

Beyond Income in Transition Economies: Evaluating Multidimensional Poverty, Informal Employment, and Market Restructuring in Uzbekistan

Abdumalik Oripov¹, Islomjon Bakhromov²

¹Fergana State University, Fergana, Uzbekistan

²Independent Researcher, Fergana, Uzbekistan

Author Email: aaoripov@gmail.com¹, mannobovagulis@gmail.com²

Abstract. Conventional income-based poverty metrics have consistently demonstrated inadequate diagnostic effectiveness in transition countries, as post-Soviet restructuring has transformed welfare conditions in ways that monetary consumption measures cannot adequately capture. This paper examines Uzbekistan's methodological and policy move from measuring monetary poverty to a multidimensional, capability-based framework, situating this transition within the wider backdrop of economic change and social policy reform in Central Asia. The analysis employs the Alkire-Foster methodology to implement a national Multidimensional Poverty Index (MPI) that includes the fundamental dimensions of education, health, and living standards, while systematically incorporating labor market dynamics and informal employment into the capability assessment. The study identifies the key non-income factors influencing welfare, emphasizing international migration and remittances as vital economic mechanisms: migration reduces perceived poverty and reallocates household spending towards health and non-food consumption, alleviating capability deprivation. Moreover, community-focused social support from mahalla organizations and strategic state investments in human capital are vital institutional mechanisms for skill development; however, regional disparities and distributional inefficiencies hinder their fair accessibility in the labor market. The utilization of sub-national instruments, specifically the Child Well-Being Index and the Poverty Resilience Index, illustrates the practical importance of multidimensional metrics for focused policy assessment. By incorporating these dimensions into a mixed-methods framework that amalgamates MPI data, qualitative institutional evidence, and household survey analysis, the paper demonstrates that an evidence-based, capability-oriented approach—alongside labor market formalization—serves as a markedly more effective tool for poverty alleviation in Uzbekistan compared to traditional income-centric strategies.

Keywords: Labor Market Formalization, Multidimensional Poverty Index (MPI), Informal Economy, Alkire-Foster Methodology, Poverty Reduction

1 Introduction

1.1 Philosophical Foundations: The Capability Approach

The Capability Approach constitutes a transformative framework in development economics and moral philosophy, significantly redefining the comprehension of human deprivation and well-being by scholars and policymakers (Alkire, 2013). This globally acknowledged framework originated from the groundbreaking theoretical insights of Nobel laureate Amartya Sen and philosopher Martha Nussbaum, whose foundational works created the philosophical structure for transcending limited economic measures in favor of a broader comprehension of human flourishing (Alkire & Santos, 2013; Dotter & Klasen, 2017). Sen's seminal work, *Development as Freedom*, posits that development should be perceived not solely as economic growth or income augmentation, but fundamentally as the enhancement of human freedoms and the elimination of unfreedoms that hinder individuals' capacity to pursue lives they deem valuable (Alkire, 2013; Ballon Fernandez & Krishnakumar, 2011). Nussbaum's supplementary work, specially *Creating Capabilities*, actualized this philosophical perspective by delineating ten fundamental human capabilities—spanning life and bodily health to practical reason and affiliation—that represent the essential criteria for a dignified human existence (Alkire & Jahan, 2018; Mühle, 2023).

Poverty is redefined in this capability-based ontology not solely as a deficiency of financial resources or inadequate income, but fundamentally as a limitation of human freedoms and capabilities—a deprivation of the essential opportunities individuals need to attain valued functionings (Ballon Fernandez, 2011; Machado et al., 2014). This conceptual shift signifies a significant divergence from conventional welfarist and resource-oriented methodologies that prevailed in poverty assessment during the twentieth century (Alkire et al., 2014; Salecker et al., 2020). While traditional economic models emphasize utility maximization or ownership of goods, the Capability Approach shifts focus to individuals' actual capabilities—their genuine freedoms to attain valuable functionings, such as adequate nutrition, education, community engagement, and political participation (Alkire, 2013; Ballon Fernandez & Krishnakumar, 2011).

This approach acknowledges that two individuals with the same income may experience significantly different levels of well-being and freedom due to their personal attributes, social environments, and conversion factors that influence the transformation of resources into capabilities (Mühle, 2023; Machado et al., 2014). Capability-based analysis conceptualizes poverty as a multifaceted phenomenon, wherein the lack of access to and exercise of individual freedoms is central to deprivation (Alkire et al., 2021; Ballon Fernandez, 2011). This multidimensional framework recognizes that human deprivation occurs concurrently across various domains—health, education, living standards, social participation, and political engagement—and that these dimensions interact to create self-reinforcing cycles of deprivation that income-focused interventions cannot adequately address.

1.2 Multidimensional Poverty Measurement: The Alkire-Foster Approach

The operationalization of the Capability Approach in empirical poverty research was substantially advanced by Alkire and Foster (2011), whose dual-cutoff counting methodology provided a mathematically rigorous framework for measuring simultaneous deprivations across multiple dimensions. The Alkire-Foster (AF) method identifies the poor through a two-step process: a first cutoff determines deprivation in each individual indicator, and a second cutoff identifies households as multidimensionally poor if their weighted deprivation score exceeds a specified threshold (Alkire & Santos, 2013). This methodology is both decomposable by subgroup and dimension, making it a powerful tool for policy targeting.

The global Multidimensional Poverty Index (MPI), developed by the Oxford Poverty and Human Development Initiative (OPHI) in partnership with the UNDP, operationalizes the AF methodology across three core dimensions—education, health, and living standards—using ten indicators (Alkire et al., 2021). The global MPI has been applied to over 100 countries and has become the standard international benchmark for non-income poverty assessment. However, cross-national MPI applications necessarily employ standardized indicator weights and thresholds that may not reflect local institutional conditions, data availability, or normative priorities (Dotter & Klasen, 2017). This limitation motivates the development of context-specific national MPI frameworks that adapt the AF methodology to local conditions while maintaining international comparability.

1.3 Transition Economies and Poverty in Central Asia

The post-Soviet transition in Central Asia created a distinct welfare context that neither standard developing-country poverty models nor developed-economy frameworks adequately capture. The dismantling of Soviet-era social infrastructure produced simultaneous deprivations across health, education, and living standards that were only partially reflected in monetary poverty statistics (Müller, 2003; McKinley & Weeks, 2009). Uzbekistan's economic transition, characterized by gradual liberalization, persistent informalization of labor markets, and significant rural-urban disparities, created welfare outcomes that diverge substantially from monetary poverty indicators.

Central Asian studies have consistently demonstrated that monetary poverty metrics underestimate welfare deprivation relative to multidimensional assessments. Arzhaev et al. (2022) documented systemic poverty persistence in the region attributable to path dependence and institutional factors, while Guirkingner et al. (2021) demonstrated that adverse policy environments generate persistent welfare trajectories resistant to income growth. Kudebayeva (2018, 2019) identified chronic poverty dynamics in Kazakhstan that remained invisible to monetary measures. Rahimzoda (2025a, 2025b) demonstrated analogous patterns in Tajikistan, where non-income welfare indicators stagnated despite monetary poverty reductions. These regional findings provide a comparative foundation for understanding Uzbekistan's multidimensional poverty dynamics.

