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Article

Macroeconomic Mechanisms for Raising Real Household Incomes and Reducing Poverty: Evidence from Uzbekistan and the Samarkand Region

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Abstract: The article examines macroeconomic channels linking real income growth and poverty reduction. Unequal distribution of growth benefits motivates the study. Systems analysis, comparative statistics and decomposition logic are applied. Poverty trends in Uzbekistan and the Samarkand region during 2021–2025 are compared. Despite substantial poverty reduction, Samarkand recorded slower real disposable income growth than the national average in 2025. The paper proposes a five-component mechanism combining price stability, productive employment, investment, targeted transfers and results-based monitoring. This framework supports the assessment of inclusive regional economic policies.

Keywords: Real Income, Poverty Reduction, Macroeconomic Mechanisms, Inflation, Employment, Labour Productivity, Social Transfers, Economic Growth, Samarkand Region

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1. Introduction

A. Background and Motivation

The ultimate criterion of macroeconomic policy is not limited to the volume of gross domestic product (GDP) or the pace of investment. The social outcome of economic growth materialises only when growth is translated into household purchasing power, stable labour income and decent living conditions. For this reason, raising real incomes and reducing poverty are closely related, but not identical, policy objectives. Even when average income is rising, low-income households may fail to obtain an adequate share of the gains from growth because of inflation, unstable employment and restricted access to social services. Whether, and how quickly, aggregate growth reaches the poor depends on the initial distribution of income, on changes in that distribution and on the channels through which macroeconomic aggregates are transmitted to households [1], [2].

Uzbekistan offers an instructive setting for examining these channels. According to official statistics, the national poverty rate fell from 17.0% in 2021 to 5.8% in 2025 [3]. The World Bank reports that growth became pro-poor in 2024, benefiting the poorest 20% of the rural population and contributing to faster poverty reduction in rural areas [4]. Poverty reduction has also been placed at the centre of the national policy agenda: the "Uzbekistan–2030" Strategy treats the improvement of living standards as a long-term development priority [5], and Presidential Decree No. PF-143 of 23 September 2024 set out a

comprehensive package of measures covering stable employment, vocational training, social services and neighbourhood (*mahalla*) infrastructure [6].

National averages, however, can conceal substantial regional heterogeneity. The Samarkand region, one of the most populous regions of the country, has a diversified economy that combines agriculture, agro-processing, tourism and pilgrimage services, handicrafts and logistics. Its poverty rate fell faster than the national average over 2021–2025 as a whole, yet in 2025 it rose back above the national level, while per capita real disposable income grew more slowly than in the country overall [3], [7]. As poverty rates approach low single digits, the remaining poor are likely to be harder to reach, and the efficiency with which income growth is converted into poverty reduction becomes as important as the growth rate itself. Understanding the macroeconomic mechanisms behind this conversion at the regional level is therefore of direct practical relevance.

B. Literature Review

Measurement of poverty. The modern literature on poverty measurement starts from the observation that the headcount ratio alone is an incomplete welfare indicator. Sen [8] argued that a poverty measure should take into account the depth of income shortfalls below the poverty line and the distribution of income among the poor, and formulated axioms that the simple headcount ratio violates. Foster, Greer and Thorbecke [9] proposed the FGT class of measures, which captures the incidence, depth and severity of poverty within a single parametric family and is additively decomposable by population subgroups. Decomposability is particularly important for regional analysis, because it allows national poverty to be expressed as a population-weighted sum of regional poverty levels. Atkinson [10] showed that every inequality index embodies an implicit social welfare judgement about the weight attached to the incomes of the worst-off. Taken together, these contributions imply that monitoring only the share of the poor cannot fully reveal the real outcome of targeted support: a programme may lift households located just below the poverty line while leaving the poorest unaffected.

Growth, distribution and poverty. A second strand of research examines how changes in poverty are related to growth and distribution. Datt and Ravallion [11] decomposed changes in poverty measures into a growth component, a redistribution component and a residual, and applied this decomposition to Brazil and India in the 1980s. Kakwani [12] derived the elasticity of poverty with respect to mean income and showed that it depends on the level of inequality and on the position of the poverty line within the income distribution. Using cross-country data, Dollar and Kraay [13] found that the average incomes of the poorest quintile rise roughly proportionately with mean incomes a result summarised by the phrase "growth is good for the poor." Kraay [14] confirmed that, in the medium and long run, growth in average incomes accounts for most of the variation in poverty changes, while changes in relative incomes play a smaller but non-negligible role. Adams [15] showed that the estimated growth elasticity of poverty depends strongly on how growth is measured and is larger when growth is defined by survey mean income rather than by GDP per capita a reminder that macroeconomic aggregates and household incomes can diverge. Bourguignon [1] synthesised these results in the "poverty–growth–inequality triangle," arguing that the poverty-reducing power of growth declines with initial inequality and that development strategies should therefore combine growth with distributional policy.

Pro-poor growth. Kakwani and Pernia [16] proposed a relative definition of pro-poor growth, under which growth is pro-poor when the poor benefit proportionally more than the non-poor, and introduced a corresponding pro-poor growth index. Ravallion and Chen [17] suggested an alternative approach based on the growth incidence curve, defining the rate of pro-poor growth as the mean growth rate of the incomes of the poor. Ravallion [2] provides a comprehensive synthesis of the history, measurement and policy of poverty and stresses that the distribution of growth across sectors and income groups matters

alongside its aggregate rate. The Brazilian experience of 1985–2004 analysed by Ferreira, Leite and Ravallion [18] demonstrates that substantial poverty reduction is possible even with weak aggregate growth when inflation is brought down, social transfers are expanded and the sectoral pattern of growth favours the poor.

