

Labor resources in the agriculture of Ukraine and their financial security: regional aspect

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ABSTRACT

Financial and quantitative indicators characterizing work in the agricultural economy of Ukraine have regional differences. The purpose of this study is a comprehensive analysis of the pre-war state of the regions of Ukraine in terms of the number and incomes of full-time agricultural workers and the formation of proposals for the development of the agro-industrial sector in the regions that fell into different zones as a result of the rating in the post-war period. The following methods were used to realize the set goal: ranking – to determine the position of each region of Ukraine according to selected financial and quantitative indicators of labor in agriculture; graphic—for the zoning of the regions of Ukraine depending on the received positions based on the results of the rating. It was determined that in 2021, the average registered number of full-time agricultural workers in the regions of Ukraine ranged from 1.2 thousand people (Transcarpathian region) to 29.7 thousand people (Poltava region). Poltava, Kyiv, and Cherkasy regions are the leaders in this indicator; Ivano-Frankivsk, Chernivtsi and Zakarpattia regions are outsiders. At the same time, the average monthly salary of full-time agricultural workers in the regions of Ukraine in the analyzed period ranged from 259.2 euros (Odesa region) to 504.1 euros (Ivano-Frankivsk region). Ivano-Frankivsk, Ternopil, and Lviv regions are the leaders in terms of financial indicators; Rivne, Chernivtsi and Odesa regions are outsiders. According to the levels of the number of full-time agricultural workers and their wages, the regions of Ukraine are classified into seven different zones. Only eight regions or 32% fell into zones with a clear position (very high, high, medium, low and very low level), all other regions fell into zones of imbalances.

KEYWORDS: wages, number of full-time employees, agriculture, regions, Ukraine

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1. Introduction. Agriculture is one of the most promising types of economic activity in Ukraine in the context of export activity. However, financial and quantitative indicators characterizing work in the country's agriculture have regional differences. Therefore, it is advisable to analyze the number and incomes of full-time agricultural workers in the regions of Ukraine, determine their minimum and maximum values, etc. The study of the agro-industrial complex of Ukraine appears to be especially relevant during military operations on its territory, which negatively affect the formation of personnel and material potential of agriculture, as well as the food security of not only Ukraine, but also the countries to which it previously exported agricultural products.

2. Literature Review. Analyzing modern scientific works in this context, three directions of research can be distinguished:

1. Financial aspects of work in the agricultural economy of Ukraine: social and economic conditions that can facilitate the transition of young men from the working class to independent agricultural work (Deffontaines, 2021); the state of budget financing for the development of rural areas (Dema et al., 2019); structural distortions in the distribution of newly created value between the main subjects of land relations (Khodakivska & Mohylnyi, 2018); creation of gross added value in agriculture (Mykhailov et al., 2020); a system of economic factors that determine the efficiency of agricultural enterprises (Shevchenko et al., 2020); wage indicators in agriculture (Vasylieva, 2019).

2. Quantitative indicators of labor in the agricultural economy of Ukraine: personnel security of agricultural enterprises (Kilnitska et al., 2020).

3. Financial and quantitative aspects of work in the agriculture of Ukraine: the influence of wages on the number of agricultural workers (Makhsma, 2013); the influence of the area of agricultural land, the number of enterprises, the number of employees and the total cost of production on the size of the net income of agricultural cooperatives (Shelenko et al., 2022); problems of declining employment and low wages (Tiurina et al., 2021).

In contrast to the scientific works of the mentioned authors, the purpose of this study is a comprehensive analysis of the regions of Ukraine in terms of the number and incomes of full-time agricultural workers and the formulation of proposals for the development of the agro-industrial sector in the regions that fell into different zones as a result of the rating, in the post-war period.

3. Methodology. The following methods were used to realize the goal:

1. Ranking – to determine the position of each region of Ukraine according to selected financial and quantitative indicators of labor in agriculture in 2021 (pre-war period).

2. Graphic – for zoning regions of Ukraine depending on the received positions based on the results of the rating.

Note that the statistical data (State Statistics Service of Ukraine, 2022) for 2021 are presented without taking into account the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol, and temporarily occupied territories in the Donetsk and Luhansk regions.

For the analysis, data on 24 regions of Ukraine and the city of Kyiv, the capital of Ukraine, were used.

4. Results. In 2021, the average registered number of full-time agricultural workers in Ukraine was 345.3 thousand people (State Statistics Service of Ukraine, 2022). A more detailed regional distribution of this quantitative indicator is given in column 3 of **Table 1**.