Uzbekistan presents a particularly important case for multidimensional poverty research given the combination of rapid GDP growth, persistent rural informality, significant labor migration, and ongoing institutional reform that characterizes its post-2016 development trajectory. The country's Gini coefficient rose from 0.26 to 0.29 during the reference period, suggesting that growth has not produced equitable welfare improvements (Amirdzhanova, 2024a). The mahalla system—a traditional community-based welfare institution adapted into Uzbekistan's social protection architecture—represents a distinctive institutional feature whose effectiveness in capability enhancement requires empirical assessment (Coudouel et al., 1999).

1.4 Aim of the Research

This study identifies significant deficiencies in existing literature by integrating the philosophical aspects of the Capability Approach with stringent economic empiricism, utilizing comprehensive statistical and regression methodologies to examine multidimensional poverty in Uzbekistan and the wider Central Asian region (Ballon Fernandez & Krishnakumar, 2011; Arzhaev et al., 2022). The study acknowledges that although the Capability Approach offers a compelling normative framework for conceptualizing poverty as deprivation of capability, the conversion of this philosophical perspective into empirically viable models necessitates advanced econometric methods capable of encapsulating the intricate, multidimensional aspects of human deprivation (Ballon Fernandez, 2011; Machado et al., 2014).

This study employs structural equation modeling, latent-variable methodologies, and regression analysis alongside capability-based poverty measurement to elucidate how constraints on human capabilities sustain systemic poverty via self-reinforcing feedback loops that ensnare households in enduring deprivation (Ballon Fernandez & Krishnakumar, 2011; Abdurakhmanov et al., 2024). This methodological integration allows the research to progress from descriptive poverty profiles to a causal analysis of the mechanisms by which deprivations in health, education, and living standards interact to limit individuals' substantive freedoms (Arzhaev et al., 2022; Guirking et al., 2021).

The research utilizes various complementary analytical approaches, leveraging recent methodological advancements in multidimensional poverty assessment and econometric modeling of poverty dynamics (Hasan & al-Mashhadani, 2024; Machado et al., 2014). The study develops a context-specific multidimensional poverty index for Uzbekistan, modifying the worldwide UNDP-OPHI methodology to align with local goals and data availability, while ensuring international comparability (Urazbayev, 2024; Alkire & Jahan, 2018). Binary logistic regression and ordinary least squares models are utilized to ascertain the socio-economic determinants of multidimensional poverty, analyzing the impact of household characteristics, geographic location, and access to public services on the likelihood and severity of deprivation (Hasan & al-Mashhadani, 2024; Machado et al., 2014).

The primary aim of this research is to deliver evidence-based policy recommendations that augment human liberties and foster sustainable welfare advancements in Uzbekistan and Central Asia (Alkire et al., 2021; Toyirov, 2025). The study seeks to

identify the specific deprivations that contribute to multidimensional poverty and the mechanisms by which these deprivations interact, with the goal of informing the development of targeted interventions that tackle the fundamental causes of enduring poverty rather than simply mitigating its symptoms (Alkire & Santos, 2013; Amir-dzhanova, 2024a). This study integrates philosophical theory with econometric practice, contributing to the overarching goal of creating measurement frameworks and analytical tools that allow policymakers to assess development progress not solely through income growth, but through authentic enhancements in human capabilities and freedoms (Alkire et al., 2021; Dotter & Klasen, 2017).

This study makes four specific contributions to the existing literature that distinguish it from prior MPI applications in transition economies. First, it constructs a context-specific national MPI for Uzbekistan that adapts UNDP-OPHI indicator weights and poverty thresholds to local institutional and normative conditions, departing from the standardized global MPI applied in cross-national comparisons. Second, it introduces an original Opportunity Index — computed from a structured primary survey of 120 respondents — to triangulate objective deprivation counts with perceived capability accessibility across nine dimensions, thereby producing a richer welfare picture than the AF headcount alone. Third, it employs binary logistic regression and OLS models with enumeration-area-clustered standard errors to move beyond descriptive poverty profiling toward an explanatory econometric analysis of the structural determinants of multidimensional deprivation. Fourth, it provides an original theoretical justification for incorporating labor-market informality as a capability-based functioning deprivation within Sen's framework — a contribution that has not been systematically developed in the existing MPI literature for Central Asian transition economies (Alkire & Santos, 2013; Arzhaev et al., 2022; Abdurakhmanov et al., 2024).

2 Literature Review

The elimination of poverty is a fundamental aim of the global Sustainable Development Goals (SDGs), yet conventional economic definitions have historically confined the concept of deprivation to just financial benchmarks. Contemporary international development frameworks increasingly acknowledge that subsisting on less than \$2.15 daily does not adequately reflect the profound, simultaneous deprivations that at-risk communities encounter in health, education, and living conditions. As a result, there has been a notable global transition towards multidimensional poverty assessments to accurately reflect the complex reality of impoverished individuals. This change is critically important for the economy of Central Asia, including Uzbekistan and Tajikistan.

Notwithstanding significant macroeconomic development and decreases in absolute monetary poverty, many countries persist in facing systemic disparities, infrastructural deficiencies, and elevated informal employment rates. This literature review critically synthesizes current research on multidimensional poverty, analyzing theoretical foundations, methodological advancements, and empirical studies related to Cen-

tral Asia, finally revealing significant knowledge gaps that the proposed study seeks to address.

2.1 Theoretical Foundations: The Capability Approach and Poverty Cycles

The theoretical basis for multidimensional poverty measurement is grounded in the 'Capability Approach' developed by Amartya Sen, which radically reinterprets poverty as the limitation of human capabilities and freedoms rather than simply an income shortfall. Saidalieva (2021) elaborates on this by incorporating the insights of Angus Deaton, who emphasized the importance of merging macroeconomic data with socio-psychological empirical research to assess welfare accurately. Saidalieva rigorously critiques the experimental methodologies employed by Nobel laureates Abhijit Banerjee and Esther Duflo, who illustrate that poverty is perpetuated by market distortions, institutional inadequacies, and a deficiency of fundamental knowledge, thereby ensnaring populations in a cycle of deprivation.

Abdurakhmanov et al. (2024) critically evaluate poverty based on structural theories, namely via the lens of cumulative and cyclical dependence. They suggest the 'vicious circle of poverty' paradigm, asserting that external shocks and disparate initial conditions result in inadequate education, which in turn produces low labor quality, diminished technological efficiency, and systemic unemployment. This literature synthesis reveals a critical theoretical consensus: poverty in Central Asia cannot be mitigated only through economic growth; it necessitates focused interventions that address interconnected structural deprivations.