Macroeconomic transmission channels. A third strand investigates specific channels through which macroeconomic policy affects the poor. Drawing on an international survey of more than 30,000 respondents, Easterly and Fischer [19] found that the poor are more likely than the rich to name inflation as a top national concern, and that high inflation tends to reduce the income share of the bottom quintile and the real minimum wage and to increase poverty. Romer and Romer [20] showed that, although a monetary expansion can temporarily benefit the poor, the cyclical upswing is necessarily transitory, whereas low inflation and stable aggregate demand are associated with higher incomes of the poor in the long run. On the labour-market side, the meta-analysis by Card, Kluve and Weber [21] shows that active labour market programmes have small average effects in the short run but larger effects two to three years after completion, with programmes that emphasise human capital accumulation gaining most over time. Kluve et al. [22] found that youth employment programmes tend to have larger effects in low- and middle-income countries and that the design and implementation of a programme matter more than its type. With respect to fiscal transfers, Coady, Grosh and Hoddinott [23] reviewed 122 targeted interventions in 48 countries and found that the median programme transferred 25% more to the poor than a universal allocation would have done, although targeting performance varied widely and about a quarter of programmes were regressive. Fiszbein and Schady [24] documented that conditional cash transfer programmes reduced consumption poverty and increased the use of education and health services. Finally, the Human Development Report 2025 [25] emphasises that well-being depends on people's capabilities and choices, not only on income a reminder that income-based indicators should be complemented by broader measures of access to education, health and decent work.

The policy context in Uzbekistan. Presidential Decree No. PF-143 [6] established a comprehensive set of measures on stable employment, vocational training, social services and *mahalla* infrastructure. However, programme targets cannot be equated with statistical outcomes: to determine their effectiveness, it is necessary to monitor both the distribution of incomes and the cost-effectiveness of public expenditure. The World Bank [4] notes that the rural poverty rate declined by 2.8 percentage points between 2023 and 2024, compared with 1.5 points in urban areas, which suggests that the benefits of growth have recently reached rural low-income households more strongly than before.

C. Research Gap, Aim and Objectives

Most of the literature examines either the growth poverty nexus at the cross-country level or the impact of individual programmes. Less attention has been paid to how official regional income and poverty statistics can be linked to explicit macroeconomic transmission channels and translated into monitorable indicators for regional governance, particularly in regions where the pace of poverty reduction has recently slowed. This paper addresses that gap for the Samarkand region.

The aim of the study is to systematise the macroeconomic factors that affect real household incomes, to compare poverty dynamics in Uzbekistan and the Samarkand region, and to propose an integrated, results-oriented mechanism for raising real incomes and reducing poverty. The objectives are (i) to clarify the key concepts and scientific approaches; (ii) to compare official indicators for 2021–2025; (iii) to classify the channels through which policy instruments are transmitted to household welfare; and (iv) to identify practical priorities for the Samarkand region. Accordingly, the study addresses three research questions:

RQ1. *How did poverty in the Samarkand region evolve relative to the national average in 2021–2025?*

RQ2. *How do the region's income level, real income growth and poverty-reduction intensity compare with the national benchmarks in 2025?*

RQ3. *Which macroeconomic transmission mechanisms and outcome indicators can strengthen the conversion of income growth into poverty reduction at the regional level?*

The contribution of the paper is threefold. First, it provides a transparent comparison of national and regional poverty and income indicators for 2021–2025. Second, it introduces a simple descriptive monitoring ratio together with an accounting decomposition that separates the effect of slower income growth from that of weaker conversion of growth into poverty reduction. Third, it proposes a five-component macro-regional mechanism with a monitoring matrix, an evaluation design and an implementation algorithm. The remainder of the paper is organised as follows: Section II describes the data and methods, Section III presents the results, Section IV discusses them, and Section V concludes.

2. Materials and Method

A. Research Design

The object of the research is the real income and poverty status of the population of Uzbekistan and of households in the Samarkand region. The subject is the set of channels through which prices, wages, employment, labour productivity, fiscal support and regional investment affect household welfare. The study follows a descriptive–analytical design that combines three methods: (a) systems analysis, used to structure the transmission channels from macroeconomic conditions to household welfare; (b) comparative statistical analysis of national and regional indicators; and (c) decomposition logic, used to separate the contribution of income growth from that of the efficiency with which growth is converted into poverty reduction. A conceptual synthesis of the literature reviewed in Section I-B informs the proposed mechanism.

B. Data Sources

The information base consists of the poverty and income indicators for 2021–2025 published in the SIAT statistical database of the National Statistics Committee of the Republic of Uzbekistan [3], [7], [26], [27], the World Bank Poverty & Equity Brief for Uzbekistan [4] and the current regulatory documents [5], [6]. The indicators used are listed in Table I. The period was chosen because a comparable annual poverty series is available for these years; incomplete data for 2026 are not mixed with full-year figures. All values are reported as published, rounded to one decimal place, and were retrieved on 1 November 2026.

Table 1. Indicators and Data Sources

Indicator	Unit	Coverage	SIAT code	Source
Poverty rate	% of population	Uzbekistan and Samarkand region, 2021–2025	2.03.01.0042	[3]
Real total income per capita	thousand UZS	Regions, 2025	2.03.01.0023	[26]
Growth rate of real disposable income per capita	% y/y	Uzbekistan and Samarkand region, 2025	2.03.01.0049	[7]

Real disposable income per capita	thousand UZS	Regions (complementary indicator)	2.03.01.0048	[27]

Note: UZS = Uzbek soum; y/y = year on year. *Source:* compiled by the authors.

