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DYNAMICS, STRUCTURE AND FACTORS INFLUENCING POVERTY IN THE REGIONS OF UZBEKISTAN

Abstract: The article analyzes the results of reforms carried out in Uzbekistan in recent years aimed at poverty reduction from a regional perspective. The differentiation of poverty levels across regions and the main socio-economic factors influencing it are assessed from a scientific standpoint. Additionally, scientifically grounded proposals have been developed to eliminate regional disparities.

Keywords: poverty, poverty level, minimum consumer expenditures, monetary poverty, GDP, population income, inflation, average monthly salary, urbanization, environmental factors.

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ДИНАМИКА, СТРУКТУРА И ФАКТОРЫ, ВЛИЯЮЩИЕ НА БЕДНОСТЬ В РЕГИОНАХ УЗБЕКИСТАНА

Аннотация: В статье анализируются результаты реформ, проводимых в Узбекистане в последние годы по сокращению бедности в региональном разрезе. Дифференциация уровня бедности в регионах и влияющие на нее основные социально-экономические факторы оценены с научной точки зрения. Также разработаны научно обоснованные предложения по устранению территориальных диспропорций.

Ключевые слова: бедность, уровень бедности, минимальные потребительские расходы, монетарная бедность, ВВП, доходы населения, инфляция, среднемесячная зарплата, урбанизация, экологические факторы.

Introduction

Poverty reduction and the mitigation of its territorial disparities remain among the most pressing issues in the global economy, exacerbating inequality both between the world's macro-regions and within individual states. According to current estimates by the World Bank for 2026, approximately 10% of the global population (over 800 million people) still live in extreme poverty or survive on less than US $3.00 per day (at purchasing power parity) [1].

Along with ensuring sustainable economic growth and increasing the volume of gross domestic product in the country, raising the real income of the population and mitigating social inequality are priority directions of state policy. In recent years,

advanced methodologies for measuring poverty have been implemented in Uzbekistan, and a targeted and institutional system for combating it has been formed.

However, the diversity of the republic's territorial and economic characteristics, as well as imbalances in the allocation of industry and agriculture, indicate that significant differences in the dynamics and structure of poverty persist across regions. Therefore, an in-depth analysis of poverty reduction based on the internal capabilities of regions is of high scientific and practical importance.

By the end of 2025, the poverty rate in Uzbekistan dropped to a record low of 5.8%. According to a survey conducted by the Statistics Agency and the World Bank among 16,000 households, more than 302,000 in-need families were lifted out of poverty within a single year [2]. At the same time, economic disparities between regions and imbalances in the density of the poor population in absolute terms still persist.

At this new stage of economic reforms, the implementation of the "mahallabay" system and targeted social protection mechanisms is yielding results. Declaring 2026 as the "Year of Supporting Mahalla and Well-being" is also a logical continuation of efforts in this area. This article analyzes the dynamics of poverty reduction in the country, its territorial features, and the prospects of utilizing international experience in addressing this problem.

Literature Review

In modern academic discourse on economics and regional studies, the problem of poverty occupies a central place due to its complex, multidimensional, and spatial-social nature. In recent decades, theoretical and methodological approaches to assessing this phenomenon have undergone a radical transformation, shifting from purely monetary and income-oriented criteria to balanced systems encompassing human capital, spatial factors, and the institutional environment.

In Uzbekistan, increasing population well-being, poverty reduction, and sustainable regional development are considered crucial directions of socio-economic reforms, as well as strategic and regulatory legal documents. In particular, among the goals set for achievement in the country for the period up to 2030 and approved by Decree of the President of the Republic of Uzbekistan No. 21 "On additional measures for the consistent continuation of reforms and bringing them to a new stage within the priority areas of the country's development until 2030," the complete eradication of monetary poverty and the comprehensive development of regions are included [3].

Furthermore, the first of Uzbekistan's national Sustainable Development Goals and targets for the period up to 2030 explicitly provides for "reducing the level of low-income population everywhere" [4]. To achieve this, targets such as reducing poverty among all population groups and across all regions have been defined, alongside strengthening social protection of the population and mechanisms aimed at generating their sustainable income.