2.2 Methodological Progress in Multidimensional Poverty Assessment

Global institutions have widely implemented the Alkire-Foster (AF) technique to operationalize the Capability Approach in empirical poverty research. The AF dual-cutoff methodology has been applied across over 100 countries through the global MPI, administered by OPHI and UNDP (Alkire et al., 2021). Alkire and Santos (2013) demonstrate the robustness and scope of the global MPI across developing economies, while Dotter and Klasen (2017) critically assess the methodological achievements and conceptual challenges of the index. Hasan and al-Mashhadani (2024) demonstrate the application of robustness testing for MPI estimates in Iraq, providing a methodological template for sensitivity analysis in middle-income country contexts.

For Central Asia specifically, Arzhaev et al. (2022) develop a systemic poverty modeling framework that captures path dependence and institutional factors as drivers of regional poverty concentration. Their work establishes that standard cross-national MPI applications underestimate the role of institutional legacies in perpetuating multidimensional deprivation in post-Soviet contexts. Salecker et al. (2020) demonstrate, through the Sub-Saharan African case, that the divergence between monetary and multidimensional poverty measures is systematically related to the depth of non-income deprivations, a finding that is directly relevant to Uzbekistan's transition context.

2.3 Labor Market Informality and Capability Deprivation

The relationship between labor market informality and multidimensional poverty has been undertheorized in the existing MPI literature. McKinley and Weeks (2009) demonstrate that informal employment in Uzbekistan is systematically associated with exclusion from social insurance, lower earnings volatility, and reduced human capital investment — all of which constitute capability deprivations under Sen's framework. Abdurakhmanov et al. (2024) provide empirical evidence that employment formalization is among the strongest structural predictors of poverty exit in Uzbekistan, while Boltaboeva (2024) situates this finding within the broader structural transformation of Uzbekistan's economy.

Migration and remittances add a further dimension of complexity to the labor market-poverty nexus in Uzbekistan. Ahunov et al. (2015) demonstrate that labor migration generates short-term welfare improvements through remittance inflows but may not address the underlying capability deprivations that drive emigration. Rahimzoda (2025a, 2025b) identifies comparable dynamics in Tajikistan, where reliance on remittances conceals persistent non-income deprivations. These findings underscore the importance of integrating labor market dynamics into multidimensional poverty assessment frameworks.

3 Methods

This study employs a sequential explanatory mixed-methods design structured in three analytically distinct but integrated phases (Creswell & Plano Clark, 2018). Phase 1 (Quantitative MPI Construction and Regression Analysis) applies the Alkire-Foster dual-cutoff counting methodology to nationally representative household survey data to construct a national Multidimensional Poverty Index and identifies the structural socioeconomic determinants of poverty status through binary logistic regression and OLS models. Phase 2 (Perceived Capability Survey) deploys a structured primary survey ($N = 120$) to generate an Opportunity Index across nine capability dimensions, providing a subjective welfare layer that triangulates objective deprivation counts with respondents' perceived access to capabilities. Phase 3 (Qualitative Institutional Analysis) uses semi-structured interviews ($n = 42$) and NVivo-assisted thematic coding to examine the institutional mechanisms — mahalla social protection administration, labor market governance, and state investment in human capital — that explain why quantitative deprivation patterns persist in specific regions and population sub-groups. Integration occurs at the interpretive stage: qualitative themes are systematically mapped onto the dimensions and regions in which quantitative deprivation rates are highest, enabling the Discussion to advance from statistical correlation to institutional mechanism (Arzhaev et al., 2022; Abdurakhmanov et al., 2024).

The Centre for Economic Research and Reforms and UNDP pilot household survey (2022) and the nationally representative Listening to the Citizens of Uzbekistan household survey (2023) were used for the research between January 2023 and December 2024. We followed Oxford Poverty and Human Development Initiative principles for national MPI construction (Alkire & Jahan, 2018). In Tashkent, Uzbekistan,

the Centre for Economic Research and Reforms Research Ethics Committee approved the study protocol. After hearing the study's aims and their rights, all survey respondents gave signed informed consent. Government, mahalla, and social protection officers provided informed approval for the qualitative component. Personal data were securely stored and anonymized in accordance with institutional data protection protocols.

Households from all 14 Uzbek administrative regions were included in the study. For national representation, multi-stage stratified random sampling was employed. Primary sampling units were selected proportional to population size in each region; enumeration areas were stratified by residence type, and households were randomly selected. Approximately 6,000 households were sampled. A household head or informed adult was required to respond, and the household must have been resident in their current location for at least six months. Households that declined consent or had significant missing data were removed from the analytic sample.

A structured household questionnaire developed from the OPHI MPI questionnaire for Uzbekistan was the main data collection instrument. Education, health, and living standards dimensions were included. For school-age children, education metrics comprised years of schooling and attendance rates. Anthropometric measures of nutritional status and birth histories of child mortality were health indicators. Cooking fuel, sanitation, drinking water, electricity, housing quality, and asset ownership (radio, TV, phone, bicycle, automobile) constituted the living standards indicators. The qualitative component examined institutional poverty reduction strategies, concentrating on mahalla committees' social assistance administration.

Data were collected by five-day-trained enumerators using tablet-based data entry tools. Calibrated equipment was used to measure children under five. Data quality was ensured through 10% back-check interviews, double-entry verification, and weekly enumerator debriefings. From March to August 2024, semi-structured qualitative interviews of 60–90 minutes were conducted with 15 government officials, 18 mahalla committee members, and 9 social protection personnel across four regions (Tashkent, Fergana, Karakalpakstan, Surkhandarya), selected to represent contrasting levels of multidimensional poverty incidence. All interviews were audio-recorded with informed consent, transcribed verbatim, and analyzed thematically in NVivo 14.

The Alkire-Foster methodology (Alkire et al., 2021) was used to calculate the Multidimensional Poverty Index ($MPI = H \times A$), which considers both the incidence (headcount ratio, H) and intensity (average deprivation share among the poor, A) of poverty. A deprivation score was assigned to each household based on the weighted sum of deprivations across 10 indicators, with one-third weighting assigned to each dimension and nested equal weighting to indicators within dimensions. A household was classified as multidimensionally poor if its deprivation score exceeded 33.3%, implying deprivation in at least one-third of the weighted indicators (Alkire & Santos, 2013).

R 4.3 and Stata 17 were used for statistical analysis. Descriptive statistics were produced with sampling weights for national representativeness. Poverty status was the dependent variable in binary logistic regression models; household characteristics including household size, head education, employment status, residence type, and

regional location were independent variables. Weighted ordinary least squares regression was used for robustness testing. A sensitivity analysis examined MPI estimates' resilience to different indicator specifications and poverty cutoffs from 20% to 50% (Salecker et al., 2020). Statistical tests were two-tailed with $\alpha = 0.05$ significance. Standard errors were adjusted for enumeration area clustering. To analyze qualitative data thematically, NVivo software was used to construct inductive codes and group themes linked to institutional mechanisms and social protection intervention effectiveness (Arzhaev et al., 2022).

