

Socio-economic determinants of income formation of agricultural sector employees as a factor of sustainable rural development: a case study of Ukraine

Determinantes socioeconómicos da formação do rendimento dos trabalhadores do setor agrícola como fator de desenvolvimento rural sustentável: um estudo de caso da Ucrânia

Determinantes socioeconómicos de la formación de la renta de los trabajadores del sector agrícola como factor del desarrollo rural sostenible: un estudio de caso de Ucrania

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Abstract

The article examines the socio-economic determinants of income formation among employees of the agricultural sector of Ukraine and their role in ensuring the sustainable development of rural territories. Using correlation and regression analysis, an econometric model was developed to quantitatively assess the influence of the studied factors on income formation in the agricultural sector. The modelling results demonstrate that the key driver of wage growth is the increase in labour productivity, whereas the impact of investment activity and profitability is more indirect. The study substantiates the need for a comprehensive approach to shaping the economic conditions that support income growth among agricultural sector employees in order to ensure the sustainable development of rural territories.

Keywords

Socio-Economic Development, Sustainable Development, Rural Territories, Agricultural Sector, Employee Income, Labour Productivity.

Resumo

O artigo analisa os determinantes socioeconômicos da formação do rendimento entre os trabalhadores do setor agrícola da Ucrânia e o seu papel na garantia do desenvolvimento sustentável dos territórios rurais. Recorrendo a análises de correlação e regressão, foi desenvolvido um modelo econométrico para avaliar quantitativamente a influência dos fatores estudados na formação do rendimento no setor agrícola. Os resultados da modelação demonstram que o principal fator impulsionador do crescimento salarial é o aumento da produtividade do trabalho, enquanto o impacto da atividade de investimento e da rentabilidade é mais indireto. O estudo fundamenta a necessidade de uma abordagem abrangente para moldar as condições económicas que apoiam o crescimento do rendimento entre os trabalhadores do setor agrícola, a fim de garantir o desenvolvimento sustentável dos territórios rurais.

Palavras-chave

Desenvolvimento Socioeconómico, Desenvolvimento Sustentável, Territórios Rurais, Setor Agrícola, Rendimento dos Trabalhadores, Produtividade do Trabalho.

Resumen

El artículo examina los determinantes socioeconómicos de la formación de los ingresos entre los trabajadores del sector agrícola de Ucrania y su papel a la hora de garantizar el desarrollo sostenible de los territorios rurales. Mediante análisis de correlación y regresión, se ha desarrollado un modelo econométrico para evaluar cuantitativamente la influencia de los factores estudiados en la formación de los ingresos en el sector agrícola. Los resultados de la modelización demuestran que el principal motor del crecimiento salarial es el aumento de la productividad laboral, mientras que el impacto de la actividad inversora y la rentabilidad es más indirecto. El estudio corrobora la necesidad de un enfoque integral para configurar las condiciones económicas que favorezcan el crecimiento de los ingresos entre los empleados del sector agrícola, con el fin de garantizar el desarrollo sostenible de los territorios rurales.

Palabras clave

Desarrollo Socioeconómico, Desarrollo Sostenible, Territorios Rurales, Sector Agrícola, Ingresos de los Trabajadores, Productividad Laboral.

1. Introduction

The formation of incomes of employees in the agricultural sector represents one of the key factors ensuring socio-economic stability and the long-term development of rural territories. The level of wages in agriculture largely determines the possibilities for the reproduction of labour potential and significantly influences the living standards of the rural population. Under current conditions, the income level of agricultural sector employees substantially determines the socio-economic balance of rural territories, as it forms the basis of consumer demand and contributes to the financial stability of households through the support of local labour markets (Pashchenko and Zharikova, 2021). At the same time, the process of income formation among agricultural workers is characterized by a complex

system of interrelated determinants. Wage levels are influenced both by the production and economic parameters of agricultural development and by the structural characteristics of the labour market, the level of investment activity in the sector, and the financial performance of agricultural enterprises. In particular, such indicators as labour productivity, the scale of capital investment in agriculture, employment levels, and the profitability of agricultural enterprises form the economic preconditions for income growth and determine the potential for their further increase (Nehrey and Trofimtseva, 2022).