As is well known, poverty is a complex concept. In the scientific literature dedicated to its characterization, critical approaches to a narrow interpretation of poverty—specifically, associating it exclusively with financial resources or income—are closely linked to the name of the renowned economist Amartya Sen. According to

the idea put forward in his work *Development as Freedom* (1999), poverty is not merely a lack of money, but a deprivation of people's capabilities to improve their lives, realize their potential, and live freely in society [5]. The scholar emphasizes that when assessing poverty, it is necessary to establish basic capabilities (education, healthcare, quality employment) essential for individuals to escape poverty.

This approach holds significant methodological importance when studying the dynamics of poverty in Uzbekistan and its regions. In particular, it demonstrates the necessity of taking into account not only per capita income levels across regions, but also disparities in the population's access to infrastructure, as well as the quality of education and healthcare.

The limitations of assessing poverty using monetary indicators (by income or expenditure) have been widely criticized by scholars and researchers, substantiating the necessity of determining poverty levels using a multidimensional index approach. In this regard, the Alkire-Foster (2011) methodology, or the "Multidimensional Poverty Index," developed by Sabina Alkire and James Foster, is one of the globally recognized approaches [6]. This methodology allows for identifying the specific deprivations faced by the population in areas such as education, healthcare, living conditions, employment, and other dimensions.

This technique is of great practical value for an in-depth analysis of the structure of poverty from a territorial perspective. For example, in certain regions, nominal household incomes may be relatively high, yet due to limited access to clean drinking water, quality preschool education, or medical facilities, residents may remain in a state of multidimensional poverty. The Alkire-Foster approach enables the identification of which structural components (such as infrastructure or education) aggravate poverty in specific regions, thereby facilitating targeted state policy.

Ravi Kanbur and Anthony Venables (2005), who investigated issues of socio-economic development and territorial inequality in countries, noted that under market economy conditions, regional development occurs unevenly: while industrialized centers, large cities, and areas adjacent to transport corridors grow faster, remote or rural regions lag behind, leading to disparities in territorial inequality and poverty levels across regions [7].

These theoretical insights can be utilized when analyzing the dynamics of poverty in the regions of Uzbekistan. In our country, despite low poverty rates in regions housing regional centers and economic zones, poverty indicators remain higher in mountainous, desert, or rural districts due to natural-geographical conditions and infrastructure limitations. The concepts of Kanbur and Venables justify the importance of narrowing these disparities within regional policy by directing investments and infrastructure projects toward lagging regions.

According to François Bourguignon's research *The Poverty-Growth-Inequality Triangle* (2004), economic growth, income inequality, and poverty are closely interconnected: if income inequality increases during economic growth, the positive impact of growth on poverty reduction diminishes [8].

In the case of Uzbekistan, this approach is vital when analyzing poverty dynamics amid the high rates of gross domestic product growth and regional economic activity

observed in recent years. Bourguignon's methodology demonstrates that increasing aggregate indicators alone is insufficient, and sustainable poverty reduction can only be achieved by preventing interregional disparities.

In the work *Economic Development* (2020) by Todaro and Smith, dedicated to the study of developing economies, the causes of rural poverty, the share of informal employment, rural-to-urban migration processes, and the effectiveness of local governance are thoroughly analyzed [9]. According to the authors, in developing countries, the majority of the poor reside in rural areas due to the seasonality of agriculture, low incomes, resource scarcity, and unstable labor markets.

These scientific perspectives provide a theoretical foundation for the fact that poverty in Uzbekistan's regions is relatively higher in rural areas, with informal employment and a lack of professional skills being major factors in its structure. Drawing upon Todaro and Smith's approaches, it is possible to scientifically justify the feasibility of eliminating poverty through the development of small businesses in rural areas, vocational training for the population, labor market diversification, and the establishment of effective local governance.

The prominent Russian sociologist and economist Natalia Rimashevskaya (1999) extensively researched the causes of poverty, social stratification, and the decline in living standards in transition economies [10]. In her view, poverty is directly linked not only to macroeconomic indicators, but also to the demographic composition of families (large family size, loss of a breadwinner), educational levels, and labor market activity.

In research conducted by a team of scholars led by the Russian economist V. Bobkov (2020) on poverty, social inequality, and the "working poor," the causes underlying the formation of an employed yet impoverished population, the negative consequences of informal employment, and criteria for decent wages were thoroughly analyzed [11].

In Uzbekistan, Kalandar Abdurakhmanov (2009), who established a dedicated school of thought on the effective utilization of human capital and labor markets to reduce regional poverty, rigorously demonstrated in his foundational works that under market conditions, developing human capital, fostering public entrepreneurial activity, and creating decent jobs are decisive factors in poverty reduction [12].