C. Measuring Real Income

Real income reflects the purchasing power of nominal receipts:

$$Y_r = \frac{Y_n}{CPI} \times 100 \quad (1)$$

where Y_r is real income, Y_n is nominal income and CPI is the consumer price index (base period = 100). The annual real growth rate is obtained as

$$g_r = \left[\frac{1 + g_n}{1 + \pi} - 1\right] \times 100 \quad (2)$$

where g_n and π are the nominal income growth rate and the inflation rate, expressed as fractions. For example, if nominal income increases by 15% and prices by 8%, real growth equals (1.15/1.08 − 1) × 100 = 6.48%. The frequently used approximation $g_r \approx g_n - \pi$ would give 7.0% and thus overstate real growth by about half a percentage point; the gap widens as inflation rises, which is why the exact formula (2) is used here.

Two income concepts are distinguished. *Total income* includes all monetary and in-kind receipts of the population, whereas *disposable income* is total income net of taxes and other mandatory payments and is therefore the measure most closely related to consumption capacity. Because low-income households spend a larger share of their budgets on food and other basic goods, the inflation rate they actually face may differ from the headline CPI; where data permit, price indices specific to income quintiles are preferable for welfare analysis.

D. Measuring Poverty

The poverty headcount ratio is calculated as

$$H = \frac{q}{n} \times 100 \quad (3)$$

where q is the number of people living below the poverty line and n is the total population. The more general FGT family of measures [9] is defined as

$$FGT(\alpha) = \frac{1}{n}\sum_{i=1}^{q}\left(\frac{z - y_i}{z}\right)^{\alpha} \quad (4)$$

where z is the poverty line, y_i is the income of individual i, and the summation runs over the q individuals with $y_i < z$. The parameter α reflects aversion to poverty: $\alpha = 0$ yields the headcount ratio, $\alpha = 1$ the poverty gap index (depth), and $\alpha = 2$ the squared poverty gap index (severity), which gives greater weight to the poorest. An important property of the FGT measures is additive decomposability: for a population divided into m regions or districts,

$$P_\alpha = \sum_{j=1}^{m}\frac{n_j}{n}P_{\alpha,j} \quad (5)$$

where n_j is the population of subgroup j and $P_{\alpha,j}$ is its poverty level. Expression (5) allows the contribution of each region (or district) to national poverty to be calculated as $(n_j/n)P_{\alpha,j}/P_\alpha$, and it underpins the district-level monitoring proposed in Section IV. Because household-level micro-data were not available, FGT(1) and FGT(2) could not be computed in this study, and the empirical analysis relies on the headcount ratio.

E. Analytical Framework

The analysis is organised around the transmission chain "macroeconomic stability → productive employment → real income → poverty reduction." Macroeconomic stability, above all low and predictable inflation, preserves the purchasing power of nominal incomes and creates conditions for investment. Investment and productivity growth create productive, formal and stable jobs, which are the main source of sustainable

labour income. Labour income, supplemented by social transfers and net of taxes, determines real disposable income, whose level and distribution relative to the poverty line determine the incidence, depth and severity of poverty. A weakness in any link of the chain reduces the extent to which macroeconomic growth reaches the poorest households.

F. Poverty-Reduction Intensity and Decomposition

To compare how effectively income growth was accompanied by poverty reduction in different territories, a conditional descriptive intensity ratio is used:

$$E = \frac{H_{t-1} - H_t}{g_r} \quad (6)$$

where $H_{t-1} - H_t$ is the year-on-year decline in the poverty rate (in percentage points) and g_r is the growth rate of per capita real disposable income over the same period (in per cent). E thus shows the reduction in poverty, in percentage points, that accompanied each per cent of real income growth. As a complementary check, the relative version

$$E^{rel} = \frac{\frac{H_{t-1} - H_t}{H_{t-1}} \times 100}{g_r} \quad (7)$$

relates the *relative* decline in poverty to income growth. Although (7) has the form of an arc growth elasticity of poverty, it is computed from two aggregate indicators for a single year and is therefore used only descriptively. E is a simple monitoring ratio proposed by the authors; it is neither an elasticity in the econometric sense nor a causal coefficient of programme impact.

Because $\Delta H = g_r \times E$ by construction, the difference in poverty reduction between the nation (N) and the region (S) can be decomposed, following the symmetric (Shapley) approach, into a growth component and a conversion component:

$$\Delta H^N - \Delta H^S = (g^N - g^S) \cdot \frac{E^N + E^S}{2} + (E^N - E^S) \cdot \frac{g^N + g^S}{2} \quad (8)$$

The first term measures the part of the gap attributable to slower income growth in the region; the second measures the part attributable to the lower intensity with which growth was converted into poverty reduction. The decomposition is an accounting identity, not a causal estimate.

G. Analytical Conventions

Income levels for 2025 are compared within a single period, while year-on-year growth is taken from the separate real indices published in SIAT [7], [26], [27]. Per cent (%) and percentage points (p.p.) are strictly distinguished. Given the short statistical series (five annual observations), no regression or causal estimates are produced. Since poverty rates are published to one decimal place, the sensitivity of the intensity ratio to rounding is reported alongside the point estimates.

3. Results

A. Poverty Dynamics in 2021–2025

In Uzbekistan, the poverty rate fell from 17.0% in 2021 to 5.8% in 2025, a decline of 11.2 percentage points over four years (Table II). In the Samarkand region, the indicator fell from 18.2% to 6.1%, i.e., by 12.1 p.p. Over the longer observation period, therefore, the absolute reduction in poverty in the region exceeded the national average. In relative terms, the two reductions were of similar magnitude 65.9% nationally and 66.5% in Samarkand corresponding to an average relative decline of about 23.6% and 23.9% per year, respectively [3].