These issues highlight the relevance of studying structural imbalances in employment and the uneven distribution of income among the population of rural territories in Ukraine. In this context, increasing the income of agricultural sector employees becomes particularly important as an instrument for ensuring the sustainable development of rural territories, as it contributes to strengthening the socio-economic resilience of local communities and improving the overall welfare of the population.

2. Literature Review

The issue of income formation among agricultural sector employees in contemporary academic research is primarily examined in connection with employment dynamics and structural transformations of the agricultural economy. At the same time, a gradual shift can be observed from a narrow analysis of wages as an isolated indicator toward their interpretation as an integral outcome of a complex system of socio-economic, production, and institutional factors.

A significant place in the scientific discourse is occupied by studies devoted to employment and structural changes in the agricultural labour market. In particular, the works of Huffman (2005), Kołodziejczak (2020), Patyka *et al.* (2021), Lupenko and Patyka (2025), Bohdan and Kotenko (2025), as well as Stryzhak *et al.* (2025) substantiate that employment dynamics in agriculture are largely determined by structural transformations of the economy, intersectoral labour mobility, and differences in income levels across economic sectors. This makes it possible to consider the number of employed persons as an important determinant in the formation of wages in the agricultural sector.

A separate line of research focuses on labour productivity and its role in shaping employee incomes. In particular, Bilenko (2022), Dziamulych *et al.* (2023), Popescu *et al.* (2025), Rozskazov *et al.* (2021), and Tsymbaliuk *et al.* (2025) demonstrate that increases in labour productivity create the economic foundation for wage growth, although the mechanism of such transformation is not automatic. These studies emphasize that the relationship between productivity and income is complex

and mediated by investment activity, technological change, labour organization, and the mechanisms of value added distribution.

Another important research direction concerns the investment and financial prerequisites for the development of the agricultural sector. In particular, Savitska *et al.* (2020), Stepanenko *et al.* (2023), Antoniuk *et al.* (2025), Shmatkovska *et al.* (2022), and Rudenko *et al.* (2023) emphasize that capital investments, production modernization, and the development of human capital form the basis for long-term improvements in the economic performance of agricultural enterprises. At the same time, the studies of Shmatkovska *et al.* (2022), Sodoma *et al.* (2018), and Pohrishchuk *et al.* (2023) underline that financial results and investment resources do not always directly translate into higher employee incomes, which necessitates a deeper econometric analysis.

A substantial contribution to understanding the broader socio-economic context is provided by the works of Kravchenko *et al.* (2020), Lisova *et al.* (2023), Sharapova *et al.* (2021), Skydan *et al.* (2023), Haider *et al.* (2018), Zbarsky *et al.* (2020), and Yatsiv and Cherevko (2022), which associate the sustainable development of rural territories with the reproduction of labour potential, population income levels, employment quality, and the capacity of local economies to retain human resources. At the same time, Baluta (2025) emphasizes the legal dimension of protecting seasonal workers, while Novikova *et al.* (2021) highlight the importance of digitalization and social dialogue for strengthening labour market resilience. Such an approach expands the methodological framework for analysing the income of agricultural sector employees as one of the key determinants of the socio-economic stability of rural territories.

At the same time, the analysis of existing academic contributions indicates that most studies either focus primarily on employment or examine labour productivity, investment, or profitability separately, without constructing an integrated model of their impact specifically on the income level of agricultural sector employees. The issue of quantitatively assessing the interaction of these factors in the context of sustainable rural development therefore remains insufficiently explored. This research gap determines the relevance and necessity of the present study.

3. Materials and Methods

The information base of the study consists of official statistical data from the State Statistics Service of Ukraine, which characterize the main socio-economic parameters of the functioning of the agricultural sector. The system of analysed indicators included the average monthly wage of agricultural sector employees (y), the number of employed persons in agriculture (x_1), the volume of capital investment in agriculture (x_2), labour productivity of agricultural enterprises (x_3), and the

level of operating profitability of agricultural sector enterprises (x_4). The use of these indicators made it possible to comprehensively assess the influence of socio-economic factors on the formation of incomes of agricultural sector employees.