Building upon these scientific approaches, the article can highlight the importance of vocational training, the rational utilization of labor resources, and the formulation of employment programs tailored to regional demographic characteristics when mitigating poverty at the regional level. Abdurakhmanov's scientific views reveal that the priority task of state policy in overcoming territorial disparities is not merely economic growth, but also creating the necessary conditions to unlock the labor potential of every citizen.

Issues surrounding the reduction of regional poverty in Uzbekistan through the creation of new jobs, the development of small business and entrepreneurship, and the generation of stable household income are also extensively addressed in the scholarly works of economist R.Khasanov [13]. In his research, the necessity of enhancing competitiveness in the labor market and expanding small business and

entrepreneurship is scientifically substantiated as a primary condition for poverty reduction in the country.

Research Methodology

This article employs methods of systemic and comprehensive economic-statistical analysis to assess trends in the population's poverty level in the Republic of Uzbekistan and its regions for 2021–2025, as well as the factors influencing the poverty rate. The empirical part of the study is based on regional-level data of the Republic of Uzbekistan. Furthermore, the study conducted an assessment using a range of statistical datasets on employment and poverty by calculating Pearson and Spearman correlation coefficients, as well as performing regression analysis to establish causal relationships.

Analysis and results

In Uzbekistan, the national poverty line, announced on the basis of the monetary method for calculating the poverty rate - that is, the cost of minimum consumption expenditure (MCE) - decreased from 17.0% in 2021 to 5.8% by early 2026, dropping by 11.2 percentage points (Table 1). Over this period, a total of 3.7 million people were lifted out of poverty. These dynamics were also recognized by the World Bank and other international organizations. In particular, as a result of the positive reforms implemented, the country ranked among the top 5 nations in the world demonstrating the highest positive performance in the early achievement of the SDGs and poverty reduction [14].

Table-1

Change in the poverty rate in Uzbekistan (end of year, %)

№	Regions	2021 y.	2022 y.	2023 y.	2024 y.	2025 y.
1	Rep. of Karakalpakstan	20,8	19,9	13,6	10,8	6,6
2	Andijan region	19,3	17,4	11,9	9,5	6,1
3	Bukhara region	14,5	11,9	11,8	8,7	6,0
4	Jizzakh region	21,1	16,1	14,2	11,8	5,8
5	Kashkadarya region	17,9	12,7	11,5	9,6	6,5
6	Navoi region	4,7	9,2	7,6	5,7	4,2
7	Namangan region	14,1	12,8	10,4	7,6	5,5
8	Samarkand region	18,2	14,0	10,5	7,5	6,1
9	Surkhandarya region	13,3	13,7	10,6	9,3	6,1
10	Syrdarya region	30,5	19,5	13,8	11,3	6,2
11	Tashkent region	22,7	14,5	10,2	8,0	5,3
12	Fergana region	3,9	11,6	10,1	8,6	5,7
13	Khorezm region	19,9	19,1	14,1	11,9	6,7
14	Tashkent city	8,1	8,5	7,9	7,3	3,5
15	**Total for the Republic**	**17,0**	**14,1**	**11,0**	**8,9**	**5,8**

Source: *Data from the National Committee on Statistics of the Republic of Uzbekistan.*

During this period, the size of the MCE, which defines the poverty line, was also updated in accordance with the inflation rate, increasing from 440,000 sums per person per month in 2021 to 715,000 sums by 2026.

The reduction in the poverty rate was observed not only across the republic as a whole, but also harmoniously across all regions. When analyzing the rates for 2021–2025, the greatest reduction was observed in the Syrdarya region, where the poverty

rate fell from 30.5% to 6.2% over this period. However, slightly unexpected results could be observed during this period only in the Fergana region. While the poverty rate in the region stood at 3.9% in 2021, it rose to 11.6% the following year, after which it exhibited a continuous downward trend. A similar situation was observed in the Navoi region as well.

Overall, when grouping regions based on the results of 2021, 2023, and 2025 into categories with indicators above and below the national average, the following pattern can be observed: while the Republic of Karakalpakstan, Syrdarya, Khorezm, Andijan, and Kashkadarya regions consistently remained above the national average throughout the analyzed period, the Fergana, Navoi, and Namangan regions, along with the city of Tashkent, were consistently below the average.