A theoretical clarification is warranted regarding the treatment of labor-market informality in this study. In accordance with Sen's (1999) capability framework, this study treats informal employment not as a standard AF deprivation indicator within the core MPI dimensions of health, education, and living standards — which would risk conflating the causes of poverty with its constitutive dimensions — but rather as a distinct capability functioning in its own right. The theoretical justification rests on the observation that formal employment provides workers with access to social insurance, legal workplace protections, occupational safety, and stable earnings — each of which constitutes a substantive freedom whose absence represents a genuine capability deprivation rather than merely a precondition for income poverty. Accordingly, labor-market informality is operationalized in two complementary ways: as an employment-access dimension within the Opportunity Index (Phase 2 survey), and as a structural covariate in the binary logistic regression models that identify the determinants of MPI-based multidimensional poverty status. This dual treatment avoids the conceptual overlap between poverty causes and poverty dimensions while preserving the theoretical richness of integrating labor-market dynamics into a capability-oriented poverty assessment framework (Alkire & Santos, 2013; Arzhaev et al., 2022).

3.1 Data Sources and Quality Assurance

This study draws on four primary data sources. (1) CERR–UNDP Pilot Household Survey (2022): Conducted by Uzbekistan's Centre for Economic Research and Reforms in partnership with the United Nations Development Programme, this survey covers approximately 6,000 households drawn from all 14 administrative regions of Uzbekistan using multi-stage stratified random sampling. Primary sampling units were selected proportional to regional population size; households were randomly selected from enumeration areas stratified by rural/urban residence. The survey instrument was adapted from the OPHI standard MPI questionnaire and covers education, health, and living standards indicators consistent with the Alkire-Foster framework. Data quality was ensured through 10% back-check interviews, double-entry verification, and weekly enumerator debriefings. (2) Listening to the Citizens of Uzbekistan (LCS) Household Survey (2023): A nationally representative panel survey providing socioeconomic and welfare data for the reference period; used to validate and cross-check MPI estimates and to construct monetary poverty comparators. (3) Authors' Primary Capability Survey (2024): A structured survey administered to $N = 120$ respondents across urban and rural localities of Uzbekistan, assessing perceived

access to nine capability dimensions on a 1–5 Likert scale. Respondents were recruited through stratified purposive sampling across three residence types and three age cohorts (see Table 1). The survey instrument was piloted on 15 respondents prior to full administration; Cronbach's alpha for the full instrument was $\alpha = 0.81$, confirming adequate internal consistency. (4) Qualitative Interview Data (March–August 2024): Semi-structured interviews conducted with $n = 42$ informants comprising 15 government officials, 18 mahalla committee members, and 9 social protection officers across four regions, selected to represent contrasting levels of multidimensional poverty incidence. All interviews were audio-recorded with informed consent, transcribed verbatim, and analyzed thematically in NVivo 14. Ethical approval was granted by the Centre for Economic Research and Reforms Research Ethics Committee (Uzbekistan). All respondent data were anonymized and securely stored in accordance with institutional data protection protocols.

4 Results

The utilization of the Alkire-Foster dual-cutoff approach on nationally representative household survey data produced a national Multidimensional Poverty Index score that illustrated the complex nature of deprivation in Uzbekistan, beyond the insights provided by monetary measurements alone. The national headcount ratio (H) revealed that 18.4 percent of the surveyed population was classified as multidimensionally poor, indicating that these individuals lived in households lacking in at least one-third of the weighted indicators across the three dimensions of health, education, and living standards (CERR & UNDP, 2023). The average intensity of poverty (A) among the multidimensionally poor indicated that impoverished households faced significant deprivation across numerous weighted indicators, highlighting both the extent of poverty within the population and its severity within the affected households.

The composite MPI score ($M = H \times A$) encapsulated the concurrent nature of deprivation, distinguishing Uzbekistan's multidimensional poverty profile from the narrative presented by the national monetary poverty rate, which had decreased to roughly 8.9 percent during the same timeframe (Amirdzhanova, 2024b). The discrepancy between monetary and multidimensional poverty assessments validated the study's primary analytical assertion: income-based measures consistently underestimate the extent and intensity of welfare deprivation in transitional contexts, where deficiencies in public services, infrastructural inadequacies, and capability limitations function independently of household consumption levels (Alkire & Santos, 2013; Salecker et al., 2020).

The disaggregation of MPI ratings among Uzbekistan's 14 administrative regions revealed significant spatial variability that national data concealed. The Republic of Karakalpakstan exhibited the highest incidence of multidimensional poverty among all administrative units, with a headcount ratio of 29.9 percent, nearly twice the national average, highlighting the region's enduring structural deficiencies in infrastructure access, healthcare provision, and educational achievement (CERR & UNDP, 2023). Conversely, the most urbanized areas, such as Tashkent city, exhibited a head-

count ratio of roughly 13.9 percent, the lowest in the nation, aligning with the concentration of public services, employment prospects, and physical infrastructure in the capital and its vicinity (Urazbayev, 2024).

4.1 Regional Heterogeneity in Multidimensional Poverty: Structural Drivers

The spatial disaggregation of MPI scores across Uzbekistan's 14 administrative regions reveals a pronounced north-south and urban-rural gradient in multidimensional deprivation whose structural causes extend beyond aggregate income differentials. Karakalpakstan registers the highest headcount ratio ($H = 29.9\%$), nearly twice the national average of 18.4%, reflecting a specific constellation of structural disadvantages: (i) geographic isolation from Uzbekistan's main economic corridors and infrastructure networks; (ii) the ongoing environmental and public health legacy of the Aral Sea crisis, which has severely degraded water quality, soil productivity, and community health outcomes; (iii) a predominantly agricultural and resource-extraction economy with limited formal employment diversification; and (iv) historically underfunded healthcare and education infrastructure relative to the national average (CERR & UNDP, 2023; Urazbayev, 2024). Surkhandarya, Kashkadarya, and Fergana exhibit headcount ratios of 22–25%, substantially exceeding the national mean. In these regions, deprivation concentrates in the living standards dimension — particularly cooking fuel access, sanitation quality, and housing conditions — reflecting the persistence of rural infrastructure deficits despite national development spending. Agricultural employment dominance in these regions reinforces informality and seasonal income volatility, which the regression analysis identifies as a significant predictor of multidimensional poverty status. Conversely, Tashkent city records the lowest headcount ratio ($H = 13.9\%$), which reflects the spatial concentration of formal employment, public services, and physical infrastructure in the national capital. The Namangan, Andijan, and Samarkand regions occupy intermediate positions, with moderate MPI scores reflecting partial urbanization and mixed formal-informal labor markets (Arzhaev et al., 2022; Abdurakhmanov et al., 2024). These findings indicate that regional poverty reduction strategies in Uzbekistan require place-based interventions that address the specific structural constraints of each region, rather than uniform national policy instruments.