The methodological framework of the research is based on methods of economic and statistical analysis, in particular correlation and regression analysis. At the first stage, the strength of the relationship between the dependent and explanatory variables was determined using the Pearson correlation coefficient, calculated according to the following formula:

$$r_{xy} = \frac{\sum((x_i - \bar{x})(y_i - \bar{y}))}{\sqrt{\sum(x_i - \bar{x})^2 \sum(y_i - \bar{y})^2}} \quad (1)$$

where

x_i and y_i – denote the values of the corresponding variables in the i -th period;

$\bar{x}$ and $\bar{y}$ – represent the mean values of the respective variables.

To quantitatively assess the impact of factors on wage levels, a multifactor correlation and regression model of the following general form was constructed:

$$y = a_0 + a_1x_1 + a_2x_2 + a_3x_3 + a_4x_4 + \varepsilon, \quad (2)$$

Where

y – the dependent variable (wage level);

x_1 – x_4 – the explanatory variables;

a_0 – the intercept;

a_1 – a_4 – the regression coefficients;

ε – the random error term.

The quality of the estimated model was evaluated using the coefficient of determination, which reflects the share of variation in the dependent variable explained by the explanatory variables:

$$R^2 = 1 - \frac{\sum(y_i - \hat{y}_i)^2}{\sum(y_i - \bar{y})^2}, \quad (3)$$

The statistical significance of the model was tested using the Fisher F-test:

$$F = \frac{R^2/k}{(1-R^2)/(n-k-1)} \quad (4)$$

where

k – the number of explanatory variables;

n – the number of observations.

The statistical significance of individual regression parameters was assessed using the Student's t-test:

$$t = \frac{a_i}{SE(a_i)}, \quad (5)$$

where

SE(a_i) – the standard error of the estimated coefficient.

In addition, the variance inflation factor (VIF) was applied to test for the presence of multicollinearity among the explanatory variables:

$$VIF = \frac{1}{(1-R_i^2)}, \quad (6)$$

where

R_i² – the coefficient of determination of the auxiliary regression for the corresponding explanatory variable.

To determine the prospective dynamics of the analysed indicator, a forecasting approach based on the recursive use of the estimated regression equation was applied, taking into account projected values of the explanatory variables. The application of this set of methods made it possible to conduct a quantitative assessment of the influence of socio-economic determinants on the formation of incomes of agricultural sector employees and to identify trends in their further development.

4. Results and Discussion

At present, the incomes of employees in the agricultural sector play an important role in ensuring socio-economic stability and the long-term development of rural territories. The level of wages in agriculture directly affects the welfare of the rural population, determines the purchasing power of households, and forms the financial basis for maintaining economic activity in rural areas. Accordingly, the growth of incomes of agricultural sector employees contributes to the expansion of the domestic market for goods and services and increases the investment attractiveness of rural territories (Pietka *et al.*, 2009). At the same time, the level of income determines the possibilities for the reproduction of labour potential in the agricultural sector, since adequate wage levels reduce population outflow from rural areas and contribute to the retention of labour resources in rural communities, thereby creating preconditions for strengthening the economic activity of local communities. Therefore, in the long term, the growth of incomes of agricultural sector employees acts as an important factor in ensuring the sustainable development of rural territories within the framework of sustainable development (Figure 1).

Figure 1

The influence of agricultural sector employees' incomes on the achievement of sustainable rural development goals



