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Employment of the rural population in Ukraine: Qualitative and quantitative dimensions

Yurii Lupenko
Doctor of Economics, Professor, Academician of the National Academy of Agrarian Sciences of Ukraine
National Scientific Centre "Institute of Agrarian Economics"
03127, 10 Heroiv Oborony Str., Kyiv, Ukraine
https://orcid.org/0000-0001-6846-0300
Nataliia Patyka*
Doctor of Economics, Professor
National Scientific Centre "Institute of Agrarian Economics"
03127, 10 Heroiv Oborony Str., Kyiv, Ukraine
https://orcid.org/0000-0003-0062-7631

▸ **Abstract.** The rural labour market in Ukraine has undergone significant transformations due to shifts in the role and format of the agricultural sector's impact on rural development, the administrative-territorial reform and decentralisation processes, and the full-scale aggression by the Russian Federation. The objective of this study was to assess the impact of key factors on rural employment in Ukraine and to identify principal directions for increasing its level. The research was grounded in a systems approach. Analytical tools included comparative analysis, averages and relative values method, graphical analysis, trend analysis, index analysis, correlation-regression analysis (multifactor model), etc. Employment trends among the rural population in Ukraine from 2000 to 2023 were examined. It was found that since 2013, the employment rate among the working-age rural population has exhibited a downward trend. The study identified key issues and specific characteristics of rural employment under current conditions. An econometric model of rural employment among the working-age population was developed, revealing its direct dependence on real gross domestic product, the number of unemployed persons undergoing vocational training, and wage levels. A negative influence on rural employment was found to be exerted by increased investment volumes and the number of enterprises, attributed to higher technological intensity, the emergence of new employment forms, consolidation and restructuring of employment, and ongoing military actions. The article outlined priority measures for enhancing rural employment. The key findings, quantitative assessments, proposals, and conclusions might be utilised by public authorities in revising existing policies and developing new strategic programmes on rural employment, considering current challenges, internal risks, and the protracted Russian-Ukrainian war

▸ **Keywords:** rural labour market; influencing factors; econometric modelling; challenges; priorities

▸ Introduction

Assessing the specifics of rural development in Ukraine from 2000 to 2024 reveals a range of pressing economic, social, and demographic challenges. These are largely the result of systemic neglect of rural living and working conditions at the national, regional, and local governance levels, compounded in recent years by the impact of ongoing military hostilities. Given that rural areas form the foundation of the country's agro-industrial complex and their residents represent the core of Ukrainian identity, there is every reason to assert that these issues pose a threat not only to rural territories themselves but also to the country's overall socio-economic development and economic security. One of the most critical issues in Ukraine's rural areas, directly affecting the well-being and quality of life of the rural population, is the persistently low employment rate and growing unemployment.

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*Corresponding author

Between 2014 and 2023, nearly half of rural residents were either unemployed or engaged in the informal sector. This underscores the urgency of research aimed at assessing the state of rural employment, identifying its key drivers, evaluating their impact, and developing solutions (State Statistics Service of Ukraine, n.d.).

According to V. Kostrytsia & T. Burlay (2020), the main drivers of imbalances in Ukraine's labour market include globalisation, digitalisation, demographic shifts, and migration. In the context of European integration and the need to mitigate negative labour market trends, they emphasise the importance of adopting new labour legislation aligned with employee interests and fostering balanced labour relations. They also highlight the need for comprehensive programmes to preserve existing jobs, create new employment opportunities, strengthen the institutional capacity of the state employment service, and improve the national wage system.

Although, as noted by M. Dziamulych & S. Maksymiak (2023), economic activity among the rural population remains relatively high, it is primarily concentrated in personal subsistence farming and seasonal work abroad. These researchers therefore argue for prioritising the development of comprehensive support programmes for entrepreneurship in the agricultural sector to ensure formal employment for rural residents. Similarly, O. Borodina *et al.* (2025) stress the importance of formalising rural employment as a key factor in rural development. They propose distinguishing between the terms, "farmer" and "active farmer", introducing their legal definitions, and implementing them in practice.

In their study, N. Patyka & O. Mohylnyi (2023) highlight the mismatch between the education and acquired competencies of rural residents and the demands of enterprises in the agricultural sector of the economy. This highlights the need for transformation within the vocational agricultural education system. Another problematic aspect of rural employment is identified by S. Kalinina & S. Lanska (2019), who underline the limited availability of non-agricultural employment opportunities in rural areas. They attribute this largely to systemic deficiencies in training specialists for the agricultural sector. According to O. Ubi Ubi & O.R. Bernard (2024), a significant cause of rural unemployment is insufficient or inefficient funding for rural development, coupled with corruption in the distribution of public financial resources.

Despite a growing body of academic research, further in-depth studies are required to identify and quantify the factors affecting rural employment in Ukraine. A thorough analysis of these factors and an assessment of their impact are particularly relevant, as this is essential for the development of effective state policies aimed at increasing rural employment in the country. Accordingly, the purpose of this study was to identify the factors influencing the level of rural employment in Ukraine, quantify the influence of selected variables, and propose measures to enhance employment levels. To achieve the stated purpose, the following tasks were set: to monitor rural employment in Ukraine and identify the factors influencing its level; to quantitatively assess the impact of selected factors on the level of rural employment; and to substantiate priority directions for increasing rural employment.