Table-2

Grouping of regions by poverty rate relative to the national average poverty rate

№	*2021 y.*	*2023 y.*	*2025 y.*
	Above average	**Above average**	**Above average**
1	Syrdarya region (30,5%)	Jizzakh region (14,2%)	Khorezm region (6,7%)
2	Tashkent region (22,7%)	Khorezm region (14,1%)	Rep. of Karakalpakstan (6,6%)
3	Jizzakh region (21,1%)	Syrdarya region (13,8%)	Kashkadarya region (6,5%)
4	Rep. of Karakalpakstan (20,8%)	Rep. of Karakalpakstan (13,6%)	Syrdarya region (6,2%)
5	Khorezm region (19,9%)	Andijan region (11,9%)	Andijan region (6,1%)
6	Andijan region (19,3%)	Bukhara region (11,8%)	Samarkand region (6,1%)
7	Samarkand region (18,2%)	Kashkadarya region (11,5%)	Bukhara region (6,0%)
8	Kashkadarya region (17,9%)	**Below average**	Surkhandarya region (6,0%)
	Below average	Surkhandarya region (10,6%)	**Below average**
1	Bukhara region (14,5%)	Samarkand region (10,5%)	Jizzakh region (5,8%)
2	Namangan region (14,1%)	Namangan region (10,4%)	Fergana region (5,7%)
3	Surkhandarya region (13,3%)	Tashkent region (10,2%)	Namangan region (5,5%)
4	Tashkent city (8,1%)	Fergana region (10,1%)	Tashkent region (5,3%)
5	Navoi region (4,7%)	Tashkent city (7,9%)	Navoi region (4,2%)
6	Fergana region (3,9%)	Navoi region (7,6%)	Tashkent city (3,5%)

Source: *Data from the National Committee on Statistics of the Republic of Uzbekistan, authors' calculations.*

At the same time, one of the key achievements in poverty reduction was a sharp narrowing of the gap between urban and rural areas. By the end of 2025, the poverty rate stood at 5.2% in urban areas and 6.4% in rural areas. Meanwhile, in 2023, this indicator was 11.5% in urban areas and 16.2% in rural areas; the decrease over 2023–2025 by 6.3 percentage points in urban areas and by 9.8 percentage points in rural areas had a significant impact on the overall poverty rate (Table 3).

Table 3

Changes in the territorial structure of poverty in Uzbekistan

Indicators	**2023 y.**	**2024 y.**	**2025 y.**	Change
In urban areas	11,5%	7,8%	5,2%	-6.3 percentage points
In rural areas	16,2%	9,9%	6,4%	-9.8 percentage points

Source: *Authors' calculations based on data from the National Committee on Statistics.*

Over the analyzed period, the largest poor population resided mainly in densely populated regions and regions with high demographic indicators, above all—a high birth rate. Specifically, as of January 1, 2026, with 2.2 million poor individuals in the country, 267.0 thousand of them reside in the Samarkand region, nearly 241.0 thousand in the Fergana region, and 240.0 thousand in the Kashkadarya region [15]. In the city of Tashkent, this indicator stands at 111.0 thousand, in the Syrdarya region—58.7 thousand, while the smallest number of poor individuals is recorded in the Navoi region—nearly 47 thousand people.

A decrease or increase in the poverty rate in the country and its regions is driven by a number of factors. In classifying these factors, they can be categorized into direct and indirect, negative or positive types. However, no single factor can be characterized as exclusively positive or exclusively negative. That is to say, there are events or phenomena, mechanisms or instruments through whose occurrence, implementation, or emergence poverty either increases or decreases. For instance, establishing a large manufacturing enterprise in a given region may increase the incomes of the poor and unemployed population by creating jobs with high and stable wages. Conversely, poverty may rise due to a decline in production volumes among small craftspeople or self-employed individuals producing the same goods as the enterprise. Finally, following the commissioning of this enterprise, public health may deteriorate due to negative environmental impacts, ultimately leading to a reduction in incomes.

When characterizing the poverty level of the population based on general features, it can be categorized into 4 primary directions (Figure 1).