Table 2. Dynamics of the Poverty Rate, %

Year	Uzbekistan	Samarkand region	Difference, p.p.
2021	17.0	18.2	+1.2

2022	14.1	14.0	−0.1
2023	11.0	10.5	−0.5
2024	8.9	7.5	−1.4
2025	5.8	6.1	+0.3

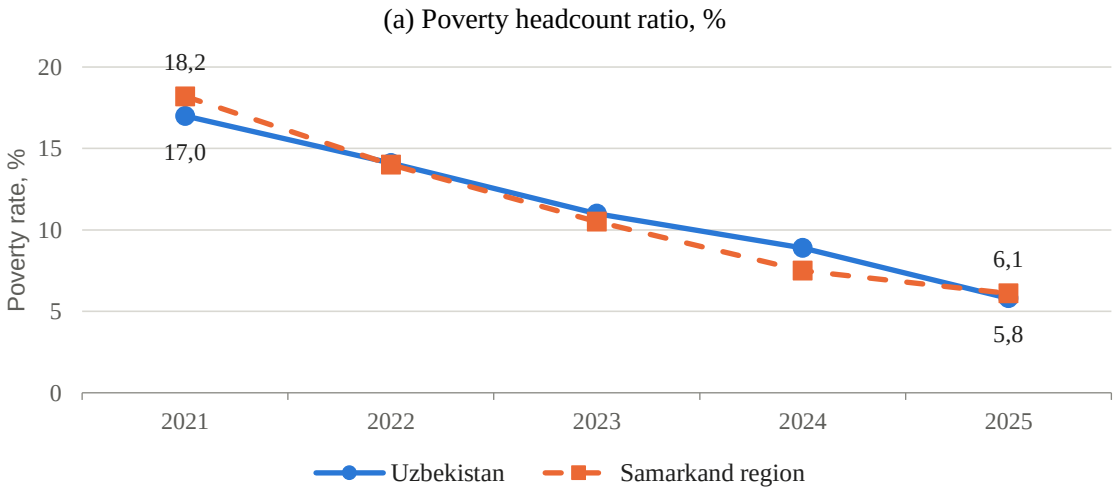
Note: difference = Samarkand region minus Uzbekistan; p.p. = percentage points. *Source:* SIAT [3].

The annual profile, however, reveals a marked change in 2025 (Table III and Fig. 1). In 2022–2024 the region outperformed the country every year: poverty fell by 4.2, 3.5 and 3.0 p.p. in Samarkand, compared with 2.9, 3.1 and 2.1 p.p. nationally. As a result, the regional rate moved from 1.2 p.p. above the national level in 2021 to 1.4 p.p. below it in 2024. In 2025 this pattern reversed. The regional reduction slowed to 1.4 p.p. (from 7.5% to 6.1%), less than half of the national reduction of 3.1 p.p., and the regional poverty rate again exceeded the national rate, by 0.3 p.p. In relative terms, the national rate of decline accelerated to 34.8% in 2025—the fastest in the period—whereas the regional rate of decline fell to 18.7%, the slowest in the period.

Table 3. Year-on-Year Reduction in the Poverty Rate

	Uzbekistan		**Samarkand region**	
Period	**Absolute, p.p.**	**Relative, %**	**Absolute, p.p.**	**Relative, %**
2022	2.9	17.1	4.2	23.1
2023	3.1	22.0	3.5	25.0
2024	2.1	19.1	3.0	28.6
2025	3.1	34.8	1.4	18.7
2021–2025	**11.2**	**65.9**	**12.1**	**66.5**

Note: absolute reduction = $H_{t-1} - H_t$; relative reduction = $(H_{t-1} - H_t)/H_{t-1} \times 100$. *Source:* authors' calculations based on [3].



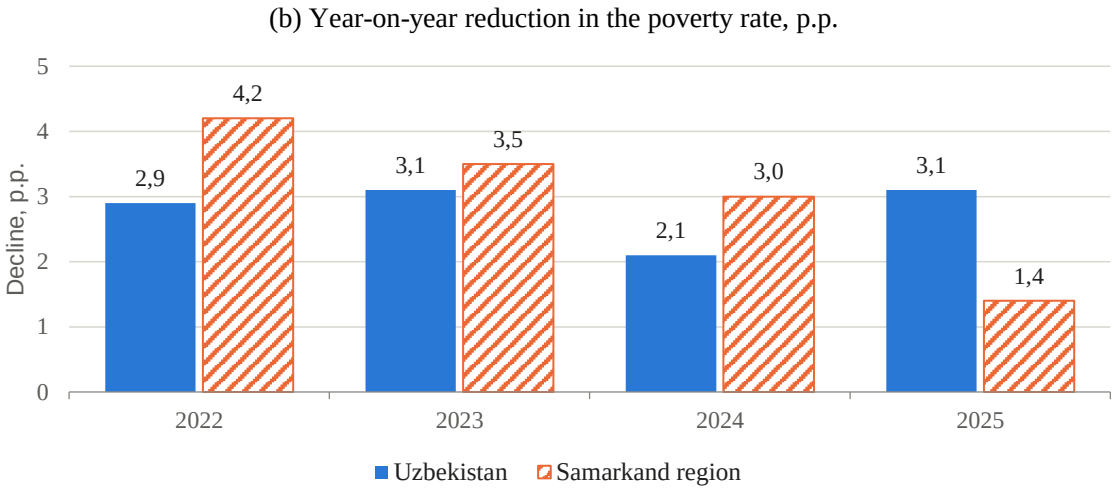


Figure 1. Poverty in Uzbekistan and the Samarkand region, 2021–2025: (a) poverty headcount ratio; (b) year-on-year reduction in the poverty rate. Source: compiled by the authors from SIAT data [3].