▸ Materials and methods

The study employed the dialectical method of scientific inquiry along with general scientific and specific research methods. In particular, economic and statistical methods (comparative analysis, mean and relative values, trend analysis, graphical method, index analysis, etc.) were applied in analytical studies to assess the status, trends, and characteristic features of rural employment. System analysis was used to identify the factors influencing rural employment. Using techniques of the abstract-logical method and the method of generalisation, conclusions were formulated, and priority directions for ensuring rural employment were determined. Economic and mathematical modelling of rural employment levels was conducted using the least squares method to construct a regression equation over the entire time interval of the collected relevant data. The study utilised official statistical data from the State Statistics Service of Ukraine (n.d.), the State Employment Service (n.d.) from 2000 to 2023, the World Economic Forum (n.d.), the World Bank Group (n.d.), and the authors' calculations.

The collection of statistical information and database formation included the following indicators: employment rate of the rural population, including by age groups; employment structure by types of economic activity; number of working-age rural residents; real GDP; volume of investment in agriculture; number of people employed in agriculture; number of hired workers in agriculture; number of formerly unemployed rural residents who found employment; number of unemployed rural residents who received vocational training; number of agricultural enterprises; average monthly wage of the rural population; demand for agricultural workers; number of registered unemployed among rural residents; volume of agricultural production; structure of agricultural output; inflation rate; volume of foreign trade; and other macroeconomic factors. In total, the influence of 27 indicators was analysed.

To account for the influence of institutional factors, government policy in the rural labour market, and the behaviour of labour market participants, both in terms of labour supply and demand, the Labour Market Efficiency Index was included in the calculations. This index is assessed by the World Economic Forum (n.d.) for ranking countries within the Global Competitiveness Index, which has been calculated since 1979. The index incorporates several indicators, including cooperation in labour-employer relations, wage flexibility, hiring and firing practices, the effect of taxation on work incentives, female participation in the labour force, and employment rigidity. At the initial stage, correlation-regression analysis was used to identify relationships between individual factors. For further research and model construction, only statistically significant influencing factors were used. Modelling was carried out using the EViews econometric software package.

▸ Results and discussion

Economic science encompasses numerous employment theories that address the factors influencing employment. These range from classical approaches (neoclassical, neoliberal, rational expectations theory), which advocate for full employment and minimal government intervention in the market processes; to Keynesian doctrines (neo-Keynesian, economic growth theory, business cycle

theory), whose proponents consider unemployment a natural market phenomenon and argue for the state's regulatory role under specific conditions such as economic crises; to modern concepts that view employment as a means to generate and grow income for investment in human capital, as a prerequisite for improving the quality of human capital (human capital theory), as a condition for redistributing the benefits of economic growth among population groups (basic needs concept), or as a means to realise human potential (human development concept).

Given the current state of Ukraine's economy and its rural areas, in particular, it is not feasible to rely solely on a single employment theory when studying rural employment. Such analysis must be grounded in a synthesis of various theories, including Keynesian theory, economic growth theory, and the human development concept. Summarising the results of the analysis of modern theoretical foundations for studying rural employment and the mechanisms for its support, it becomes evident that this issue is not limited to the economic dimension alone. It also requires examining the current institutional framework for rural employment in Ukraine and the broader socio-economic development of rural areas. This will eventually enable the formulation of a market-relevant organisational and economic mechanism to support rural employment in Ukraine, define its structural components, and outline the priorities for its implementation.

As stated in Article 43, Chapter 2 of the Constitution of Ukraine: "Everyone shall have the right to work, including the opportunity to earn a living by work which he or she freely chooses or to which he or she freely agrees." To this end, "the state shall create conditions for the full realisation by citizens of the right to work, guarantee equal opportunities in the choice of profession and type of labour activity, and implement vocational training, education, and retraining programmes under societal needs" (Constitution of Ukraine, 1996). However, the reality tells a different story. According to employment monitoring of the working-age rural population in 2021 (based on official data from the State Statistics Service of Ukraine (n.d.)), the employment rate for this age group dropped by 9.9 percentage points to 53.6% compared to 2013, which recorded the highest level of 63.5% during 2000-2021. The assessment of rural employment levels during the wartime years of 2022-2023 showed a continued downward trend, reaching 50.2% in 2023 (Fig. 1). This means that only slightly more than half of the working-age rural population is employed. This situation in the rural labour market has been driven by numerous destructive factors: socio-demographic, economic, institutional, political, and individual (Patyka *et al.*, 2021). In 2022-2024, additional factors emerged as a result of the full-scale Russian aggression against the Ukrainian people. The summarised current issues of rural employment are visualised in Figure 2.

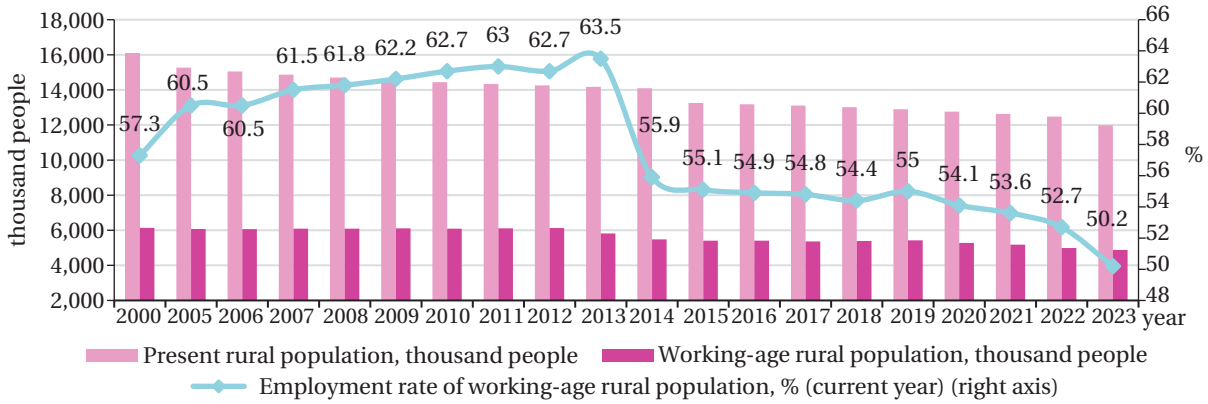

Figure 1. Employment of the rural working-age population
Notes: 2022-2023 – authors' estimates
Source: compiled by the authors based on data from the State Statistics Service of Ukraine (n.d.)