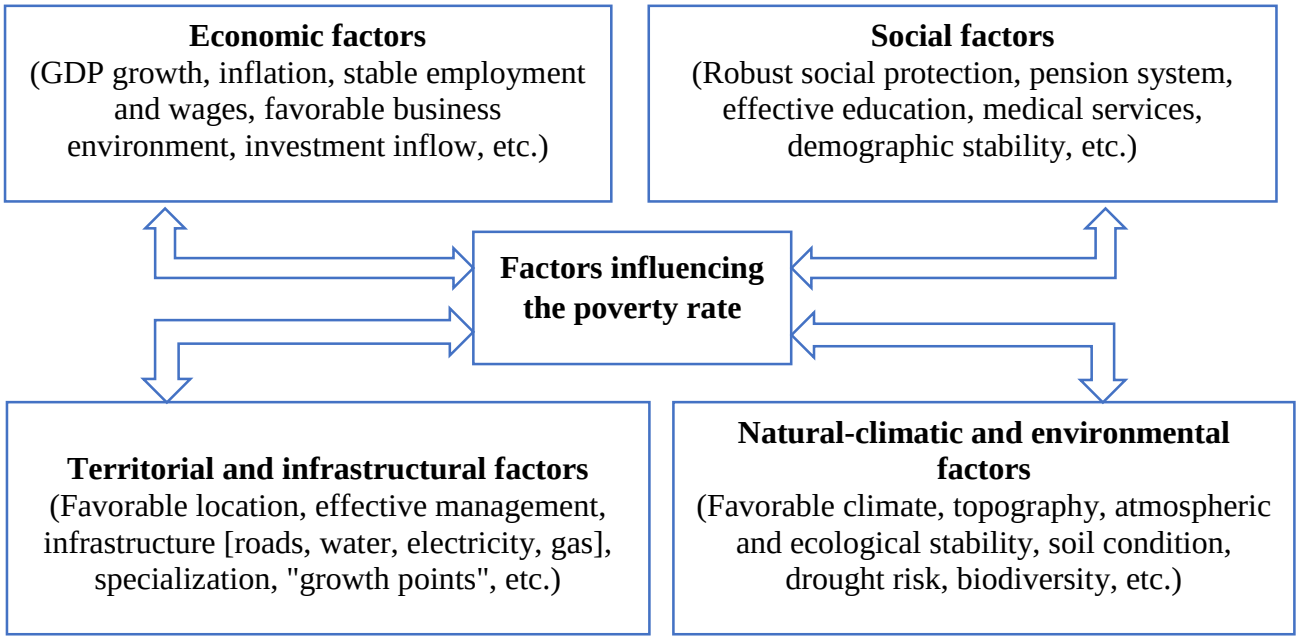


Figure 1. *Classification of factors influencing the poverty rate (authors' design)*

In the World Bank Group report dedicated to the findings of research on the topic "Poverty and Equity Assessment in Uzbekistan" published in September of the current year, among the factors that had the greatest impact on poverty reduction in the country, the growth in the share of hired employees and their incomes was noted, whereas a

contraction in agriculture, self-employment, and the number of labor migrants was recorded.

The report also highlights the significance of disparities between regions, specifically the concentration of high-income jobs in the capital and Tashkent region, as well as the existence of income discrepancies among the population residing across the regions [16].

Furthermore, other sources identify the following among the factors influencing the poverty rate in Uzbekistan: the creation of a favorable environment and the allocation of resources for small business and entrepreneurship, gradual infrastructure improvement, a focus on enhancing human capital quality, land reforms, and others.

Using the conducted analysis and statistical data, for the purpose of an econometric evaluation of the poverty rate across the regions of Uzbekistan, as well as determining the relationship between the multidimensional factors influencing it, Pearson's linear correlation coefficients (r) and Spearman's rank correlation coefficients were calculated (Table 4). Taking into account the non-stationarity of time series and panel data, parametric (Pearson) and non-parametric (Spearman) statistical tests were applied in parallel in the study. The 24 analyzed factors were divided into 4 fundamental directions:

$$Y = f(X_{economic}, X_{social}, X_{territorial-infrastructural}, X_{natural-climatic\ and\ environmental})$$

Economic factors. In this dimension, real aggregate per capita income (r = -0.962; ρ = -0.947) and the average monthly nominal wage (r = -0.961; ρ = -0.921) exhibited the highest negative elasticity. A correlation modulus value above 0.90 indicates that the growth of population income and wage levels acts as the primary macroeconomic factor reducing the poverty rate.

In accordance with the labor market theory of Curtis and Fisher, the unemployment rate (r = +0.983; ρ = +0.987) demonstrated the strongest direct correlation with poverty. Such a high correlation between the indicators indicates that informal employment and unemployment in the labor market are key factors driving the population into the "poverty trap."