B. Regional Income Gap in 2025

The regional cross-section of income indicators for 2025 is equally informative (Table IV). According to SIAT, per capita real total income amounted to 27,511.7 thousand UZS nationally and 22,556.0 thousand UZS in the Samarkand region [26]. The regional figure thus corresponds to about 82.0% of the national level, with an absolute gap of 4,955.7 thousand UZS per person. Per capita real disposable income grew by 8.0% nationally and by 6.4% in Samarkand, a difference of 1.6 p.p. [7], while the reduction in poverty relative to 2024 amounted to 3.1 and 1.4 p.p., respectively [3].

Table 4. Comparison of Income and Poverty Indicators in 2025

Indicator	Uzbekistan	Samarkand region	Difference
Real total income per capita, thousand UZS	27,511.7	22,556.0	−4,955.7
Real total income per capita, % of national level	100.0	82.0	−18.0 p.p.
Growth of real disposable income per capita, %	8.0	6.4	−1.6 p.p.
Reduction in the poverty rate vs. 2024, p.p.	3.1	1.4	−1.7 p.p.
Poverty rate, %	5.8	6.1	+0.3 p.p.

Source: SIAT [3], [7], [26]; differences calculated by the authors.

This comparison describes the regional income gap for a single year, but it does not provide a complete picture of the internal structure of income distribution or of all components of purchasing power. In particular, differences in regional price levels and in the composition of income (wages, self-employment earnings, transfers and in-kind income) may affect the comparison, and an average income gap of 18% does not by itself indicate how incomes are distributed around the poverty line.

C. Poverty-Reduction Intensity

Applying (6) to the 2025 data gives E = 3.1/8.0 = 0.388 p.p. per one per cent of real disposable income growth nationally and E = 1.4/6.4 = 0.219 in the Samarkand region (Table V). In other words, each percentage point of real disposable income growth was

accompanied by a poverty reduction of about 0.39 p.p. in the country as a whole but only 0.22 p.p. in the region, i.e., roughly 56% of the national intensity. The relative version (7) leads to the same conclusion: the relative decline in poverty per one per cent of income growth was 4.35 nationally and 2.92 in Samarkand.

Table 5. Poverty-Reduction Intensity in 2025

Indicator	Uzbekistan	Samarkand region
Reduction in the poverty rate, $H_{t-1} - H_t$, p.p.	3.1	1.4
Relative reduction in the poverty rate, %	34.8	18.7
Growth of real disposable income per capita, g_r, %	8.0	6.4
Intensity ratio E, p.p. per 1% of growth, (6)	0.388	0.219
Relative intensity ratio E^{rel}, (7)	4.35	2.92
Range of E allowing for rounding of H (±0.05 p.p.)	0.375–0.400	0.203–0.234

Source: authors' calculations based on [3], [7].

The decomposition (8) makes it possible to identify the sources of the 1.7 p.p. gap in poverty reduction between the country and the region in 2025. The growth component, attributable to Samarkand's slower real disposable income growth, equals 1.6 × (0.388 + 0.219)/2 ≈ 0.49 p.p., or about 28.5% of the gap. The conversion component, attributable to the lower intensity with which growth was translated into poverty reduction, equals (0.388 − 0.219) × (8.0 + 6.4)/2 ≈ 1.22 p.p., or about 71.5% of the gap. Non-symmetric orderings of the decomposition give a growth component of 0.35–0.62 p.p. and a conversion component of 1.08–1.35 p.p.; in every case the conversion component dominates. Hence, the region's weaker performance in 2025 is explained less by slower income growth than by the weaker conversion of that growth into poverty reduction.

These results are robust to rounding. Because poverty rates are published to one decimal place, the regional reduction could lie between 1.3 and 1.5 p.p., which gives E between 0.203 and 0.234; the corresponding national range is 0.375–0.400. The two ranges do not overlap. E can therefore be used as an initial signal that helps to discuss what results resources have produced in different territories, but not as evidence of the effectiveness of any particular programme.

D. Proposed Macro-Regional Mechanism

On the basis of the literature reviewed and the results obtained, a five-component macro-regional mechanism is proposed (Fig. 2 and Table VI). Each component is linked to a specific transmission channel and to an outcome indicator that can be monitored at the regional and district levels.

1) Price stability. Rising prices erode the growth of nominal incomes, especially in households where the share of spending on basic consumer goods is high. International evidence shows that the poor are particularly vulnerable to inflation and that low, stable inflation benefits them in the long run [19], [20]. Monetary policy should therefore anchor inflation expectations, while fiscal policy should provide targeted compensation to households in need during price shocks, rather than untargeted price subsidies. The proposed outcome indicator is the real consumption of the bottom income quintile.

2) Productive employment. Along with the number of new jobs, their duration, formality and real wage growth must be assessed. Linking skills upgrading to enterprise orders and raising value added through technological modernisation strengthen the main

source of real income. The evidence that the effects of active labour market programmes grow over time and depend on programme design [21], [22] supports evaluating these measures over a horizon of at least 6–12 months. The outcome indicator is the number of formal, stable jobs and the level of real wages.

3) Regional investment and value chains. In Samarkand, cooperation among tourism, agro-services, processing and logistics can expand the share of local suppliers in value added. It is advisable to link subsidies not to the amounts allocated but to the jobs created and retained. The outcome indicator is the 12-month retention rate of newly created jobs.