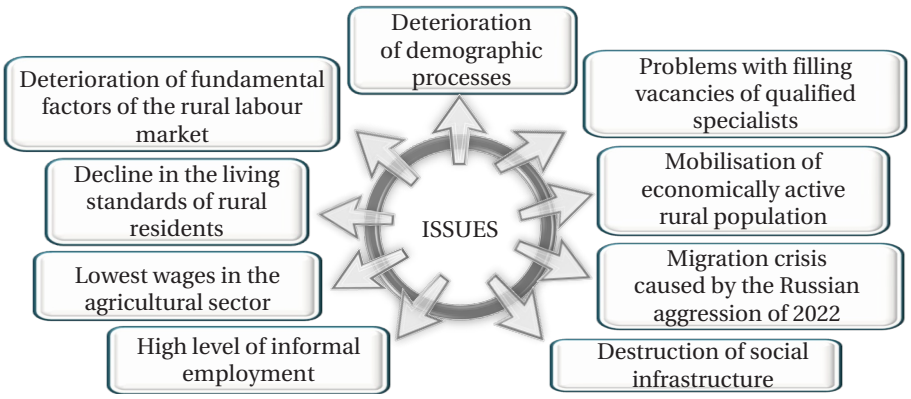

Figure 2. Issues of rural employment in Ukraine
Source: compiled by the authors based on the results of their own research

It is worth noting that the employment rate of the rural population continues to decline even amid a reduction in the working-age population residing in rural areas – and at an even faster pace. Specifically, between 2000 and 2021, the number of employed individuals aged from 15 to 70 decreased by 24.8%, from 6.429 million in 2000 to 4.835 million in 2021. At the same time, the total rural population within this age group declined by 19.2%, from 11.216 to 9.062 million respectively. The highest employment rate is recorded among the rural population aged 35-49, exceeding 72%, and slightly lower, around 70%, among those aged 30-34. However, among the seven age groups analysed, only one group (50-59 years) saw an increase in employment: by 5.2 percentage points during 2000-2021. The most vulnerable to job loss were rural residents aged 25-29 (-11.7 p.p.), 60-70 (-10.3 p.p.), 40-49 (-8.5 p.p.), and 35-39 (-8.3 p.p.) years (Table 1). It should also be noted that a distinctive feature of rural areas is that fewer than 70% of all employed individuals are officially registered employees (Table 2). This reflects a high level of informal employment.

Table 1. Employment rate of the rural population aged from 15 to 70 by age group

Year	Age group (years)						
	15-24	25-29	30-34	35-39	40-49	50-59	60-70
2000	36.8	74.8	77.8	81	81.0	60.3	24.7
2005	41.1	71.9	75.9	78.2	78.6	64.8	35.9
2010	42.3	70.9	74.3	77.0	79.5	67.2	41.3
2015	32.3	65.3	67.6	74.7	74.8	60.0	17.3
2016	31.8	65.4	67.5	73.5	74.6	60.0	17.2
2017	31.6	65.3	68.9	72.2	73.9	59.5	16.2
2018	31.6	67.9	70.8	71.9	74.8	61.6	14.2
2019	33.7	68.6	71.1	73.4	75.0	64.6	14.8
2020	28.6	65.6	70.1	70.7	72.6	65.0	14.2
2021	28.7	63.1	69.6	72.7	72.5	65.5	14.4
2021 compared to 2000, p.p.	-8.1	-11.7	-8.2	-8.3	-8.5	5.2	-10.3

Source: compiled by the authors based on data from the State Statistics Service of Ukraine (n.d.)

Table 2. Number of employed persons aged from 15 to 70 in rural areas by employment status

Indicator	2000	2005	2010	2015	2020	2021	2021 compared to 2000
Rural areas, thousand people	6,255.5	6,586.1	6,474.2	5,134.2	4,931.6	4,835.5	77.3%
Including by employment status, as % of total							
employees (paid workers)	78.1	56.5	58.7	68.4	69.5	69.8	-8.3 p.p.
employers	0.2	0.4	0.5	0.9	1.0	1.0	0.8 p.p.
self-employed	18.3	42.0	39.9	30.1	28.9	28.7	10.4 p.p.
unpaid family workers	3.4	1.1	0.9	0.6	0.6	0.5	-2.9 p.p.

Source: calculated by the authors based on data from the State Statistics Service of Ukraine (n.d.)

These indicators reflect the difficult situation in the rural labour market and the significant deterioration of the fundamental factors influencing its functioning, particularly the excess supply of labour compared to employer demand. Data presented in Table 3 show a substantial reduction in the number of agricultural enterprises and individual entrepreneurs over the period from 2010 to 2022.

Table 3. Number of active enterprises and individual entrepreneurs in agriculture by size

Indicator	Year					2022 compared to 2010, %
	2010	2015	2020	2021	2022	
Large business entities (enterprises)	13	29	36	49	39	300.0
Medium-sized business entities, total	3,445	2,535	2,137	2,095	1,687	49.0
including						
enterprises	3,440	2,533	2,134	2,091	1,683	48.9
individual entrepreneurs	5	2	3	4	4	80.0
Small-sized business entities, total	76,863	76,720	71,195	68,659	51,555	67.1
including						
enterprises	47,213	44,182	47,282	45,613	31,122	65.9
individual entrepreneurs	29,650	32,538	23,913	23,046	20,433	68.9
Of which micro-enterprises, total	72,421	71,649	65,753	63,051	46,622	64.4
including						
enterprises	42,972	39,237	42,042	40,185	26,338	61.3
individual entrepreneurs	29,449	32,412	23,711	22,866	20,284	68.9

Source: calculated by the authors based on data from the State Statistics Service of Ukraine (n.d.)