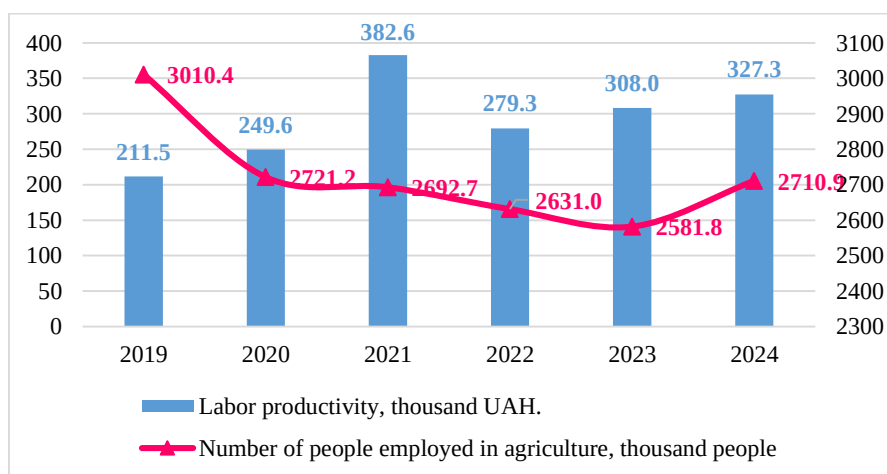
Source: developed by the authors

It should be noted that the wage level in the agricultural sector of Ukraine plays a significant role in the socio-economic development of rural territories. In this context, the main socio-economic determinants of income formation for agricultural employees are the number of employed persons and labour productivity in the sector. Their influence is manifested through the mechanism of value added formation and the efficiency of labour resource utilization in agriculture. Labour productivity directly determines the economic outcomes of workers' activities and the level of value they generate. Consequently, an increase in output per employee indicates improved efficiency in resource utilization and enhanced labour organization (Halanaik, 2022). Under such conditions, agricultural enterprises obtain additional economic opportunities to increase wages, thereby contributing to the growth of employee incomes in the agricultural sector.

The number of employed persons influences income levels through the balance of supply and demand in the labour market. A reduction in employment in agriculture, while maintaining or increasing production volumes, leads to a higher workload per employee and stimulates productivity growth, which may be accompanied by an increase in wage levels. At the same time, an excessive increase in the number of employed persons under conditions of limited production resources may restrain income growth, as it creates additional pressure on the wage fund (Lim and Kim, 2022). Taken together, these factors form the economic preconditions for changes in the income level of agricultural sector employees (Figure 2).

Figure 2

Dynamics of labour productivity and the number of employed persons in the agricultural sector of Ukraine in 2019-2024



Source: developed by the authors based on (State Statistics Service of Ukraine, 2025)

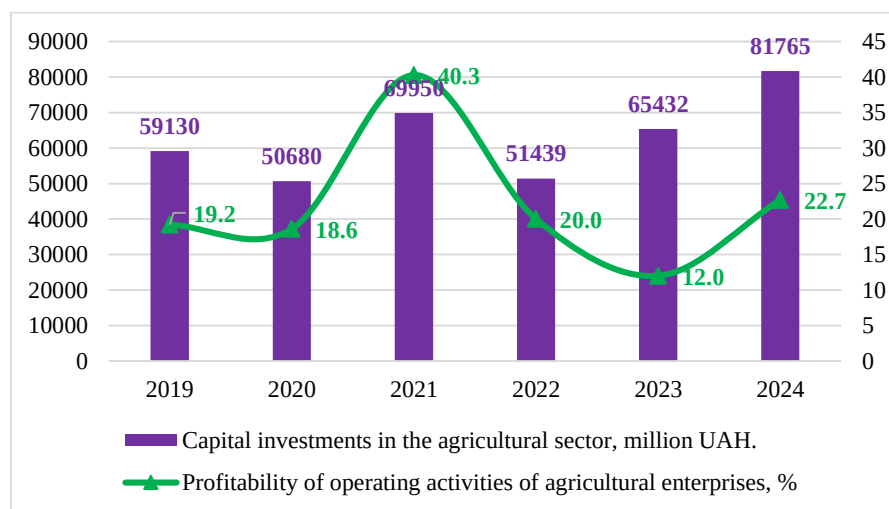
The conducted analysis indicates that during 2019-2024 the dynamics of labour productivity in the agricultural sector of Ukraine were characterized by an overall upward trend, while the number of employed persons in agriculture gradually decreased. In particular, over the analysed period labour productivity increased from UAH 211.5 thousand in 2019 to UAH 327.3 thousand in 2024, indicating improved efficiency in the use of labour resources in the sector. The most significant increase in this indicator was observed in 2021, when labour productivity reached UAH 382.6 thousand, followed by a certain decline in 2022, after which the indicator again demonstrated gradual growth in subsequent years.