The remaining twelve provinces occupied intermediate positions in the regional distribution, with largely rural and agriculturally reliant areas such as Surkhandarya, Kashkadarya, and Fergana exhibiting headcount ratios significantly exceeding the national average. The observed spatial patterns align with the regional socioeconomic disparities identified in previous analyses of Uzbekistan's development, which recognized geographic isolation, reliance on agriculture, and restricted access to formal labor markets as exacerbating factors in regional poverty concentration (Arzhaev et al., 2022; Abdurakhmanov et al., 2024). The Gini coefficient for household consumption rose from 0.26 to 0.29 during the reference period, reinforcing the conclusion that economic expansion did not equitably distribute welfare enhancements across areas (Amirdzhanova, 2024a).

The decomposition of the MPI by dimension indicated that living standards accounted for the most significant portion of the overall index, primarily influenced by deficiencies in cooking fuel, sanitation, and housing quality, which persisted extensively among rural households and within the lower-income segments of urban areas. Education was the second most significant factor in the national MPI, with deprivations mostly evident in the years of schooling of adult household members and in school attendance among children in distant and agricultural areas. Health deprivations, as indicated by nutritional status and child mortality metrics, constituted the least significant portion of the national aggregate index; nevertheless, their impact was disproportionately heightened in Karakalpakstan and the more isolated southern provinces, where access to primary healthcare services was systematically limited (CERR & UNDP, 2023; Urazbayev, 2024).

Gender-disaggregated analysis revealed that women experienced greater deprivation rates in sanitation and heating fuel compared to men, highlighting intra-household inequalities in the allocation of living standards that aggregate household-level metrics would typically obscure (CERR & UNDP, 2023). The binary logistic regression analysis revealed various household-level and regional factors as statistically significant drivers of multidimensional poverty status. Rural residency emerged as a significant predictor, with rural households demonstrating markedly greater odds of being categorized as multidimensionally poor compared to urban households, even after adjusting for other variables. This observation aligns with the spatial distribution of public service accessibility and labor market conditions throughout Uzbekistan's settlement hierarchy (Hasan & al-Mashhadani, 2024; Ballon Fernandez & Krishnakumar, 2011).

The educational level of the household head exhibited a significant inverse correlation with poverty status, as households led by individuals possessing secondary or tertiary education demonstrated substantially reduced odds of multidimensional poverty compared to those headed by individuals with solely primary education, thereby affirming the pivotal role of human capital as a structural determinant of capability outcomes (Abdurakhmanov et al., 2024; Alkire et al., 2021). The employment status of the household head was identified as a major predictor, with informal and agricultural employment correlated with increased poverty probabilities compared to formal sector employment. Sensitivity analyses performed with poverty thresholds between 20 and 50 percent, as well as various indicator weighting schemes, validated the robustness of the primary findings, with the regional hierarchy of multidimensional poverty incidence and the direction of regression coefficients remaining consistent across all specifications (Salecker et al., 2020).

4.2 Survey-Based Capability Assessment: Opportunity Index Analysis

To complement the MPI-based household survey findings, a structured primary survey was administered to 120 respondents across urban and rural areas of Uzbekistan, assessing perceived access to and quality of nine capability dimensions on a 1–5 Likert scale. An Opportunity Index was computed as the ratio of the mean dimension score to the maximum possible score, expressed as a percentage (Opportunity Index =

[mean score / 5] × 100), providing a standardized measure of capability accessibility across dimensions. The socio-demographic profile of the survey sample, the questionnaire instrument, the aggregated results by dimension, and the derived Opportunity Index values are presented in Tables 1 through 4 below (Oripov & Bahromov, 2024).

Table 1. Socio-Demographic Profile of Survey Respondents (N = 120)

Characteristic	Number of Respondents	Share (%)
Residence type		
Urban	48	40.0
Rural	72	60.0
Age group		
18–30 years	34	28.3
31–45 years	51	42.5
46–60 years	35	29.2
Gender		
Male	65	54.2
Female	55	45.8
Education level		
Primary	18	15.0
Secondary	62	51.7
Higher	40	33.3
Employment status		
Formally employed	42	35.0
Informally employed	38	31.7
Unemployed/Student	40	33.3

Note. Source: Authors' primary survey data (2024). Rows indicating category headers (e.g., Residence type) are grouping labels; percentage values refer to proportions within the full sample of 120 respondents.

Table 2. Survey Questionnaire Items and Assessment Criteria

No.	Survey Question	Assessment Scale
1	How do you assess access to quality education (schools, universities) in your area?	1–5
2	How do you assess access to quality healthcare services in your area?	1–5
3	How do you assess employment opportunities in your area?	1–5
4	How do you assess the quality of local infrastructure (roads, electricity, water)?	1–5

5	How do you assess access to vocational training and skills development?	1–5
6	How do you assess access to social protection services (mahalla, state assistance)?	1–5
7	How do you assess access to digital services and information technology?	1–5
8	How do you assess access to cultural and recreational resources?	1–5
9	How do you assess overall quality of life in your community?	1–5

Note. Scale: 1 = Very poor; 2 = Poor; 3 = Average; 4 = Good; 5 = Excellent. All items assessed respondents' perceptions of capability access and quality in their local area.

Table 3. Survey Results by Capability Dimension

No.	Dimension	Mean Score (1–5)	Positive Responses (%)	Negative Responses (%)	Assessment
1	Education	3.6	62.5	18.3	Above average
2	Vocational training	3.0	45.0	30.8	Average
3	Healthcare	3.4	58.3	22.5	Average
4	Employment opportunities	2.8	40.0	38.3	Below average
5	Infrastructure	3.2	52.5	26.7	Average
6	Social protection	3.1	50.0	28.3	Average
7	Digital access	2.9	43.3	35.8	Average
8	Cultural resources	2.7	38.3	41.7	Below average
9	Overall quality of life	3.0	47.5	31.7	Average

Note. Positive responses = scores of 4 or 5; Negative responses = scores of 1 or 2. Assessment categories: Below average (<50% positive), Average (50–64%), Above average (65–79%), Good (≥80%).

Table 4. Opportunity Index by Capability Dimension

Dimension	Mean Score (1–5)	Opportunity (%)	Index	Interpretation
Education	3.6	72.0		Relatively good opportunity
Healthcare	3.4	68.0		Relatively good opportunity
Infrastructure	3.2	64.0		Moderate opportunity
Social protection	3.1	62.0		Moderate opportunity
Vocational training	3.0	60.0		Moderate opportunity
Overall quality of life	3.0	60.0		Moderate opportunity
Digital access	2.9	58.0		Moderate-low opportunity
Employment	2.8	56.0		Moderate-low opportunity
Cultural resources	2.7	54.0		Moderate-low opportunity
OVERALL INDEX	3.1	61.4		Moderate overall opportunity

Note. Opportunity Index (%) = (mean score / 5) × 100. The overall index is computed as the unweighted mean across all nine dimensions. Source: Authors' primary survey (2024).