Only the number of large agricultural producers has increased significantly (threefold). However, large enterprises are vertically integrated and generally do not engage the local rural population in work, nor do they create job opportunities in the local rural labour market. In contrast, the number of medium-sized enterprises decreased by 51%, small enterprises by 32.9%, and micro-enterprises by 35.6%. The reduction in the number of agricultural enterprises, due to various factors both objective and subjective, leads to the elimination or reduction of jobs, and consequently, to a decline in rural employment (Table 4). Despite certain changes in the structure of rural employment by types of economic activity, agriculture continues to hold a leading position among them (Fig. 3). It is logical to assume that even minor changes in the sectoral structure of the agricultural sphere, production volumes in agriculture, the number of economic entities, and their demand for workers will lead to changes in rural employment. For example, there has been an unprecedented increase in the share of crop production in agricultural production and export. In total agricultural production volumes, crop production accounted for 78.2% in 2022 (compared to 51.5% in 1990), while the share of livestock production decreased by 26.7 percentage points over this period. In 2022, over 77% of those employed in agriculture worked in crop production, 11% in livestock farming, 10.8% in forestry, and less than 1% in fisheries. Information on rural employment by sub-sectors of crop and livestock production and its dynamics comparing 2015 and 2022 is presented in Figure 4.

Table 4. Number of full-time equivalent employees in large-, medium-, small-, and micro-enterprises in agriculture

Year	Employed people, total	Of which hired employees in full-time equivalent	Economic entities							
			large business entities		medium business entities		small business entities		of which micro business entities	
			people	%	people	%	people	%	people	%
2013	726,250	615,615	37,159	6.0	379,383	61.6	199,073	32.3	78,106	12.7
2014	733,384	609,299	43,030	7.1	358,154	58.8	208,115	34.2	73,584	12.1
2016	658,721	551,359	34,526	6.3	329,598	59.8	187,235	34.0	75,197	13.6
2017	635,638	534,351	26,801	5.0	309,838	58.0	197,712	37.0	81,521	15.3
2018	626,072	525,070	31,083	5.9	299,977	57.1	194,010	36.9	80,328	15.3
2019	610,117	515,402	40,893	7.9	279,191	54.2	195,318	37.9	78,701	15.3
2021	576,093	486,364	41,450	8.5	243,897	50.1	201,017	41.3	83,314	17.1
2022	488,555	410,813	33,135	8.1	212,092	51.6	165,586	40.3	64,055	15.6
2023	456,909	379,056	60,793	16.0	163,465	43.1	154,798	40.8	61,888	16.3
2023 compared to 2013	62.9%	61.6%	163.6%	10.0 p.p.	43.1%	-18.5 p.p.	77.8%	8.5 p.p.	79.2%	3.6 p.p.

Source: calculated by the authors based on data from the State Statistics Service of Ukraine (n.d.)

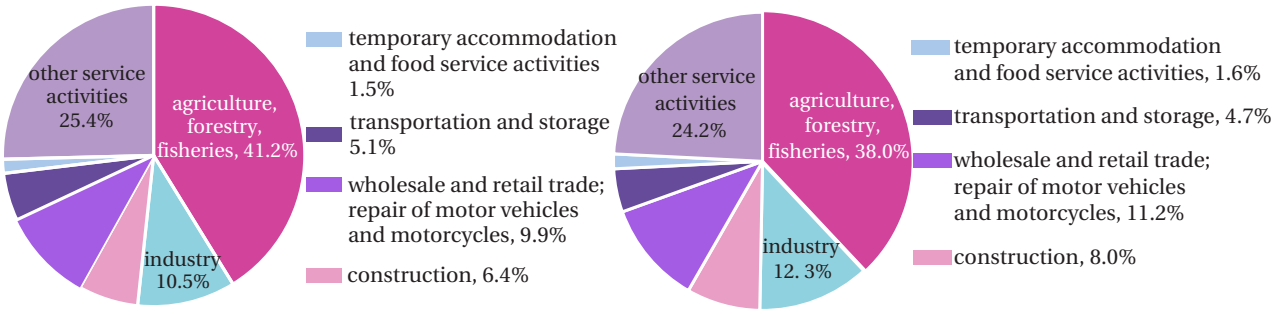

Figure 3. Structure of rural employment by types of economic activity in 2015 and 2022, %
Source: compiled by the authors based on data from the State Statistics Service of Ukraine (n.d.)

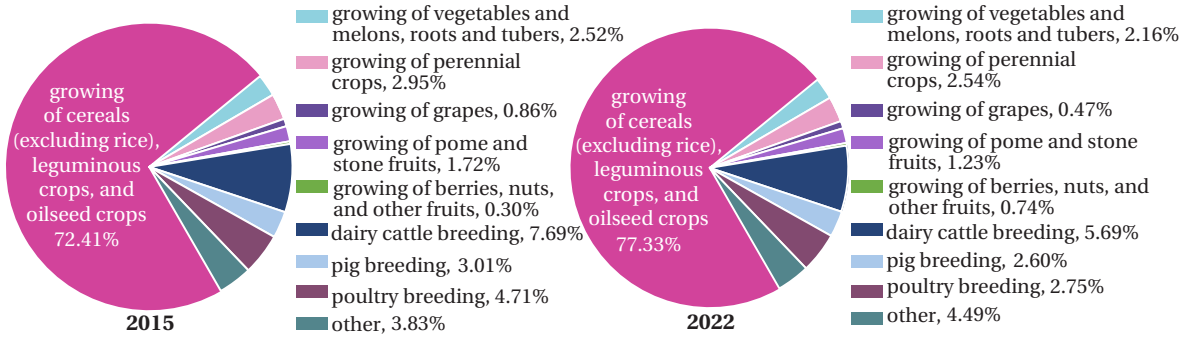

Figure 4. Structure of employed rural population by agricultural subsectors in 2015 and 2022, %
Source: compiled by the authors based on data from the State Statistics Service of Ukraine (n.d.)