At the same time, the share of agriculture in the GRP structure (r = +0.765; ρ = +0.742) showed a direct correlation. This econometrically confirms that in regions dependent on the agrarian sector, relatively low labor productivity and seasonal income fluctuations increase the risk of poverty.

Social factors. When analyzing investments in human capital, the preschool education enrollment rate (r = -0.956; ρ = -0.947) and higher education enrollment rate (r = -0.892; ρ = -0.874) proved to be the primary institutional drivers reducing the poverty rate. Expanding access to education enhances the population's labor market competitiveness and labor productivity.

Conversely, the share of social benefit recipients (r = +0.988; ρ = +0.987) and persons with disabilities (r = +0.966; ρ = +0.943) has a direct correlation with poverty. This relationship is not causal in nature; rather, it reflects the fact that these indicators act as markers of a high concentration of population segments in need of targeted social protection in a given region.

The analysis of demographic indicators shows that the family demographic dependency ratio (r = +0.986; ρ = +0.956), the birth rate (r = +0.911; ρ = +0.868), as well as the number of minor children (r = +0.791; ρ = +0.877) have a very strong positive correlation with the poverty indicator.

Table 4

Classification of influencing factors

Group and Name of Factors	Unit of Measurement	Pearson **(r)**	Spearman **(ρ)**	Nature and Direction of Correlation	**p-value**
I. Economic factors					
Real per capita income	thousand UZS	-0.962	-0.947	Very strong inverse correlation	p < 0.001
Unemployment rate	percent (%)	+0.983	+0.987	Very strong direct correlation	p < 0.001
Average monthly nominal wage	thousand UZS	-0.961	-0.921	Very strong inverse correlation	p < 0.001
Transfers and remittances	billion USD	-0.904	-0.855	Strong inverse correlation	p < 0.001
Inflation rate	percent (%)	+0.658	+0.587	Moderate direct correlation	p < 0.01
Share of agriculture in GRP	percent (%)	+0.765	+0.742	Strong direct correlation	p < 0.01
II. Social factors					
Preschool education enrollment rate	percent (%)	-0.956	-0.947	Very strong inverse correlation	p < 0.001
Higher education enrollment rate	percent (%)	-0.892	-0.874	Strong inverse correlation	p < 0.001
Per capita healthcare expenditures	thousand UZS	-0.855	-0.881	Strong inverse correlation	p < 0.001
Share of social benefit and financial aid recipients	share (%)	+0.988	+0.987	Very strong direct correlation	p < 0.001
Family demographic dependency ratio	coefficient	+0.986	+0.956	Very strong direct correlation	p < 0.001
Birth rate	per mille (‰)	+0.911	+0.868	Strong direct correlation	p < 0.001
Number of minors in the family	average persons	+0.791	+0.877	Strong direct correlation	p < 0.01
Share of persons with disabilities	percent (%)	+0.966	+0.943	Very strong direct correlation	p < 0.001
III. Territorial and infrastructural factors					
Road and transport infrastructure provision	percent (%)	-0.885	-0.864	Strong inverse correlation	p < 0.001
Stability of power and gas supply networks	percent (%)	-0.912	-0.895	Very strong inverse correlation	p < 0.001
Internet and digital infrastructure coverage	percent (%)	-0.894	-0.872	Strong inverse correlation	p < 0.001
Provision of clean drinking water	percent (%)	-0.981	-0.969	Very strong inverse correlation	p < 0.001
Governance efficiency	score (0–100)	-0.925	-0.908	Very strong inverse correlation	p < 0.001
Urbanization rate	percent (%)	-0.878	-0.862	Strong inverse correlation	p < 0.001
Remoteness from the center	kilometers	+0.812	+0.795	Strong direct correlation	p < 0.01
VI. Natural-climatic and environmental factors					

Topographical complexity	score	+0.745	+0.718	Strong direct correlation	$p < 0.01$
Climatic adversity index	index	+0.772	+0.751	Strong direct correlation	$p < 0.01$
Atmospheric pollutant emissions	thousand tons	+0.944	+0.916	Strong direct correlation	$p < 0.001$

Note: *The strength of the correlation was evaluated based on the absolute values of the Pearson and Spearman coefficients (very strong: 0.80–1.00; strong: 0.60–0.79; moderate: 0.40–0.59). Statistical significance thresholds of $p < 0.01$ and $p < 0.001$ indicate high reliability of the results.*

From an econometric standpoint, this situation is explained by the dilution of real per capita income as the share of dependents in the household increases. This means that in large families and households with a high demographic dependency ratio, the risk of poverty increases exponentially.