4) Targeted transfers. Transfers convert budget resources directly into the net disposable income of the poorest households. Their effectiveness depends on coverage, targeting accuracy and benefit adequacy [23], and well-designed transfers can also strengthen human capital [24]. Because transfers mainly affect households located well below the poverty line, their impact is better captured by the poverty gap FGT(1) than by the headcount ratio. The outcome indicators are FGT(1) and the coverage of the poor by assistance.

5) Results-based governance. The fifth component closes the loop: systematic monitoring of outcomes leads to the correction of policy instruments. The proposed indicator is the share of households that fall back into poverty within 12 months of exiting it, which requires district-level data and household panels.

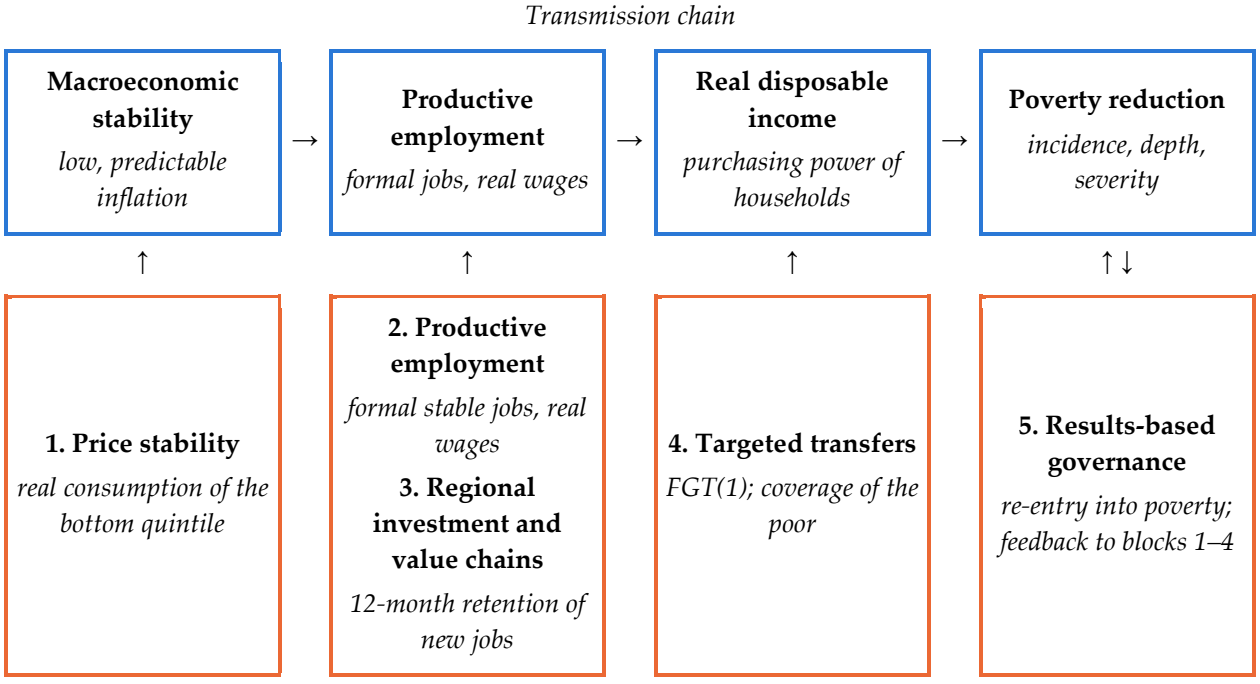


Figure 2. Proposed macro-regional mechanism: the transmission chain (top) and the five policy blocks acting on its links, with their outcome indicators (bottom). Source: developed by the authors.

Table 6. Monitoring Matrix of the Proposed Macro-Regional Mechanism

Policy block	Key instruments	Transmission channel	Outcome indicator
Price stability	Anchoring inflation expectations; targeted	Nominal income →	Real consumption of the bottom quintile

	compensation during price shocks	purchasing power	
Productive employment	Demand-driven training; technological modernisation	Value added → wages	Formal stable jobs and real wages
Regional investment	Job-linked subsidies; local supplier contracts	Project → local income	12-month retention of new jobs
Targeted transfers	Means-tested benefits; registry-based targeting	Budget → net disposable income	FGT(1); coverage of the poor
Results-based governance	District dashboards; independent evaluation	Monitoring → policy correction	Share of households re-entering poverty

Source: developed by the authors on the basis of the theoretical approaches in [1], [2], [9], [11], [13], [16]; empirical validation is required.

4. Discussion

A. Interpretation of the Findings

The results confirm that the relationship between real incomes and poverty is multi-channel. Over 2021–2025, both the country and the Samarkand region achieved large reductions in poverty, which is consistent with cross-country evidence that sustained growth in average incomes is the main driver of poverty reduction in the medium term [13], [14]. National performance in 2025 is also consistent with the World Bank's assessment that growth in Uzbekistan became more pro-poor in 2024 [4].

The regional slowdown in 2025 requires a more nuanced explanation. Part of it may be mechanical: as the headcount ratio falls, fewer households remain just below the poverty line, so the same rate of growth produces a smaller absolute reduction in poverty—a property implied by the dependence of the growth elasticity of poverty on the position of the poverty line within the distribution [1], [12]. This effect, however, cannot explain the entire gap. In 2024 the national and regional poverty rates were relatively close (8.9% and 7.5%), yet in 2025 the national rate fell by 3.1 p.p. and the regional rate by only 1.4 p.p. The decomposition attributes about 71% of this gap to weaker conversion rather than to slower growth. This points to the distribution of income gains within the region: growth may have accrued mainly to households above the poverty line, or the remaining poor may face specific barriers—weak attachment to formal employment, high dependency ratios or limited access to non-farm jobs in rural areas—that general income growth does not overcome. These explanations are hypotheses that require household-level data to be tested.