Such sectoral disproportions lead to a reduction in labour demand and a decline in employment levels, since crop production, being a less labour-intensive sector, requires significantly fewer workers than livestock farming. To identify the most influential factors affecting rural employment levels and to assess their impact, economic-mathematical modelling was conducted. Based on the results of correlation-regression analysis and the determination of relationships between individual factors, the model was built using significant influencing factors for the period 2000-2023 (Table 5).

Table 5. Input data for model construction

Year	Employment rate of the rural working-age population, %	Real GDP (2021 = 100), million UAH	Capital investments in agriculture, million UAH	Number of enterprises (including farms) in agriculture, units	Number of unemployed rural population undergoing vocational training, thousand people	Average monthly wage in rural areas, UAH	Labour market efficiency index
	Y	X_1	X_2	X_3	X_4	X_5	X_6
2000	57.3	191,684	496	51,588	66.8	85.42	n/a
2001	60.5	222,451	1,617	54,417	n/a	119.22	n/a
2002	55.9	256,420	1,854.1	61,178	n/a	142.49	n/a
2003	54.7	310,070	2,054	59,923	n/a	165.36	n/a
2004	56.1	368,525	3,381	58,575	n/a	228.61	n/a
2005	60.5	491,951	5,016	57,877	n/a	342.24	n/a
2006	60.5	611,439	7,306	57,858	99.1	452.62	4.21
2007	61.5	767,957	9,519	58,387	111.7	596.17	4.30
2008	61.8	840,844	16,890	59,059	119.4	817.36	4.47
2009	62.2	191,684	9,382	57,152	76.5	914.91	4.57
2010	62.7	949,619	11,062.6	80,321	99.0	1,011.91	4.54
2011	63.0	1,138,338	16,465.9	61,488	105.0	1,195.01	4.44
2012	62.7	1,303,094	18,883.7	68,497	107.7	1,433.46	4.44
2013	63.5	1,404,293	18,587.4	71,058	105.7	1,525.85	4.18
2014	55.9	1,369,190	18,795.6	75,660	96.6	1,535.24	4.12
2015	55.1	1,431,826	30,154.7	79,284	83.9	1,769.86	4.33
2016	54.9	2,037,084	50,484.0	74,620	81.7	1,990.81	4.23
2017	54.8	2,441,661	64,243.3	76,593	80.7	3,178.22	4.01
2018	54.4	3,085,223	66,104.1	76,328	75.1	3,925.13	4.40
2019	55.0	3,674,214	59,129.5	75,450	73.8	5,084.24	4.41
2020	54.1	3,827,941	50,679.7	73,368	52.3	5,314.86	4.40
2021	53.6	4,367,501	69,950.3	70,803	50.7	6,369.16	n/a
2022	52.7	3,883,262	51,439.4	53,281	26.8	7,585.82	n/a
2023	50.2	5,529,085	65,432.1	62,960	14.8	8,873.61	n/a

Source: compiled by the authors based on data from the State Statistics Service of Ukraine (n.d.), State Employment Service (n.d.), World Economic Forum (n.d.), World Bank Group (n.d.)

The inclusion of these indicators and their potential impact on rural employment levels requires explanation. Real GDP is a comprehensive indicator that reflects the result of all processes taking place within a specific sector or the economy as a whole, the effect of developments in other world economies and existing markets on Ukraine's economy, as well as the regulatory influence of the state through the use of various levers and instruments of economic policy. This indicator reflects production efficiency and the level of employee motivation for productive work, enables the assessment of the state and dynamics of changes in economic parameters, and helps identify structural imbalances in its development, among other aspects. Investors consider real GDP, for example, when making decisions about establishing or expanding enterprises. An upward trend in real GDP is likely to enhance the employment rate.

An increase in investment volume can have a dual effect: on one hand, it directly creates new jobs and improves production efficiency overall: enhancing logistics, building auxiliary facilities, and increasing the workload of existing enterprises, thereby indirectly increasing employment. On the other hand, investments in innovation, scientific and technological research promote automation, robotics, drones, and other technological devices that replace human labour, leading to employment reduction. A similar situation applies to the number of enterprises variable in the model: ideally, growth in the number of enterprises should boost employment, but this is not always the case.

Regarding the rise in the number of unemployed rural residents undergoing vocational training, it is logical to assume a positive impact on rural employment levels. An increase in wages is among the most significant motivating factors for employment growth. However, this effect primarily influences the labour supply side positively. From the employers' perspective, the need to increase wages for regular employees, alongside technological progress, might force layoffs, thus lowering employment levels.

Conversely, increased incomes among the rural population boost their purchasing power, stimulating consumer demand and expanding the quantity and variety of goods and services produced, which in the long term supports employment growth (Krylova *et al.*, 2023).

An increase in the labour market efficiency index implies enhanced production efficiency, which in the short term might reduce employment levels. However, in the long term, the situation may reverse: higher production volumes will increase demand for production factors, including labour, positively impacting employment.