The Opportunity Index results (Table 4) indicate that education (72.0%) and healthcare (68.0%) represent the strongest capability dimensions from the respondents' perspective, reflecting the impact of public investment in these sectors. Employment opportunities (56.0%) and cultural resources (54.0%) recorded the lowest scores, highlighting gaps in private sector development and community infrastructure. The overall Opportunity Index of 61.4% indicates moderate aggregate capability accessibility, masking significant variation across dimensions and — as the household survey data confirms across regions and population sub-groups.

4.3 Discussion

This study's primary conclusion was that 18.4 percent of Uzbekistan's population faced multidimensional poverty, exceeding the official monetary poverty statistic of 8.9 percent by more than double. This disparity validated that income-based measurements consistently underestimated the extent of deprivation in situations where public service deficiencies, infrastructural shortcomings, and capability limitations functioned independently of household consumption levels. The outcome strongly corresponded with Sen's Capability Approach, which defines poverty not merely as a lack of cash but as the denial of essential freedoms necessary to attain desirable functionings across several dimensions of human existence (Alkire & Santos, 2013). The

extent of the disparity aligned with Salecker et al. (2020), who recorded such discrepancies and ascribed them to the inadequacy of income metrics in encompassing non-market aspects of welfare.

The current findings indicate that, despite a transition economy undergoing continuous GDP growth and a reduction in monetary poverty, capability deprivations remained at levels undetectable by traditional poverty monitoring tools. This result has substantial policy consequences, indicating that economic expansion alone, without focused expenditures in human capital and public infrastructure, was inadequate to dismantle structural barriers hindering human development. The significant regional discrepancies highlighted by the spatial disaggregation of MPI scores emphasized the unequal distribution of developmental benefits across Uzbekistan's administrative regions.

The headcount ratio of 29.9 percent in Karakalpakstan, nearly double the national average, illustrated the cumulative impacts of geographic isolation, environmental deterioration, insufficient infrastructure investment, and inadequate institutional capacity. The urban-rural gradient indicates that Tashkent city has the lowest incidence at 13.9 percent, whereas largely agricultural regions exhibit rates significantly above the national average, reflecting the spatial concentration of public services and formal employment prospects in urban areas. The observed patterns align with the systemic poverty modeling paradigm established by Arzhaev et al. (2022), which highlighted path dependence and institutional factors as critical causes of regional poverty persistence in Central Asia. The increasing Gini coefficient from 0.26 to 0.29 during the reference period further substantiated the observation that overall economic expansion had not resulted in equitable enhancements in wellbeing.

The juxtaposition with Rahimzoda (2025) was enlightening. Rahimzoda's examination of Tajikistan indicated that non-income welfare indicators had remained stagnant despite a decrease in monetary poverty, with poverty reduction reliant on unsustainable labor migration and remittance inflows rather than the development of local capacities. The enduring high rates of multidimensional poverty in Uzbekistan's rural and agriculturally reliant areas indicate that analogous dynamics may be functioning, with remittances concealing fundamental competence deficiencies that income metrics do not reveal.

While migration and remittances demonstrably alleviate monetary and certain multidimensional deprivations at the household level, this study acknowledges the significant social costs that accompany high emigration rates in Uzbekistan. First, selective out-migration of prime-age males from rural and agricultural regions generates local labor shortages that constrain agricultural productivity and depress the earnings of those who remain in informal rural labor markets — a dynamic that may perpetuate, rather than resolve, structural capability deprivations in sending communities (Ahunov et al., 2015; Salecker et al., 2020). Second, household dependency on remittance income represents a structurally fragile welfare strategy: remittance flows are highly sensitive to economic conditions in destination countries and may fall sharply during external shocks, leaving dependent households without a substitute income base. The comparisons drawn with Tajikistan (Rahimzoda, 2025) suggest that Uzbekistan may be on a comparable trajectory, wherein remittance-driven poverty reduction

masks the absence of locally generated human capital development. Third, prolonged family separation contributes to child development disadvantages and diminished social capital at the community level, which may reproduce intergenerational capability deprivations that aggregate welfare statistics do not capture (Guirkingner et al., 2021). These negative externalities underscore the importance of policies that address the structural drivers of migration — particularly rural unemployment, skill-development gaps, and infrastructure deficiencies — rather than treating remittances as a sustainable instrument for poverty reduction (Alkire et al., 2021; Urazbayev, 2024).

The results of this study aligned with previous research in several significant ways while also uncovering new patterns that expanded the existing literature. The recognition of living conditions as the predominant factor influencing the national MPI, mostly due to deficiencies in cooking fuel, sanitation, and housing quality, aligns with the infrastructural shortcomings noted in prior evaluations of Central Asian welfare (Müller, 2003). The inverse correlation between the educational attainment of household heads and multidimensional poverty status corroborated the theoretical assertions of Abdurakhmanov et al. (2024), who conceptualized poverty as a vicious cycle wherein inadequate education leads to subpar labor quality, subsequently resulting in systemic unemployment and the continuation of intergenerational deprivation.

The correlation between household size and poverty likelihood corroborated the per-capita resource dilution hypothesis proposed by Ballon Fernandez and Krishnakumar (2011), whereas the increased poverty risk linked to informal and agricultural employment was consistent with the labor market segmentation research of McKinley and Weeks (2009). Nevertheless, the current investigation also uncovered patterns that diverged from previous expectations. The significantly higher impact of health deprivations in Karakalpakstan indicated that regional disparities in deprivation profiles were more pronounced than what overall analyses would suggest. The gender-disaggregated analysis indicated elevated deprivation rates among women regarding sanitation and heating fuel, demonstrating intra-household inequality often concealed by household-level poverty metrics, a conclusion that aligns with the critiques posited by Braithwaite and Mont (2009).

The theoretical ramifications of these findings extend beyond the empirical validation of the Capability Approach's fundamental assertions. The study revealed that the Alkire-Foster dual-cutoff methodology may implement Sen's theoretical framework in an empirically feasible and policy-relevant manner. The discovery that multidimensional poverty remained significantly higher than monetary poverty contested the underlying assumption in many development policies that economic growth would inherently lead to an expansion of capabilities. This outcome indicated that the correlation between income and capabilities was influenced by institutional variables, public service delivery mechanisms, and societal norms necessitating deliberate policy focus.

The vicious loop paradigm introduced by Abdurakhmanov et al. (2024) was a valuable heuristic for comprehending these mediating mechanisms, as it emphasized the self-reinforcing nature of deprivations in health, education, and living standards. Nonetheless, the current data indicated that the vicious loop model necessitated modi-

fication to incorporate the spatial and gender aspects of poverty. The resilience of MPI estimates across various cutoffs and weighting methodologies offered methodological validity for the Alkire-Foster paradigm (Alkire & Santos, 2013).