Table 1. The number and wages of full-time agricultural workers by regions of Ukraine in 2021

No	Region	The average registered number of full-time employees, thousands of people	Average monthly salary of full-time employees, euros (at the rate of 1 euro = 32.31 UAH)
1	Vinnitsia	25.8	387.3
2	Volyn	7.0	341.5
3	Dnipropetrovsk	18.7	318.4
4	Donetsk	12.7	352.1
5	Zhytomyr	11.3	372.9
6	Transcarpathian	1.2	335.2
7	Zaporizhzhia	15.1	300.1
8	Ivano-Frankivsk	2.9	504.1
9	Kyiv	26.3	383.4
10	Kirovohrad	18.3	324.5
11	Luhansk	8.6	382.4
12	Lviv	7.0	434.9
13	Mykolaiv	11.3	315.5
14	Odesa	14.0	259.2
15	Poltava	29.7	361.7
16	Rivne	4.9	294.4
17	Sumy	16.0	389.0
18	Ternopil	11.4	455.2
19	Kharkiv	17.9	386.7
20	Kherson	13.9	321.6
21	Khmelnyskyi	17.5	382.7
22	Cherkasy	26.3	384.0
23	Chernivtsi	2.0	274.1
24	Chernihiv	22.3	398.6
25	the city of Kyiv	3.2	370.0
Ukraine		345.3	363.1

Source: Author's calculation based on data from the State Statistics Service of Ukraine and the National Bank of Ukraine (State Statistics Service of Ukraine, 2022; National Bank of Ukraine, 2022).

At the same time, in 2021, the average monthly salary of full-time agricultural workers in Ukraine in terms of euros at the official hryvnia exchange rate (average for the period) set by the National Bank of Ukraine amounted to 363.1 euros. A more detailed regional distribution of this financial indicator is given in column 4 of Table 1.

According to **Table 1** (column 3), in the analyzed period, the average registered number of full-time agricultural workers in the regions of Ukraine ranged from 1.2 thousand people (Transcarpathian region) to 29.7 thousand people (Poltava region).

Agricultural workers were distributed by region as follows:

- more than 20,000 people: Vinnytsia, Kyiv, Poltava, Cherkasy and Chernihiv regions (five regions);
- more than 10,000 people: Dnipropetrovsk, Donetsk, Zhytomyr, Zaporizhzhya, Kirovohrad, Mykolaiv, Odesa, Sumy, Ternopil, Kharkiv, Kherson and Khmelnytskyi regions (12 regions);
- less than 10,000 people: Volyn, Transcarpathian, Ivano-Frankivsk, Luhansk, Lviv, Rivne and Chernivtsi regions, as well as the city of Kyiv (eight regions).

According to **Table 1** (column 4), in the analyzed period, the average monthly salary of full-time agricultural workers in the regions of Ukraine ranged from 259.2 euros (Odesa region) to 504.1 euros (Ivano-Frankivsk region). The wages of agricultural workers were distributed by region as follows:

- more than 400 euros: Ivano-Frankivsk, Lviv and Ternopil regions (three regions);
- more than 300 euros: Vinnytsia, Volyn, Dnipropetrovsk, Donetsk, Zhytomyr, Transcarpathian, Zaporizhzhya, Kyiv, Kirovohrad, Luhansk, Mykolaiv, Poltava, Sumy, Kharkiv, Kherson, Khmelnytsky, Cherkasy and Chernihiv regions, as well as the city of Kyiv (19 regions);
- less than 300 euros: Odesa, Rivne and Chernivtsi regions (three regions).

The ratings of the regions of Ukraine according to the selected financial and quantitative indicators of labor in agriculture are presented in **Table 2**. Note that in the case of identical indicators (for example, the average registered number of full-time agricultural workers in the Kyiv and Cherkasy regions was equal to 26.3 thousand people), their rankings were the same and equal to the highest possible position (2 and 2, not 2 and 3).