The modelling results produced the following model:

$$Y = 59.0 + 7.33 \cdot LOG(X_1) - 1.82 \cdot LOG(X_2) - 12.5 \cdot \cdot LOG(X_3) + 2.21 \cdot LOG(X_4) + 4.14 \cdot LOG(X_5) - - 4.46 \cdot LOG(X_6) - 2.76 \cdot dummy14.22. \quad (1)$$

The regression equation demonstrates satisfactory econometric properties (among the tested hypotheses were those related to the normal distribution of residuals, the absence of residual autocorrelation, and the absence of residual heteroscedasticity). The results of the regression analysis are shown in Table 6.

Table 6. Results of regression analysis of selected indicators on rural population employment

Dependent Variable: Y Method: Least Squares Sample (adjusted): 2000-2023 Included observations: 24 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	59.03949	43.16905	1.367635	0.3048
$LOG(X_1)$	7.334832	4.011859	1.828288	0.2090
$LOG(X_4)$	2.213722	1.901768	1.164034	0.3645
$LOG(X_3)$	-12.53922	3.833149	-3.271258	0.0821
$LOG(X_5)$	4.135394	0.915280	4.518172	0.0457
X_6	-4.459458	0.850903	-5.240853	0.0345
dummy14.22	-2.763122	0.423627	-6.522540	0.0227
$LOG(X_2)$	-1.823113	0.927472	-1.965681	0.1883
R-squared	0.985254	Mean dependent var		70.25000
Adjusted R-squared	0.933644	S.D. dependent var		1.096712
S.E. of regression	0.282509	Akaike info criterion		0.300353
Sum squared resid	0.159623	Schwarz criterion		0.542421
Log likelihood	6.498236	Hannan-Quinn criterion		0.034805
F-statistic	19.09027	Durbin-Watson stat		2.574105
Prob (F-statistic)	0.050666			

Source: compiled by the authors based on the results of their own research

The economic meaning of the dummy variable dummy14.22 is as follows: It reflects a significant decline in the employment rate of the rural working-age population since 2014 (primarily due to the unstable economic situation caused by the armed conflict in the eastern region of the country in 2014) and subsequently the Russian-Ukrainian war in 2022, resulting in a bigger decrease than would be predicted by the model based solely on economic factors. The results showed that modelling the employment level of the rural population is entirely feasible even with a relatively short time series. As shown in Table 6, the explanatory variables are mostly statistically significant at the 5-10% level, which is acceptable given the short modelling period, and their signs are consistent with economic interpretation (Table 7). The coefficient of determination R^2 (0.985) signifies that 98.5% of the fluctuations in rural employment rates are attributable to changes in the independent variables.

Table 7. Interpretation of model elasticities

a 1% increase in	real GDP	leads to	a 7.33 p. p.	rise in the employment rate of the working-age rural population
a 1% increase in	investment volume	leads to	a 1.82 p. p.	decrease in the employment rate of the rural working-age population
a 1% increase in	the number of enterprises	leads to	a 12.5 p. p.	decrease in the employment rate of the rural working-age population
a 1% increase in	the number of unemployed persons undergoing vocational training	leads to	a 2.21 p. p.	rise in the employment rate of the working-age rural population
a 1% increase in	rural population incomes	leads to	a 4.14 p. p.	rise in the employment rate of the working-age rural population
a 0.1 increase in	the labour market efficiency index	leads to	a 0.45 p. p.	decrease in the employment rate of the rural working-age population
the impact of	military actions and the related displacement of the workforce	leads to	a 2.76 p. p.	decrease in the employment rate of the rural working-age population

Source: compiled by the authors based on the results of their own research

The regression equation obtained as a result of the econometric modelling demonstrated an inverse relationship between the level of rural employment and the number of agricultural enterprises. This relationship can be explained by the fact that during the analysed period, consolidation of enterprises in the sector occurred, which in turn led to restructuring and concentration of employment. A comparison of data from Tables 3 and 4 illustrates this: the number of large agricultural business entities tripled, while the number of employees in these entities increased by only 63.6%. A similar situation is observed in small and microbusinesses, where workforce reduction outpaces the decrease in the number of enterprises. Additionally, the introduction of innovative technologies, active automation and robotisation of production processes at enterprises, as well as the application of new forms of employment that are not always accounted for in statistics (e.g., remote work, which is not always formally contracted), also contribute to the decline in employment levels.

State-supported programs aimed at employment support and stimulation, which intended to form and ensure effective social and labour relations, failed to yield a significant positive effect. Particularly, such instruments as compensation to employers for wages paid to internally displaced persons (the compensation of UAH 8,000 (equivalent to the minimum wage) for a 3-month period resulted in only 16,480 persons employed during the entire program duration), provision of non-repayable grants to small and medium-sized businesses for creating new jobs, and engaging temporarily unemployed individuals in socially useful work under the government project Recovery Army (2022) have insufficient effect, according to the conducted research (State Employment Service, n.d.). The reasons for the catastrophic decline in rural employment are complex and require a comprehensive approach to resolution. Modelling rural employment and identifying the factors and their impact on employment provide a foundation for determining priority directions for implementing state policies and measures to increase rural employment.

Despite the modelling results showing an inverse relationship between rural employment levels and the number of agricultural enterprises, stimulating entrepreneurship development in rural areas remains a key priority of state policy aimed at ensuring rural employment amidst the risks posed by military aggression and exacerbation of demographic and economic crises. However, this must be accompanied by avoiding further enterprise consolidation and promoting the development of small and medium-sized businesses. As practice has shown, under conditions of Russian aggression, micro and small enterprises proved to be more resilient, quickly adapting to extreme operating conditions, and in the first months of the war, on a volunteer basis, they provided for the needs of volunteer formations, territorial defence, and the population in food supplies.