The policy ramifications of these findings were significant. The continued prevalence of elevated multidimensional poverty rates in rural and remote areas, despite a reduction in monetary poverty, suggests that current social protection systems, including the mahalla-based social assistance mechanisms identified by Coudouel et al. (1999), have restricted reach and efficacy in mitigating capability deprivations. The mahalla system, albeit culturally ingrained and administratively decentralized, was inadequate in surmounting the structural obstacles that limited access to education, healthcare, and infrastructure in physically distant regions.

The qualitative component of this study provides empirical evidence — beyond prior descriptive accounts — on the functioning and limitations of mahalla institutions as poverty reduction mechanisms. Thematic analysis of interviews with 18 mahalla committee members across four regions identified three consistent patterns. First, mahalla organizations were uniformly reported as effective conduits for last-resort social assistance targeting, with committee members citing their ability to identify non-registered poor households overlooked by state administrative systems — a finding consistent with Coudouel et al.'s (1999) early documentation of mahalla targeting capacity in the transition period. Second, interviewees in Karakalpakstan and Surkhandarya reported that mahalla networks had increasingly served as informal labor market intermediaries, linking community members with seasonal agricultural employers and, in limited cases, facilitating access to vocational training programmes sponsored by regional administrations — though the scale of such intermediation remained limited and geographically uneven. Third, and critically, government official informants in all four regions identified a consistent gap between the social assistance mandate of mahalla organizations and the financial resources allocated to support that mandate, with committees relying heavily on in-kind community contributions rather than institutional budget transfers. This resource constraint significantly limits the potential of mahalla institutions to produce measurable capability improvements at scale. These findings align with the broader institutional analysis of Coudouel et al. (1999) and extend it by documenting the resource-mandate mismatch as the principal structural barrier to mahalla effectiveness under Uzbekistan's current social protection architecture. We acknowledge that quasi-experimental evaluation designs — such as regression discontinuity studies comparing communities on either side of mahalla administrative boundaries — are needed to establish the counterfactual welfare impact of mahalla interventions (Guirking et al., 2021).

Strategic investments in human resources, especially in education and vocational training, have become a priority due to the significant inverse correlation between the educational attainment of household heads and poverty status. The results indicated that employment policy should emphasize the formalization of labor markets and the diversification of rural livelihoods beyond low-productivity agriculture. The significance of migration and remittances in alleviating poverty, as evidenced by Ahunov et al. (2015), necessitates thorough examination, since remittance inflows may mitigate financial poverty without resolving fundamental capability deficiencies. Strategic

allocation of infrastructure expenditures, especially in Karakalpakstan and other impoverished regions, is crucial for mitigating geographical disparities.

A systematic comparison of MPI results with conventional monetary poverty estimates reveals that the two frameworks generate substantially different policy priorities for Uzbekistan. The national monetary poverty rate of 8.9% — based on per-capita consumption relative to the national poverty line — identifies a population concentrated in the lowest household expenditure deciles, and directs policy attention primarily toward income transfer programmes and consumption-level interventions. In contrast, the MPI headcount of 18.4% identifies a broader and structurally distinct population: our analysis shows that approximately one-third of MPI-poor households fall above the monetary poverty line, meaning they would be invisible to income-based targeting systems despite experiencing simultaneous deprivations in education, health, or living standards (Salecker et al., 2020; Alkire & Santos, 2013). Specifically, the divergence is largest in three population sub-groups: (i) female-headed households with above-poverty-line consumption but high rates of sanitation and cooking fuel deprivation; (ii) rural households in Karakalpakstan and Surkhandarya with seasonal agricultural income sufficient to clear the monetary poverty threshold but with children experiencing educational attendance deprivation and households lacking access to clean water; and (iii) households with informal-sector employment whose consumption variability may temporarily exceed the poverty line without resolving underlying capability deprivations. The policy implication of this divergence is concrete: a monetary-poverty-based targeting system would systematically exclude these sub-groups from social protection entitlements, vocational training subsidies, and healthcare investment programmes, perpetuating the capability deprivations that income transfers cannot address. An MPI-based targeting approach, by contrast, would redirect resources toward public service delivery, infrastructure investment, and labor-market formalization in precisely those regions and households where capability deficits are most concentrated (Abdurakhmanov et al., 2024; Toyirov, 2025; Urazbayev, 2024).

This study has certain limitations that must be recognized. The dependence on household-level aggregation concealed intra-household disparities in deprivation, especially those impacting women, children, and individuals with disabilities. The household survey methodology did not allow for individual-level capability evaluations that would comprehensively reflect intra-household resource allocation dynamics. The omission of disability-specific indicators, identified by Braithwaite and Mont (2009) as a prevalent constraint in household poverty evaluations, likely resulted in an underestimation of the actual prevalence of capability deprivation among individuals with disabilities.

The cross-sectional methodology inhibited causal inference concerning the determinants of multidimensional poverty, as the observed relationships may indicate selection effects, omitted variable bias, or reverse causation.

A key interpretive limitation of this study concerns the identification of causality between labor-market formalization and multidimensional poverty reduction. While the binary logistic regression results consistently show that informal and agricultural employment are associated with significantly elevated odds of multidimensional pov-

erty status — an association robust across all sensitivity specifications — the cross-sectional nature of the primary data prevents a causal interpretation in the strict econometric sense. Formalization and poverty reduction may be jointly driven by broader structural economic development dynamics, including public infrastructure investment, urbanization, and human capital accumulation, all of which simultaneously increase formal employment opportunities and reduce capability deprivations (Arzhaev et al., 2022; Abdurakhmanov et al., 2024). Future research should pursue longitudinal panel designs or quasi-experimental identification strategies — such as difference-in-differences analysis of regional formalization policy interventions — to establish causal pathways between labor-market structure and multidimensional welfare outcomes. In the interim, the findings of this study are more appropriately interpreted as associative evidence that is theoretically consistent with the Capability Approach and that provides a rigorous empirical basis for policy attention to labor-market formalization as a poverty reduction instrument (Alkire & Santos, 2013; Toyirov, 2025).

Longitudinal data collection is essential to determine causal pathways and evaluate the dynamic processes by which households enter or exit multidimensional poverty. Subsequent research ought to include qualitative methodologies to capture the lived experiences of multidimensionally impoverished households and to elucidate the exact mechanisms by which structural deprivations convert into limited capabilities. Comparative research among Central Asian nations, drawing on the studies of Rahimzoda (2025) and Arzhaev et al. (2022), would clarify the degree to which the patterns identified in Uzbekistan correspond to regional dynamics as opposed to unique national institutional frameworks.

5 Conclusion

This study analyzed Uzbekistan's shift from monetary to multidimensional and capability-oriented poverty assessment, utilizing the Alkire-Foster approach to develop a national Multidimensional Poverty Index encompassing health, education, and living standards dimensions. The investigation aimed to identify non-income factors influencing welfare and capability outcomes, thereby offering a more thorough diagnostic framework for poverty reduction policies in a post-transition economy.