Table 2. Ranking of the regions of Ukraine by the level of full-time agricultural workers and their wages in 2021

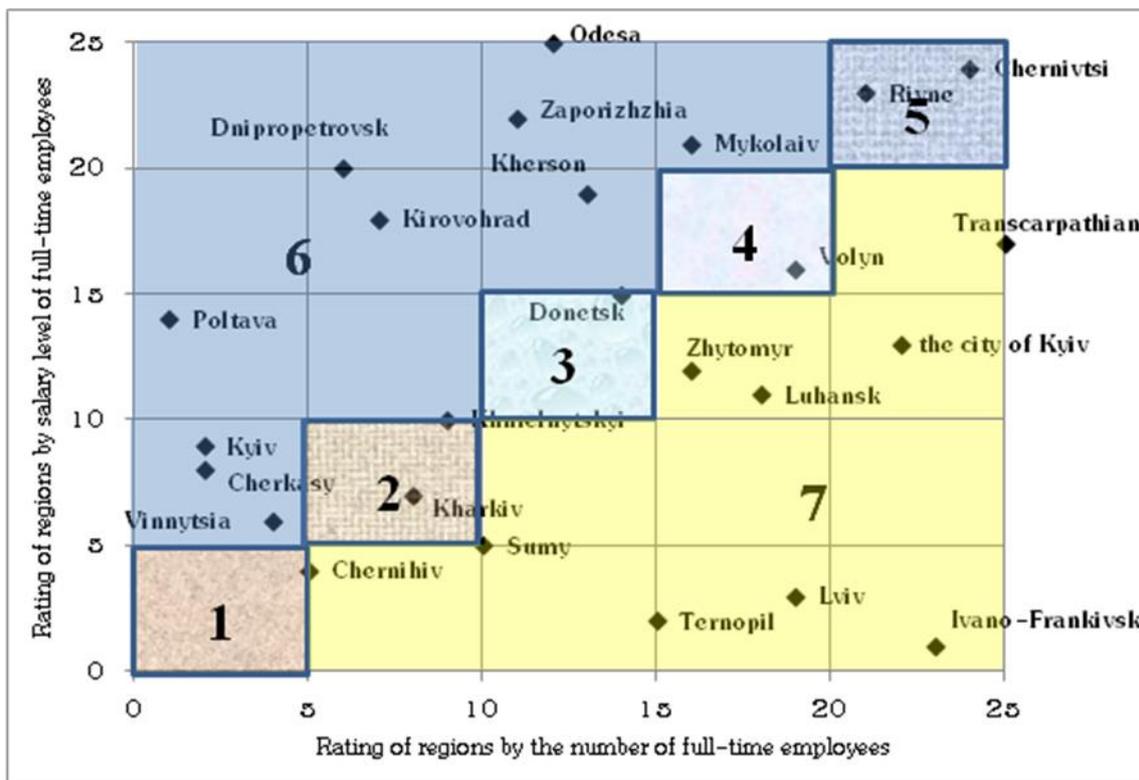
No	Region	Rating of regions by the level of the average registered number of full-time employees	Rating of regions by the level of average monthly salary of full-time employees
1	Vinnitsia	4	6
2	Volyn	19	16
3	Dnipropetrovsk	6	20
4	Donetsk	14	15
5	Zhytomyr	16	12
6	Transcarpathian	25	17
7	Zaporizhzhia	11	22
8	Ivano-Frankivsk	23	1
9	Kyiv	2	9
10	Kirovohrad	7	18
11	Luhansk	18	11
12	Lviv	19	3
13	Mykolaiv	16	21
14	Odesa	12	25
15	Poltava	1	14
16	Rivne	21	23
17	Sumy	10	5
18	Ternopil	15	2
19	Kharkiv	8	7
20	Kherson	13	19
21	Khmelnyskyi	9	10
22	Cherkasy	2	8
23	Chernivtsi	24	24
24	Chernihiv	5	4
25	the city of Kyiv	22	13

Source: Author's calculation based on the data of Table 1.

According to **Table 2**, Poltava, Kyiv, and Cherkasy regions are the leaders in terms of quantitative indicator; outsiders are Ivano-Frankivsk, Chernivtsi and Transcarpathian regions. At the same time, Ivano-Frankivsk, Ternopil, and Lviv regions are the leaders in terms of financial indicator; outsiders are Rivne, Chernivtsi and Odesa regions.

The results of the zoning of the regions of Ukraine according to the rating positions obtained in

Table 2 are shown in **Fig. 1**.



Zone 1 – very high level;

zone 2 – high level;

zone 3 – medium level;

zone 4 – low level;

zone 5 – very low level;

zone 6 – an imbalance zone with a higher level of the number of full-time employees;

zone 7 – an imbalance zone with a higher level of wages of full-time employees.