In terms of formalising employment, personal peasant farms (PPFs) hold significant potential. To this end, following the example of European Union countries, it is necessary to classify their economic activities as a separate category and extend special social insurance rules to the owners and members of family-type farms and their hired workers; furthermore, it is essential to motivate and actively support the transformation of PPFs into family farming enterprises (FFEs). Such measures are relevant from the standpoint of Ukraine's European integration ambitions and the need to harmonise Ukrainian legislation with that of the European Union. As of January 1, 2024, the total number of rural households in Ukraine amounted to 3,845.3 thousand, with an average household size of 2.10 persons per equivalent adult (State Statistics Service of Ukraine, n.d.). Expert assessments estimate the transformation potential of PPFs into FFEs at approximately 350 thousand (Malik *et al.*, 2024). To encourage PPF members to transition to FFEs, it is proposed to grant them priority rights to purchase land plots for FFE operation activities, while also providing access to affordable loans secured by guarantees from the Partial Credit Guarantee Fund for Agriculture. As I. Chornodid *et al.* (2021) note, solving the problem of informal labour relations should be based on the involvement of all necessary resources and means of regulation, including legal, economic and social ones.

Significant reserves for balancing the fundamental factors of the labour market and overcoming mono-structural employment in rural areas lie in the diversification of agricultural production. The livestock sector holds great potential for providing stable employment to rural residents. Agriculture contributes a substantial share of exports through crop production, including fodder grains. This indicates a considerable potential for the development of livestock industries driven by strengthening feed production. According to expert estimates, the production of milk or pork meat can create approximately 930 and 440 additional jobs, respectively, per 100,000 tons of exported grain (Khodakivska & Mohylnyi, 2020). Another priority direction for ensuring rural employment is the development of a diversified employment structure, namely the growth of processing industries, service cooperatives, and non-agricultural activities such as agritourism, rural and ecological (green) tourism, as well as the provision of various household and information-communication services.

An important priority of state policy to ensure rural employment and address the problem of rural depopulation is to encourage youth to return to or relocate to rural areas for residence and work by providing them with grant support and access to concessional loans to develop family entrepreneurship and start-ups in agriculture and other sectors. It is worth considering the option of transferring ownerless and unused municipal real estate along with the land plots (where they are located) to rural youth initiatives (either free of charge or for a symbolic fee) to establish micro- and small businesses in rural areas.

Significant potential for ensuring rural employment also lies in addressing the problem of low labour mobility among working-age rural residents, which is primarily related to attachment to housing and personal peasant farms. The rural labour market often exhibits regional imbalances, with some areas facing labour shortages despite job availability, while others experience high unemployment alongside an excess labour supply. This, in turn, requires measures to develop transport and engineering infrastructure (such as well-developed logistics, roads, scheduled and public transport) and the housing and utilities sector, including the possibility of free housing provision

or preferential terms for its purchase. Measures to increase rural employment should also include a complex of socio-psychological, organisational, legal, and economic activities aimed at creating favourable conditions for integrating internally displaced persons into rural communities, expanding their labour potential reproduction, and motivating war migrants to return from abroad.

The issues of rural employment are not exclusive to the Ukrainian economy. These challenges are common worldwide, including in highly developed countries. Identifying the causes of declining rural employment, isolating influencing factors, assessing their impact on employment levels, developing ways to prevent risks and mechanisms to eliminate disparities in rural labour markets, and defining state policy directions to ensure rural employment remain a constant focus of scientific research. For instance, the reduction of agriculture's share in rural employment structure, insufficient development of processing enterprises in rural areas, job shortages, seasonal employment, mismatch of labour supply qualifications with labour market demands, and weak transport infrastructure are characteristic not only of Ukraine but also of other countries, including the United Kingdom (Lindsay *et al.*, 2003). The authors importantly note that the severity of these problems intensifies with increasing remoteness of the rural labour market from centres of economic activity, which are mainly cities or industrial hubs.

Unemployment among rural youth is a pressing issue for many countries (Shuker & Sadik, 2024). The lack of available land for farming, poor infrastructure, financial isolation, and job shortages in rural areas contribute to the worsening situation in the labour market. However, state policies aimed at addressing these problems will remain ineffective and limited if they do not consider the full spectrum of issues, including gender equality, age, education, health-related discrimination in the labour market, and other factors (Usoro *et al.*, 2021). Analysing the relationship between population size, employment, and poverty in rural areas of Costa Rica, R. Rivera Alfaro & A. Porras Solis (2018) also concluded that a comprehensive approach is necessary to solve rural unemployment issues. In particular, the authors emphasise that employment strategies in rural areas should address wage levels, social security, institutional frameworks, labour mobility, and workforce relocation. They see a key role for local governments in stimulating rural labour markets, entrepreneurship, innovation, professional integration at the rural level, and inclusion.

Assessing the relationship between family farms and rural labour markets in Germany, D. Wuepper *et al.* (2021) concluded that this relationship is not causal; thus, supporting family farms as a means to combat rural unemployment in the country is ineffective. This finding partly confirms the results of the multifactorial correlation analysis conducted in this study, especially regarding the inverse relationship between the number of enterprises and rural employment levels in Ukraine. This is explained by the inefficiency of policies focused on enlarging agricultural enterprises, which led to restructuring and concentration of employment. Instead, promoting the development of small and micro-enterprises, including family farms, would be an important tool to ensure rural employment and formalisation.

G. Kukel *et al.* (2020) emphasise the need to select labour market regulation instruments that take into account the objective impact of global trends and aim to stimulate innovative employment and entrepreneurial activity among the rural population. In their view, supporting the development of organic agriculture constitutes such a tool. To address rural employment issues and develop competencies demanded in agriculture, E. Shahini & E. Shahini (2024) propose active implementation of cooperatives.

