by increasing or decreasing the number of cattle, pigs, and broiler poultry.

4) These households try out new types of agricultural activities: growing and selling fruits, vegetables, or seedlings of peppers, tomatoes, cabbage, flowers, etc.

5) Most of the interviewed heads of such households are descendants of the dekulakised (robbed and destroyed) wealthy peasant farmers in the 1930s, which, in our opinion, is the genetic memory of Ukrainian landowners.

The data analysis indicates a deagrarianisation trend for rural households with an

area of up to 0.5 hectares and between 0.5 and 1 hectare. Such households account for 78 % of their total number. At the same time, the opposite process of agrarisation is observed for households with an area of more than 1.01 hectares, which is 22 % of all rural households. In this regard, creating favorable conditions for the development of the latter is a strategic task for Ukraine, and it requires the following measures:

1) Establishing a legislative definition of households as farms that use more than one hectare, giving them the status of agricultural entities and being eligible for state support.

2) Launching credit programs to increase land use, purchase machinery, and other means of production provided through cooperative banks and special state funds, like those in the EU, the USA, India, China, etc.

3) Encourage small households to create marketing and other agricultural cooperatives through amendments to the current cooperative legislation and the integration of EU regulations and European Commission resolutions.

4) State assistance in creating a network of wholesale markets to facilitate the effective sale of products from households with a land use of more than one hectare, similar to the systems existing in the European Union.

These steps will help ensure the economic development of rural areas, and also help preserve their social and cultural potential. If these steps are not taken, this may result in the gradual deagrarisation of landowners with land areas of one hectare or more, which will have negative economic, social, and environmental consequences.

6. CONCLUSIONS

In light of current socioeconomic changes and global transformations of the agricultural sector in rural areas, the issue of agrarisation and deagrarisation is becoming fundamental for agricultural development and regional sustainability. The study of the strategic vectors of rural development in Ukraine through the prism of agrarisation and deagrarisation has revealed the deep dynamics of these processes, which requires attention and targeted actions from government and research organisations.

Based on the findings, it can be argued that deagrarisation is becoming an important challenge for contemporary rural areas in Ukraine. Households with smaller land areas tend to switch to non-agricultural activities, which may be detrimental to the agricultural sector and food security. At the same time, households with more land demonstrate active agricultural development, diversifying their activities and introducing new agricultural technologies. This development vector indicated economic maturity and reflects the genetic memory of Ukrainian landowners.

It was found that effective rural development requires the government to create a favorable environment to support households with land plots larger than 1.01 hectares. This includes providing access to cutting-edge agricultural technologies, financial support, and infrastructure development. Furthermore, it is crucial to focus on the integration of innovative approaches, such as cooperatives and agricultural tourism, which can help preserve resources and open up new opportunities for rural

development.

Prospects for further research include broadening the scope of the analysis to encompass other aspects of agrarisation and deagrarisation, such as examining the impact of these processes on the ecological condition of the territories and the residents' quality of life, as well as delving more deeply into the role of institutional factors in shaping the strategic choices of economic entities. In addition, it is essential to consider the experience of other countries in agricultural development and how it can be adapted to Ukrainian conditions.

7. LIMITATIONS AND FUTURE RESEARCH

Although this study provides a comprehensive picture of the transformational changes in agricultural households of different land sizes in Ukraine, with an emphasis on their adaptation to market conditions, adoption of new technologies, and farming practices, there are some limitations.

The study does not analyse the broader economic effect of agrarisation and deagrarisation processes, such as their impact on national GDP, employment trends, and rural-urban migration patterns. Although the study touches upon cultural and social potential of rural regions, a more thorough examination of the cultural heritage, traditional farming methods, and social structures in these areas could provide a deeper understanding of the transformations taking place. The research offers recommendations for the Ukrainian government, but does not delve deeply into existing policies and institutional frameworks that could facilitate or hinder the proposed rural development strategies. This study might have benefited from a comparative analysis with other countries that have experienced agrarisation or deagrarisation processes, as it would have given a broader perspective and potentially valuable lessons for Ukraine.

These limitations highlight areas for potential future research that could enhance our understanding of the complex dynamics that shape rural development in the context of agrarisation or deagrarisation.

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