At the same time, the number of employed persons in agriculture decreased from 3,010.4 thousand in 2019 to 2,581.8 thousand in 2023, reflecting a gradual reduction in labour resources involved in agricultural production. Only in 2024 was a certain increase recorded, with the indicator rising to 2,710.9 thousand persons, which may reflect a partial recovery of employment in the sector. Such dynamics indicate the presence of an inverse relationship between employment levels and wage levels in the agricultural sector. Overall, this trend suggests an inverse relationship between labour productivity and the number of employed persons, which may be associated with technological changes and improvements in the efficiency of production organization in the agricultural sector of Ukraine.

At the same time, important economic determinants of income formation for agricultural sector employees also include capital investment in agriculture and the level of operating profitability of enterprises. In particular, the growth of capital investment contributes to the modernization of production capacities and increases the efficiency of resource utilization (Khodakivska and Mohylnyi, 2018). As a result, this creates economic preconditions for increasing labour productivity and raising wage levels of employees in agricultural enterprises. The level of operating profitability reflects the financial performance of business entities and determines their capacity to form wage funds. Higher profitability of production activities provides greater financial resources for employee incentives. However, the influence of profitability on employee income may be indirect, since an increase in profitability does not always automatically translate into higher wages, which depends on the specific mechanisms of distribution of financial results (Sakovska, 2020). Accordingly, the dynamics of these indicators in the agricultural sector of Ukraine in recent years are considered below (Figure 3).

Figure 3

Changes in the volume of investment and the operating profitability of agricultural enterprises in Ukraine in 2019–2024



Source: developed by the authors based on (State Statistics Service of Ukraine, 2025)

The conducted analysis indicates that during 2019-2024 the dynamics of capital investment in the agricultural sector of Ukraine and the level of operating profitability of agricultural enterprises were characterized by significant instability and uneven changes. In particular, the volume of capital investment in agriculture amounted to UAH 59.1 billion in 2019, after which it declined to UAH 50.7 billion in 2020. In the following year, a substantial increase in investment activity was observed, reaching UAH 69.9 billion, which became one of the highest values during the studied period. However, in 2022 investment decreased to UAH 51.4 billion due to war-related risks. Subsequently, in 2023-2024 a trend toward recovery and growth was observed, with investment reaching UAH 81.8 billion in 2024, which became the highest value within the analysed interval.

At the same time, the level of operating profitability of agricultural enterprises demonstrated greater variability. After relatively stable values at the beginning of the period, a sharp increase was recorded in 2021, when profitability reached 40.3 percent, forming the peak level of profitability during the entire study period. However, in the following years profitability declined significantly: in 2022 it amounted to 20 percent, and in 2023 it reached its minimum value of 12 percent. Only in 2024 was a certain recovery observed, with profitability increasing to 22.7 percent.

Overall, it can be stated that there is no clear direct relationship between investment volumes and the level of operating profitability of agricultural enterprises. The dynamics of investment display a more gradual pattern with periodic fluctuations, whereas the profitability indicator demonstrates

considerably sharper changes, indicating a complex and indirect relationship between investment activity and the financial results of agricultural enterprises.

In order to provide a generalized assessment of the influence of individual factors on the income of agricultural sector employees in Ukraine, a correlation and regression analysis is conducted to identify the corresponding relationships. In this regard, the variables used include the above-mentioned factors influencing wage levels in agricultural enterprises (Table 1).