In studying employment opportunities for rural populations in India, R. Kapur (2019) identified key motivating factors for employment as wages, workplace location relative to home, availability of transport, working conditions, job duties, relationships with colleagues, training programs, work schedules, benefits and incentives, as well as provision of infrastructure, equipment, and tools. These demands correspond to the rural population of Ukraine, where the inability to find employment is often linked to low labour mobility, attachment to housing and land, and lack of transport infrastructure. Similar views are shared by S. Rosenberg *et al.* (2021). The main factors influencing rural employment levels in Romania, according to the authors, are low income levels and significant gaps in healthcare reform, which have practically rendered quality medical services inaccessible to rural residents.

In examining rural-to-urban migration, H. Lyu *et al.* (2019) identified the primary cause as the lack of jobs and rising unemployment in rural areas rather than better living conditions or higher incomes in cities. In particular, the authors concluded that a 1% increase in the unemployment rate leads to the migration of an additional 16,000 individuals, based on their research and the proposed migration model. Therefore, political measures aimed at creating employment opportunities in rural areas are necessary to reduce migration rates.

All the above indicates the presence of similar rural employment challenges worldwide. Therefore, the positive experience of other countries in addressing such issues is valuable for Ukraine, particularly in promoting diversified rural employment, agricultural production diversification, combating long-term unemployment, encouraging young people to live and work in rural areas, and ensuring the integrated development of rural territories.

▸ Conclusions

The current characteristics of rural employment include changes in its structure, notably a declining share of agriculture as the primary type of economic activity, the restructuring and consolidation of work, a high level of informal employment, and lower wages compared to the urban population. As a result, this led to a significant decrease in the employment rate of the working-age rural population to 50.2% in 2023. Based on the results of economic-mathematical modelling of rural employment, the following conclusions were made: 1) the developed model shows that a 1% increase in real GDP ensures an increase in the employment rate of the working-age rural population by 7.33 percentage points; 2) a 1% increase in the number of unemployed persons undergoing vocational training ensures a rise in the employment rate by 2.2 percentage points; 3) a 1% increase in rural incomes ensures an increase in their employment rate by 4.14 percentage points; 4) a 1% increase

in investment volume reduces the employment rate by 1.8 percentage points; 5) a 1% increase in the number of enterprises leads to a decrease in the employment rate of the working-age rural population by 12.5 percentage points; 6) an increase in the labour market efficiency index by 0.1 leads to a decrease in the rural employment rate by approximately 0.45 percentage points; 7) the impact of military actions and the corresponding workforce displacement causes a decrease in the employment rate of the working-age rural population by 2.76 percentage points.

Priority paths for the implementation of state policy and measures to increase the employment level of the rural population have been identified in the following directions: stimulating entrepreneurship development in rural areas, supporting the market activity of micro and small entities; formalisation of rural employment by facilitating the transformation of household farms into family farms; diversification of agricultural production and development of a multi-sectoral employment structure; addressing the problem of low labour mobility among rural residents; encouraging youth to relocate and work in rural areas; strengthening institutional capacity and resource sufficiency of rural territorial communities. Promising directions for further research in this context include the development of an organisational and economic mechanism to ensure rural employment, as well as the substantiation of methods and instruments for its implementation aimed at addressing the current situation in the rural labour market and resolving employment challenges in rural areas.

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Зайнятість сільського населення України: якісний і кількісний виміри

Юрій Лупенко
Доктор економічних наук, професор,
академік Національної академії аграрних наук України
Національний науковий центр «Інститут аграрної економіки»
03127, вул. Героїв Оборони, 10, м. Київ, Україна
https://orcid.org/0000-0001-6846-0300
Наталія Патика
Доктор економічних наук, професор
Національний науковий центр «Інститут аграрної економіки»
03127, вул. Героїв Оборони, 10, м. Київ, Україна
https://orcid.org/0000-0003-0062-7631

► **Анотація.** Сільський ринок праці в сучасних умовах зазнав суттєвих трансформацій, зумовлених зміною ролі та формату впливу аграрного сектору на розвиток сільських територій країни, адміністративно-територіальною реформою та процесами децентралізації, повномасштабною агресією рф. Мета роботи – оцінити вплив окремих чинників на зайнятість сільського населення в Україні та визначити основні шляхи підвищення її рівня. Методологічною основою дослідження був системний підхід. В аналітичних дослідженнях застосовано порівняльний аналіз, метод середніх і відносних величин, графічний метод, трендовий, індексний, кореляційно-регресійний (багатофакторна модель) аналізи тощо. Проаналізовано тенденції зайнятості сільського населення в Україні за 2000-2023 рр. З'ясовано, що з 2013 р. рівень зайнятості сільського населення працездатного віку має спадну динаміку. Визначено основні проблеми та характерні особливості зайнятості сільського населення в сучасних умовах. Проведено економіко-математичне моделювання рівня зайнятості сільського населення працездатного віку, результати якого засвідчили пряму його залежність від реального валового внутрішнього продукту, кількості безробітних, які проходили професійне навчання, рівня заробітної плати. Негативний вплив на рівень зайнятості сільського населення мають збільшення обсягів інвестування та кількості підприємств, що пояснюється підвищенням технологічності виробництва; запровадженням нових форм зайнятості, укрупненням та реструктуризацію зайнятості, та воєнні дії. Окреслено пріоритетні напрями підвищення рівня зайнятості сільського населення. Основні положення, кількісні оцінки, пропозиції і висновки, викладені у статті, можуть бути використані державними органами управління при перегляді прийнятих документів та під час розроблення нових стратегічних програм з питань зайнятості сільського населення з урахуванням викликів сьогодення, внутрішніх загроз і тривалої російсько-української війни

► **Ключові слова:** сільський ринок праці; чинники впливу; економіко-математичне моделювання; проблеми; пріоритети