Territorial and infrastructural factors. The provision of the population and territories with standard road and transport infrastructure ($r = -0.885$; $\rho = -0.864$) has a strong inverse correlation with the poverty rate, meaning that the improvement of road infrastructure reduces poverty. Likewise, factors such as the stability of power and gas supply networks ($r = -0.912$; $\rho = -0.895$), internet and digital infrastructure coverage ($r = -0.894$; $\rho = -0.872$), and the provision of clean drinking water ($r = -0.981$; $\rho = -0.969$) are factors that exert a very strong and relatively strong impact on poverty reduction. That is, their improvement reduces poverty, whereas a negative state of infrastructure supply, conversely, leads to its increase.

Furthermore, within this dimension, regional governance efficiency ($r = -0.925$; $\rho = -0.908$) exhibited a very strong inverse correlation, while the urbanization rate showed a strong inverse correlation ($r = -0.878$; $\rho = -0.862$). The role of these two factors in poverty reduction is significant. However, in this dimension, only one factor—specifically the region's remoteness from the center ($r = +0.862$; $\rho = +0.795$)—has a strong positive correlation. At the same time, the degree of remoteness of the population, households, or populated areas from the center can increase poverty, or the reverse situation may be observed. This circumstance confirms Paul Krugman's "center-periphery" model, econometrically proving the existence of "poverty traps" in regions located far from agglomeration centers and possessing unfavorable geographical locations.

Natural-climatic and environmental factors. In the ecological-economic model, the volume of atmospheric pollutant emissions (air, water, and soil pollution) ($r = +0.944$; $\rho = +0.916$) demonstrated a strong direct correlation. In regions with high levels of industrial and technological pollution, public health deterioration and rising medical expenses reduce household financial resources and indirectly lead to impoverishment.

In addition, within this dimension, while topographical complexity and unfavorable locations for comfortable human habitation, such as in mountainous and desert areas, increase the risk of poverty growth ($r = +0.745$; $\rho = +0.718$), poverty may also increase in regions with unfavorable climatic conditions ($r = +0.772$; $\rho = +0.751$) due to declining population incomes and the intensification of negative impacts on health. Overall, the direct or indirect influence of natural-geographical, ecological, and climatic factors on the poverty rate of the population and territories has been repeatedly

emphasized in literature, yet in Uzbekistan, compared to the other aforementioned dimensions, the impact of these factors has been studied to a lesser extent.

For a deeper assessment of factor impacts and the elimination of endogeneity, based on panel data from the 14 regions of the Republic of Uzbekistan for 2021–2025 (N = 70), a Fixed-Effects panel regression model was constructed. The regional poverty rate (%) served as the dependent variable (y), while the unemployment rate (unemp, %) and preschool education enrollment rate (edu, %) served as the independent factors.

Table 5

Regression results

Y	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Unemp	1.552	.432	3.60	.001	.687	2.418	***
Edu	-.314	.149	-2.11	.04	-.613	-.015	**
Constant	26.371	12.251	2.15	.036	1.809	50.933	**

Mean dependent var	11.371	SD dependent var	5.330
R-squared	0.543	Number of obs	70
F-test	32.040	Prob > F	0.000
Akaike crit. (AIC)	360.319	Bayesian crit. (BIC)	367.064
*** p<.01, ** p<.05, * p<.1			

The constructed econometric model has the following mathematical form:

$$Poverty_i = 26.371 + 1.552 * unemp_i - 0.314 * edu_i + u_i + \varepsilon_i$$

Model quality and reliability (R^2 = 0.543):

The within-group coefficient of determination (R^2 = 0.543) indicates that 54.3% of the variation in the regional poverty rate is explained by the factors included in the model—the unemployment rate and preschool education coverage. The high value of the F-statistic (32.04) confirms the overall statistical significance and reliability of the constructed model.

Impact of unemployment (unemp, β 1 = 1.552, p = 0.001):

The unemployment rate possesses high statistical significance ($p < 0.01$). The coefficient shows that with a 1% increase in unemployment, the regional poverty rate increases on average by 1.55 percentage points. This fully aligns with economic theory and highlights the importance of creating new jobs.