Figure 1. The rating matrix of the zoning of the regions of Ukraine by the levels of the number of full-time agricultural workers and their wages

Source: Author's calculation based on data from Table 2.

In this matrix, all regions of Ukraine are divided into seven zones:

zone 1 – very high level (both rating positions from 1 to 5) – Chernihiv region (4% of regions);

zone 2 – high level (both rating positions from 5 to 10) – Sumy, Kharkiv and Khmelnytskyi (12%);

zone 3 – medium level (both rating positions from 10 to 15) – Donetsk (4%);

zone 4 – low level (both ranking positions from 15 to 20) – Volyn (4%);

zone 5 – very low level (both ranking positions from 20 to 25) – Rivne and Chernivtsi (8%);

zone 6 – an imbalance zone with a higher level of the number of full-time employees – Vinnytsia, Dnipropetrovsk, Zaporizhzhya, Kyiv, Kirovohrad, Mykolaiv, Odesa, Poltava, Kherson and Cherkasy (40%);

zone 7 – an imbalance zone with a higher level of wages of full-time employees – Transcarpathian, Zhytomyr, Ivano-Frankivsk, Luhansk, Lviv and Ternopil, as well as the city of Kyiv (28%).

As you can see, eight regions fell into the zones with a clear position, 17 regions – into the zones of imbalances.

It is worth noting that as a result of the Russian aggression, which began on February 24, 2022, Ukrainian agriculture, like other industries, suffered significant losses. According to the Center for Food and Land Use Research of the Kyiv School of Economics, the damage caused by the war in agriculture amounted to 4,292.3 million dollars USA, namely:

- agricultural land and unharvested harvest of winter crops – 2,135 million dollars USA;
- machine equipment – 926.1 million dollars USA;
- warehouses – 272.4 million dollars USA;
- animal husbandry – 136.4 million dollars USA;
- perennial crops – 89.1 million dollars USA;
- production factors (for example, fuel) – 119.6 million dollars USA;
- stored products – 613.0 million dollars USA (KSE Center for Food and Land Use Research, 2022).

In addition, significant problems appeared with the export of grain:

- Ukrainian ports can put into operation only a small part of their pre-war capacities;
- when dry goods enter the Black Sea, they are checked for weapons smuggling (an expensive procedure);
- when dry cargoes leave the Black Sea, they are checked for stolen grain (an expensive procedure);
- many insurance companies refuse to insure transportation in the conflict zone (Lachan & Saakov, 2022).

As a result, a significant part of the harvested crop remains on the territory of Ukraine.

There is also significant migration of the population of Ukraine as a result of the war.

The above-mentioned factors definitely have a negative impact on the current indicators of Ukrainian agriculture.

5. Conclusion. Work in agriculture in the regions of Ukraine can be characterized both quantitatively and financially. In particular, in 2021 (pre-war period), the number of full-time agricultural workers in the regions of Ukraine ranged from 1.2 thousand people to 29.7 thousand people. Poltava, Kyiv, and Cherkasy regions are the leaders in this indicator; Ivano-Frankivsk, Chernivtsi and Zakarpattia regions are outsiders.

At the same time, in the analyzed period, the average monthly salary of full-time agricultural workers in the regions of Ukraine ranged from 259.2 euros to 504.1 euros. Ivano-Frankivsk, Ternopil, and Lviv regions are the leaders in this indicator; Rivne, Chernivtsi and Odesa regions are outsiders.

The results of the zoning of the regions of Ukraine according to the obtained rating positions based on the financial and quantitative indicators of labor in agriculture in 2021 showed that only eight regions or 32% were included in the zones with a clear position (very high, high, medium, low and very low level), all other regions fell into imbalance zones.

Taking into account the obtained results, the development of agriculture in Ukraine requires:

- a) end military operations in Ukraine;

b) restore the material and technical base of enterprises of the agro-industrial complex and return workers who migrated due to the war;

c) for the region included in zone 1 – to maintain a high level of personnel potential and financial support of employees;

d) for regions that have fallen into zones 2–5 – gradually move to zones with a higher level of the number of full-time agricultural workers and their wages;

e) for regions that have fallen into zones 6–7 – to balance the imbalance by raising the unbalanced rating position of the quantitative or financial indicator of agricultural development.

We see the prospects for further research in the study of the quantitative and financial indicators of the agro-industrial complex of Ukraine for 2022 in the regional dimension and their comparison with the results obtained for 2021, the identification of changes and the formation of new proposals.

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