Table 1

Analysed indicators for 2010-2024 used to construct the correlation and regression model

Year	Average monthly wage in the agricultural sector, thousand UAH (y)	Number of employed persons in agriculture, thousand persons (x1)	Capital investment in agriculture, million UAH (x2)	Labour productivity (output per employee) of agricultural enterprises, thousand UAH (x3)	Operating profitability of agricultural sector enterprises, % (x4)
010	1.47	3094.5	11568.4	61.2	1.47
011	1.85	3393.8	17039.5	74.7	1.85
012	2.09	3496.0	19205.8	78.1	2.09
013	2.34	3577.5	18919.1	57.9	2.34
014	2.56	3091.4	18582.4	92.8	2.56
015	3.31	2870.6	29798.5	145.1	3.31
016	4.20	2866.5	50319.6	165.7	4.20
017	6.06	2860.7	64084.1	183.2	6.06
018	7.56	2937.6	66576.3	209.7	7.56
019	8.86	3010.4	59910.1	211.5	8.86
020	9.76	2721.2	50634.3	249.6	9.76
021	12.29	2692.7	69966.3	382.6	12.29
022	13.06	2631.0	51355.7	279.3	13.06
023	14.63	2581.8	65150.6	308.0	14.63
024	18.01	2710.9	81764.6	327.3	18.01

Source: (State Statistics Service of Ukraine, 2025)

Table 2 presents the main quantitative characteristics of the estimated econometric model that reflects the dependence of wage levels in the agricultural sector on the selected explanatory variables.

Table 2

Key parameters of the correlation and regression model of the influence of determinants on wage levels in the agricultural sector of Ukraine (y)

Factor	Coefficient (B)	Standard error	t-statistic	p-value
Average monthly wage in the agricultural sector (y)	8.6946	2.731	3.18	0.010
Number of employed persons (x1)	-0.00195	0.00091	-2.15	0.056
Capital investment (x2)	-0.0000136	0.0000081	-1.67	0.126
Labour productivity (x3)	0.05063	0.0107	4.72	0.0007
Operating profitability (x4)	-0.01944	0.0113	-1.71	0.118

Source: own research

The correlation and regression equation obtained as a result of the analysis reflects the dependence of wage levels of employees in the agricultural sector of Ukraine on a set of socio-economic factors and takes the following form:

$$y = 8.6946 - 0.00195x_1 - 0.0000136x_2 + 0.05063x_3 - 0.01944x_4 \quad (7)$$

The equation shows that the coefficient for the variable “number of employed persons in agriculture” has a negative value (−0.00195). This means that an increase in employment by 1 thousand persons is, on average, associated with a decrease in the average monthly wage by approximately UAH 1.95. This result reflects the influence of labour supply on the agricultural labour market: as the number of employed persons increases, pressure on the wage fund also intensifies.

The coefficient for the variable “capital investment” is also negative (−0.0000136), indicating the absence of a direct short-term impact of investment on wage levels. This may be explained by the fact that investment expenditures often produce a delayed effect, and their influence on employee income becomes evident only after the completion of the investment cycle and the commissioning of new production capacities.

Among the analysed factors, labour productivity demonstrates the most significant positive effect, with a coefficient of 0.05063. This implies that an increase in output per employee by UAH 1 thousand is associated with an increase in the average monthly wage of approximately UAH 50.6.

This result confirms the strong relationship between the efficiency of labour resource utilization and the income level of employees in the agricultural sector.

The coefficient for the variable “operating profitability” has a negative value (-0.01944), indicating that increases in enterprise profitability do not always directly translate into higher employee wages. Such a result may be explained by the specific mechanisms of financial result allocation within enterprises, when a portion of profits is directed toward investment, renewal of fixed assets, or the formation of financial reserves.

Overall, the obtained model demonstrates a high explanatory power ($R^2 = 0.938$), which indicates the significant influence of the analysed factors on the formation of income levels of employees in the agricultural sector of Ukraine.

Thus, it can be concluded that the obtained correlation and regression model confirms the complex nature of the influence of socio-economic determinants on the formation of income levels of employees in the agricultural sector of Ukraine. The modelling results indicate that the most significant role in wage growth is played by increases in labour productivity, which acts as the key factor in improving the economic efficiency of labour resource utilization. At the same time, the influence of other factors is more indirect, reflecting the complexity of the mechanisms through which investment and financial results of enterprise activities are transformed into higher wage levels. This indicates the need for a more coordinated integration of investment, production, and social and labour policies of agricultural enterprises aimed at ensuring stable income growth for employees and strengthening the socio-economic resilience of rural territories.

The main statistical characteristics of the developed correlation and regression model of wage formation in the agricultural sector indicate the following.