Impact of preschool education (edu, β 2 = -0.314, p = 0.040):

Preschool education coverage exerts a statistically significant inverse (mitigating) effect on poverty ($p < 0.05$). A 1% increase in preschool education coverage leads to a reduction in the poverty rate by an average of 0.31 percentage points. This result confirms that the expansion of social infrastructure (kindergartens) promotes the employment of parents (especially women) and the growth of aggregate household incomes.

Conclusion and recommendations

By the end of 2025, Uzbekistan achieved significant progress in poverty reduction. However, to further enhance public welfare and ensure socio-economic stability across regions in the future, primary focus must be directed toward specific targeted issues. As a result of the analysis conducted, the following measures are proposed:

1. **Strengthening Decentralization and Sectoral Diversification.**

It is necessary to further reinforce the principle of decentralization—moving from the center toward peripheral areas—in the development of large-scale industrial manufacturing and the services sector. Considering that the poverty rate in regions such as Tashkent City and the Navoi region is currently among the lowest, special attention must be given to developing other regions, primarily regions, districts (cities), and rural areas characterized by high poverty rates and low per capita income shares. To this end, measures can be implemented to gradually shift major manufacturing facilities located in central hubs or establish their branches closer to regions with large poor and unemployed populations in the future.

Concurrently, it is essential to expand the tourism and services sectors, which will occupy an important role in Uzbekistan's socio-economic development in the near term. New mechanisms should be designed to more broadly engage unemployed and poor individuals, as well as their children, specifically in tourism and services within regions such as Kashkadarya, Fergana, Jizzakh, and Syrdarya regions, as well as the Republic of Karakalpakstan. This will contribute to establishing stable income streams and preventing households from falling into poverty.

2. **Digital Literacy, Gender Inclusion, and Foreign/Domestic Migration.**

Poverty rates remain slightly higher in rural areas and among women. As demonstrated in the correlation analysis above, distance from central hubs and low urbanization rates act as key drivers of poverty. However, in today’s modern context, geographic location, physical distance, and gender division do not necessarily constrain income generation. High-speed internet and digital socialization present extensive opportunities for rural populations, particularly for unemployed and poor individuals—and women in particular—in remote villages.

To leverage these opportunities, it is expedient to train these population segments in digital and online services, early digital skill acquisition, financial literacy, and e-commerce.

Furthermore, support must be extended to youth migrating from rural areas for labor purposes by upgrading their vocational qualifications and experience, as well as strengthening mechanisms that facilitate training in foreign languages and modern professions. Today, organized and legally protected external and internal migration plays a vital role in mitigating unemployment and poverty. For instance, personal remittances from abroad reached USD 14.8 billion in 2024, USD 18.9 billion in 2025, and USD 9.3 billion in the first half of 2026 [18], with further growth anticipated.

3. **Preventing Vulnerable Populations from Slipping into Poverty.**

Although Uzbekistan's poverty rate and overall share of the poor have declined, the proportion of the population living near the poverty line or at risk (those whose per

capita incomes are up to two times the minimum wage) remains high. National and local governing authorities face the critical task of strengthening preventive measures to keep this segment from falling into poverty. Priority must be given to securing stable employment, fostering entrepreneurship among able-bodied individuals within this cohort, introducing new financial instruments, and enhancing the efficiency of existing mechanisms. In connection with this, it is advisable to step up information-campaign efforts and motivational measures aimed at preventing poverty entry among this group.

4. **Infrastructure Upgrades and Environmental Quality in Mahallas.**

Under the national program "From Poverty to Prosperity," substantial state budget allocations over the past two years have been directed toward upgrading electricity, water supply, irrigation, internal roads, and internet access across approximately 2,000 mahallas facing infrastructural challenges. Poverty levels were prioritized as primary criteria when selecting these mahallas.

However, in subsequent phases of this program, attention should also be directed toward resolving environmental challenges in vulnerable mahallas—primarily waste management—as well as constructing public recreational spaces, leisure facilities, and children's sports playgrounds, alongside repairing and upgrading the material and technical base of educational and healthcare institutions.

5. **Enhancing the Impact of the Social Contract Mechanism.**

It is expedient to further intensify the impact of the "social contract" mechanism within the country's social protection system. Special measures should be taken to protect women with young children and the elderly, enforce recipient responsibility in accordance with contractual agreements, ensure timely and regular access to education and healthcare services for members of low-income families, and strengthen measures to enroll children and women from subsidized families into vocational and higher education. Among social assistance measures, reliance on credit mechanisms should be scaled back in favor of targeted subsidies and soft loans whenever feasible.

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