The divergence between aggregate income dynamics and poverty outcomes also echoes the finding that the measured poverty response to growth depends on whether growth is captured by macroeconomic aggregates or by household survey incomes [15]. The Brazilian experience shows that inflation control, transfers and the sectoral composition of growth can matter as much as the growth rate itself [18]. For regional policy, the implication is that monitoring should extend beyond GDP growth to include the real consumption and labour income of low-income groups.

B. Diagnosing the Weak Transmission Channel

To turn the identified gap into a policy decision, the composition of income growth must also be examined. In particular, if the growth rates of formal wages, self-employment earnings and transfers received by low-income families are monitored separately, it

becomes possible to identify which transmission channel is underperforming. For the Samarkand region, it is appropriate to evaluate, on a pilot basis, such directions as production-linked cooperation in the service sector, storage and processing capacity in rural areas and the alignment of young people's skills with employer demand. These priorities are research proposals, and their effectiveness should be verified with post-programme data.

C. Priority Directions for the Samarkand Region

In the Samarkand region, tourism and pilgrimage services, the processing of agricultural products, handicrafts and logistics are interconnected areas of development. Procurement contracts between hotels and catering businesses and local cooperatives could stabilise demand for small producers. This proposal should, however, be substantiated by project-level calculations.

It is recommended that vocational training in the region be aligned with the actual orders of employers, with outcomes measured by formal employment and real wages 6–12 months after completion. For women and young people, childcare and other care services, commuter transport and flexible jobs can lower the costs of entering economic activity. Districts of the region could also be segmented according to their economic structure—for example, tourism-oriented urban districts, predominantly agrarian districts and industrial or logistics hubs—so that the mix of instruments matches local conditions.

D. Evaluation Design

To test the proposed model, programmes can be introduced in stages in selected districts and their outcomes compared with those of similar districts. In a difference-in-differences framework [28], the effect can be estimated as

$$Y_{dt} = \mu_d + \lambda_t + \beta(D_d \times Post_t) + X'_{dt}\gamma + \varepsilon_{dt} (9)$$

where Y_{dt} is the outcome (e.g., the poverty rate or real income) in district d in year t; μ_d and λ_t are district and year fixed effects; D_d equals one for pilot districts; $Post_t$ equals one after the programme is launched; X_{dt} is a vector of controls; and β is the estimated programme effect. Baseline trends, migration and large investment projects must be controlled for, and the parallel-trends assumption should be checked with pre-programme data. Without these conditions, interpreting a statistical decline in poverty as the causal effect of a programme is unfounded.

E. Practical Algorithm for Regional Governance

The practical algorithm proposed for regional governance consists of four stages:

1) Baseline indicators of real incomes and poverty are established for each district;
2) Employment and investment projects are screened and ranked according to their expected impact on low-income groups;
3) Outcomes are re-measured 6 and 12 months after implementation;
4) Ineffective instruments are redesigned or discontinued.

At each stage, the assessment should not be limited to the funds allocated and the number of jobs created; it should cover the growth of net real income and the risk of falling back into poverty. Such a system makes it possible to take into account the different economic potential of the districts of the Samarkand region and to identify programmes that produce different results for the same expenditure of resources.

F. Limitations and Directions for Future Research

The study has several limitations. First, aggregated official statistics do not fully reveal the distribution of income among households. Second, the 2025 results do not allow the causal effects of individual policy components to be isolated. Third, the short time series (five annual observations) precludes econometric estimation, and the intensity ratio and decomposition are accounting devices rather than structural parameters. Fourth, the comparison of income levels is not adjusted for regional price differences. Future research

should draw on district and household panels, FGT depth and severity measures, unexpected price shocks and indicators of employment quality within an integrated econometric framework, and should consider broader dimensions of human development [25].

5. Conclusion

The analysis showed that the relationship between real incomes and poverty operates through multiple channels. In 2021–2025, poverty declined by 11.2 p.p. nationally and by 12.1 p.p. in the Samarkand region (RQ1). In 2025, however, poverty in the region was 0.3 p.p. higher than the national level, and the growth of real disposable income was 1.6 p.p. lower . The poverty-reduction intensity in the region was 0.219 p.p. per one per cent of income growth, compared with 0.388 nationally, and about 71% of the 2025 gap in poverty reduction reflects weaker conversion of income growth into poverty reduction rather than slower growth (RQ2). This calls for regular assessment of the quality of inclusive growth.

In practical terms (RQ3), the following measures are proposed: coordinating price stability with targeted transfers; segmenting the districts of the Samarkand region according to their economic structure; linking vocational training to stable jobs; creating a digital regional monitoring system; and conducting independent evaluations of results. The quantitative effects of these proposals should be tested in further research based on micro-data.

REFERENCES

[1] F. Bourguignon, "The poverty–growth–inequality triangle," World Bank, Washington, DC, USA, 2004. [Online]. Available: https://documents.worldbank.org/curated/en/449711468762020101/pdf/28102.pdf

[2] M. Ravallion, *The Economics of Poverty: History, Measurement, and Policy*. New York, NY, USA: Oxford Univ. Press, 2016, doi: 10.1093/acprof:oso/9780190212766.001.0001.