- The coefficient of determination $R^2 = 0.938$ indicates a high explanatory power of the model, as approximately 93.8% of the variation in the average monthly wage in the agricultural sector is explained by the combined influence of the included socio-economic factors. This confirms the appropriateness of using the selected set of variables to analyse the determinants of income formation among agricultural sector employees.
- The adjusted coefficient of determination $\text{Adj. } R^2 = 0.913$ differs only slightly from the value of R^2 , indicating a sufficient consistency of the model with empirical data and the absence of redundancy among the included factors given the sample size.
- The value of the Fisher F-statistic = 37.55 with a significance level of $p = 5.39 \cdot 10^{-6}$ confirms the overall statistical significance of the model and allows the null hypothesis of the absence

of a relationship between wage levels and the analysed factors to be rejected. This means that the constructed model is econometrically justified and suitable for further analysis.

- The analysis of the Student's t-statistics shows that labour productivity is the most statistically significant factor within the model, with a p-value lower than 0.01. At the same time, the number of employed persons, capital investment, and the level of operating profitability do not demonstrate high individual statistical significance. This may be explained by the presence of interrelationships among the explanatory variables and by the complex nature of the transformation of enterprise economic results into wage levels.

Overall, the obtained values of the main statistical parameters indicate a sufficiently high quality of the constructed model and confirm the feasibility of using it to analyse the socio-economic determinants of income formation among employees of the agricultural sector of Ukraine.

In addition, an assessment of the correlation matrix is conducted (Table 3).

Table 3

Matrix of pairwise correlations of explanatory and dependent variables

Indicators	Average monthly wage in the agricultural sector (y)	Number of employed persons (x1)	Capital investment (x2)	Labour productivity (x3)	Operating profitability (x4)
Average monthly wage in the agricultural sector (y)	1.000	-0.817	0.841	0.923	0.999
Number of employed persons (x1)	-0.817	1.000	-0.782	-0.876	-0.822
Capital investment (x2)	0.841	-0.782	1.000	0.895	0.844
Labour productivity (x3)	0.923	-0.876	0.895	1.000	0.925
Operating profitability (x4)	0.999	-0.822	0.844	0.925	1.000

Source: own research

According to the correlation matrix, the strongest positive relationship with the dependent variable y is observed for the operating profitability indicator ($r = 0.999$), as well as for labour productivity ($r = 0.923$). Capital investment also demonstrates a strong positive correlation with wage levels ($r = 0.841$). In contrast, the number of employed persons in agriculture shows a negative and relatively strong relationship with the dependent variable ($r = -0.817$), indicating a decrease in the average wage level under conditions of increasing employment.

For the correct interpretation of the results of the correlation and regression analysis, it is important to test the model for the presence of multicollinearity among the explanatory variables. One of the most commonly used tools for such verification is the calculation of the variance inflation factor (VIF). This indicator allows the assessment of the extent to which correlation among independent variables increases the variance of the estimated regression coefficients. High VIF values indicate the presence of multicollinearity, which may lead to instability of model parameters, changes in the signs of coefficients, and a decrease in the reliability of the economic interpretation of the results (Table 4).

Table 4

Variance inflation factor (VIF) values for the explanatory variables of the model

Indicators	VIF
Number of employed persons (x1)	4.61
Capital investment (x2)	5.83
Labour productivity (x3)	6.42
Operating profitability (x4)	1.12