[3] National Statistics Committee of the Republic of Uzbekistan, "Poverty rate (2021–2025)," SIAT Statistical Database, indicator code 2.03.01.0042. Accessed: Nov. 1, 2026. [Online]. Available: https://siat.stat.uz/data/3495/

[4] World Bank, "Poverty & equity brief: Uzbekistan," World Bank, Washington, DC, USA, Oct. 2025. [Online]. Available: https://documents1.worldbank.org/curated/en/099532204222516347/pdf/IDU-3cc4a5d1-571e-4566-a170-43264aca2c0e.pdf

[5] *On the Strategy "Uzbekistan–2030"*, Decree of the President of the Republic of Uzbekistan No. PF-158, Sep. 11, 2023. [Online]. Available: https://lex.uz/docs/-6600413 (in Uzbek)

[6] *On Raising to a New Stage the Measures for Poverty Reduction and Improving the Well-Being of the Population*, Decree of the President of the Republic of Uzbekistan No. PF-143, Sep. 23, 2024. [Online]. Available: https://lex.uz/uz/docs/-7109857 (in Uzbek)

[7] National Statistics Committee of the Republic of Uzbekistan, "Growth rate of real disposable total income per capita," SIAT Statistical Database, indicator code 2.03.01.0049. Accessed: Nov. 1, 2026. [Online]. Available: https://siat.stat.uz/data/3535/

[8] A. Sen, "Poverty: An ordinal approach to measurement," *Econometrica*, vol. 44, no. 2, pp. 219–231, 1976, doi: 10.2307/1912718.

[9] J. Foster, J. Greer, and E. Thorbecke, "A class of decomposable poverty measures," *Econometrica*, vol. 52, no. 3, pp. 761–766, 1984, doi: 10.2307/1913475.

[10] A. B. Atkinson, "On the measurement of inequality," *J. Econ. Theory*, vol. 2, no. 3, pp. 244–263, 1970, doi: 10.1016/0022-0531(70)90039-6.

[11] G. Datt and M. Ravallion, "Growth and redistribution components of changes in poverty measures: A decomposition with applications to Brazil and India in the 1980s," *J. Dev. Econ.*, vol. 38, no. 2, pp. 275–295, 1992, doi: 10.1016/0304-3878(92)90001-P.

[12] N. Kakwani, "Poverty and economic growth with application to Côte d'Ivoire," *Rev. Income Wealth*, vol. 39, no. 2, pp. 121–139, 1993.

[13] D. Dollar and A. Kraay, "Growth is good for the poor," *J. Econ. Growth*, vol. 7, no. 3, pp. 195–225, 2002, doi: 10.1023/A:1020139631000.

[14] A. Kraay, "When is growth pro-poor? Evidence from a panel of countries," *J. Dev. Econ.*, vol. 80, no. 1, pp. 198–227, 2006.

[15] R. H. Adams, Jr., "Economic growth, inequality and poverty: Estimating the growth elasticity of poverty," *World Dev.*, vol. 32, no. 12, pp. 1989–2014, 2004.

[16] N. Kakwani and E. M. Pernia, "What is pro-poor growth?" *Asian Dev. Rev.*, vol. 18, no. 1, pp. 1–16, 2000, doi: 10.1142/S0116110500000014.

[17] M. Ravallion and S. Chen, "Measuring pro-poor growth," *Econ. Lett.*, vol. 78, no. 1, pp. 93–99, 2003.

[18] F. H. G. Ferreira, P. G. Leite, and M. Ravallion, "Poverty reduction without economic growth? Explaining Brazil's poverty dynamics, 1985–2004," *J. Dev. Econ.*, vol. 93, no. 1, pp. 20–36, 2010.

[19] W. Easterly and S. Fischer, "Inflation and the poor," *J. Money, Credit Banking*, vol. 33, no. 2, pp. 160–178, 2001.

[20] C. D. Romer and D. H. Romer, "Monetary policy and the well-being of the poor," *Econ. Rev. (Fed. Reserve Bank Kansas City)*, vol. 84, no. 1, pp. 21–49, 1999.

[21] D. Card, J. Kluve, and A. Weber, "What works? A meta analysis of recent active labor market program evaluations," *J. Eur. Econ. Assoc.*, vol. 16, no. 3, pp. 894–931, 2018.

[22] J. Kluve et al., "Do youth employment programs improve labor market outcomes? A quantitative review," *World Dev.*, vol. 114, pp. 237–253, 2019.

[23] D. Coady, M. Grosh, and J. Hoddinott, "Targeting outcomes redux," *World Bank Res. Observer*, vol. 19, no. 1, pp. 61–85, 2004.

[24] A. Fiszbein and N. Schady, *Conditional Cash Transfers: Reducing Present and Future Poverty*. Washington, DC, USA: World Bank, 2009.

[25] United Nations Development Programme, *Human Development Report 2025: A Matter of Choice—People and Possibilities in the Age of AI*. New York, NY, USA: UNDP, 2025. [Online]. Available: https://hdr.undp.org/content/human-development-report-2025

[26] National Statistics Committee of the Republic of Uzbekistan, "Real total income per capita, by region," SIAT Statistical Database, indicator code 2.03.01.0023. Accessed: Nov. 1, 2026. [Online]. Available: https://siat.stat.uz/data/403/

[27] National Statistics Committee of the Republic of Uzbekistan, "Real disposable total income per capita," SIAT Statistical Database, indicator code 2.03.01.0048. Accessed: Nov. 1, 2026. [Online]. Available: https://siat.stat.uz/data/3534/

[28] J. D. Angrist and J.-S. Pischke, *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton, NJ, USA: Princeton Univ. Press, 2009.