Source: own research

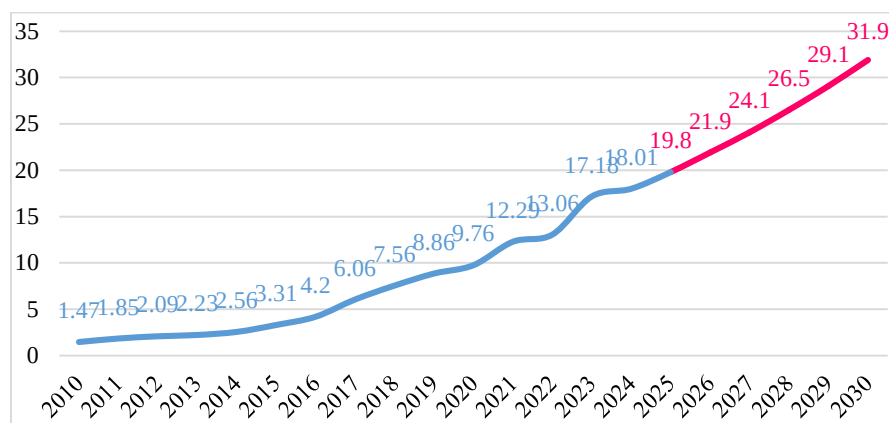
The calculation results indicate that all explanatory variables have VIF values that do not exceed the critical threshold of 10, which confirms the absence of problematic multicollinearity in the constructed model. At the same time, the VIF values for labour productivity and capital investment are somewhat higher, which can be explained by the relationship between the efficiency of labour resource utilization and investment activity in the agricultural sector. This is an economically justified phenomenon, as production modernization and increasing investment are typically accompanied by higher labour productivity.

Overall, the obtained results confirm that the constructed correlation and regression model is statistically reliable, while the level of interdependence among the explanatory variables does not distort the estimated regression parameters and does not reduce the analytical value of the model.

Based on the developed correlation and regression model, a forecast of changes in the monthly wage level in agriculture in Ukraine until 2030 was constructed (Figure 4).

Figure 4

Forecast of changes in the average monthly wage level in the agricultural sector of Ukraine until 2030, thousand UAH



Source: own research

The model-based forecast constructed on the basis of the correlation and regression relationship demonstrates a continued increase in the average monthly wage level without sharp fluctuations, which indicates the inertial nature of the development of the agricultural sector of Ukraine under the condition that the current trends in the structure of the factor environment remain unchanged. It is expected that in 2025-2030 the average monthly wage will gradually increase from UAH 19.8 thousand to UAH 31.9 thousand, reflecting a stable positive dynamic of employee incomes in the sector.

The main contribution to the projected wage growth will be provided by increases in labour productivity and the gradual expansion of investment activity in the agricultural sector, which creates economic preconditions for improving the efficiency of labour resource utilization. At the same time, the influence of the number of employed persons and the level of operating profitability within the model is more indirect, which is reflected in the moderate pace of projected wage growth. Overall, the forecast illustrates that by 2030 the increase in income levels of agricultural sector employees will occur gradually, while achieving higher growth rates will require further improvements in labour productivity, production modernization, and more efficient utilization of investment resources in the development of the agricultural economy.

5. Conclusions

The conducted study made it possible to develop a comprehensive analytical understanding of the socio-economic determinants shaping the income of employees in the agricultural sector of

Ukraine and their role in ensuring the sustainable development of rural territories. The obtained results indicate that the dynamics of wage levels in the agricultural sector are formed not by isolated factors, but by the interaction of a set of production, investment, and financial parameters characterizing the functioning of agricultural enterprises. The most significant influence on the growth of employee income is exerted by increases in labour productivity, which confirms the decisive role of the efficiency of labour resource utilization in shaping the economic outcomes of agricultural production.

At the same time, the modelling results demonstrate a more indirect influence of capital investment and operating profitability on wage levels. This indicates that the financial results and investment activity of enterprises do not always directly translate into higher employee income, which largely depends on the mechanisms of financial resource allocation and the effectiveness of managerial decisions in the use of labour potential. In addition, the inverse relationship between the number of employed persons and wage levels reflects structural changes in the agricultural labour market and the gradual strengthening of intensive factors in production development.

The constructed correlation and regression model is characterized by a high level of explanatory power and statistical reliability, which confirms its suitability for analytically substantiating trends in the formation of income among employees in the agricultural sector. The conducted forecast indicates the preservation of an upward trajectory of wage growth in the long term, creating favourable conditions for strengthening the socio-economic resilience of rural territories. In conclusion, it is demonstrated that ensuring the sustainable development of rural territories requires a systematic approach to increasing the income of agricultural sector employees, oriented toward improving labour productivity, modernizing production, and enhancing the efficiency of investment resource utilization.

6. References

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