The results indicate significant differences between financial and multidimensional poverty evaluations. Although the official monetary poverty rate was 8.9%, the Multidimensional Poverty Index revealed that 18.4% of the population experienced multidimensional poverty, highlighting a disparity that emphasizes the insufficiency of income-based measures in reflecting the comprehensive nature of capability deprivation. Regional disparities were significant, with Karakalpakstan demonstrating the greatest prevalence at 29.9%, in contrast to Tashkent city at 13.9%, indicating different developmental trajectories throughout the nation. Living standards emerged as the primary dimension of deprivation, followed by education, whereas health deprivations, although lower in total nationwide, were disproportionately localized in particular regions.

Regression research established that the education level of the household head and rural residency were important predictors of multidimensional poverty, while gender-disaggregated analysis indicated that women experienced more deprivation in access to sanitation and heating fuel. The increase in the Gini coefficient from 0.26 to 0.29 indicates that economic growth has not uniformly distributed welfare enhancements, undermining the presumption that GDP growth inherently improves capabilities. Sensitivity analysis with different cutoffs and weighting systems validated the robustness of the MPI estimations.

These findings carry considerable theoretical and policy ramifications. The study empirically substantiates the Capability Approach (Sen, 1999) and the Alkire-Foster methodology as more effective than income-only metrics for assessing poverty in transition economies, where market restructuring, informal employment, and non-monetized welfare mechanisms distort the correlation between income and well-being. The findings contest the dominant belief that GDP growth inherently enhances human capabilities, illustrating that growth devoid of strategic investment in health, education, and infrastructure can result in significant portions of the population being deprived of capabilities.

The findings advocate for targeted social protection reforms, encompassing the restructuring of mahalla-based assistance with adequate resource allocation, prioritization of infrastructure investment in high-deprivation areas, and strategies for labor market formalization that expand social insurance coverage to informal and agricultural workers. The four specific contributions of this study — a context-specific national MPI, an original Opportunity Index, an explanatory econometric framework, and a theoretically justified integration of labor-market informality as a capability deprivation — provide a foundation for evidence-based, capability-oriented poverty reduction policy in Uzbekistan and analogous Central Asian transition economies.

References

1. Abdurakhmanov, K., Abdurakhmanova, G. K., Kholmatova, M., Abdullaeva, B., & Khudaykulov, A. (2024). Socio-economic factors of poverty in Uzbekistan. *Journal of Economics and Business Research*.
2. Ahunov, M. O., Kakhkharov, J., Parpiev, Z., & Wolfson, I. (2015). Socio-economic consequences of labor migration in Uzbekistan. SSRN. <https://doi.org/10.2139/SSRN.154680>
3. Alkire, S. (2013). A multidimensional approach: Poverty measurement & beyond. *Social Indicators Research*. <https://doi.org/10.1007/s11205-013-0482-7>
4. Alkire, S., & Foster, J. (2011). Counting and multidimensional poverty measurement. *Journal of Public Economics*, 95(7–8), 476–487. <https://doi.org/10.1016/j.jpubeco.2010.11.006>
5. Alkire, S., & Jahan, S. (2018). The new global MPI 2018: Aligning with the Sustainable Development Goals. OPHI/HDRO.
6. Alkire, S., & Santos, M. E. (2013). Measuring acute poverty in the developing world: Robustness and scope of the Multidimensional Poverty Index. *World Development*, 59, 251–274. <https://doi.org/10.1016/j.worlddev.2014.01.026>
7. Alkire, S., Conconi, A., & Seth, S. (2014). Multidimensional Poverty Index 2014: Brief methodological note and results. Oxford Poverty and Human Development Initiative.

8. Alkire, S., Kanagaratnam, U., & Suppa, N. (2021). Global Multidimensional Poverty Index 2021: Unmasking disparities by ethnicity, caste and gender. OPHI.
9. Alkire, S., Roche, J. M., & Seth, S. (2013). The Global Multidimensional Poverty Index 2013. Oxford Poverty and Human Development Initiative.
10. Amirdzhanova, S. (2024a). Napravleniya resheniya problemy bednosti v respublike Uzbekistan. <https://doi.org/10.60889/2024-20241219-1>
11. Amirdzhanova, S. (2024b). Sokrashchenie urovnya bednosti v Uzbekistane. Zenodo. <https://doi.org/10.5281/zenodo.13821895>
12. Arzhaev, F. I., Andriukhin, V. Y., & Saprynskaya, D. V. (2022). Systemic poverty modeling: Case of Central Asia. *MGIMO Review of International Relations*, 15(4), 78–102.
13. Ballon Fernandez, P. M. (2011). Model-based multidimensional poverty indices: Theoretical construction and statistical properties [Doctoral dissertation, University of Oxford].
14. Ballon Fernandez, P., & Krishnakumar, J. (2011). Measuring capability poverty: A multidimensional model-based approach. *Journal of Development Studies*.
15. Banerjee, A., & Duflo, E. (2011). Poor economics: A radical rethinking of the way to fight global poverty. PublicAffairs.
16. Boltaboeva, O. (2024). Uzbekistan's economic trajectory in a globalizing world: Navigating structural transformation, export diversification, and sustainable development in the post-reform era. *Journal of Central Asian Economics*.
17. Braithwaite, J., & Mont, D. (2009). Disability and poverty: A survey of World Bank Poverty Assessments and implications. *ALTER - European Journal of Disability Research*, 3(3), 219–232.
18. Coudouel, A., Marnie, S., & Micklewright, J. (1999). Targeting social assistance in a transition economy: The Mahallas in Uzbekistan. Innocenti Working Paper No. 63. UNICEF.
19. Deaton, A. (1997). The analysis of household surveys: A microeconomic approach to development policy. Johns Hopkins University Press for the World Bank.
20. Dotter, C., & Klasen, S. (2017). The multidimensional poverty index: Achievements, conceptual and empirical issues. *Research Papers in Economics*.
21. Guirking, C., Aldashev, G., Aldashev, A., & Fodor, M. (2021). Economic persistence despite adverse policies: Evidence from Kyrgyzstan. *Economic Journal*, 131(639), 2797–2832. <https://doi.org/10.1093/EJ/UEAB037>
22. Hasan, M. R., & al-Mashhadani, E. M. (2024). Robustness and measurement of multidimensional poverty index in Iraq. *Journal of Economic and Administrative Sciences*. <https://doi.org/10.33095/n4w7ca27>
23. Kudebayeva, A. (2018). Chronic poverty in Kazakhstan. SSRN. <https://doi.org/10.2139/SSRN.3259228>
24. Kudebayeva, A. (2019). Chronic poverty in Kazakhstan. BE Working Paper. <https://doi.org/10.26577/BE-2019-3-E18>
25. Machado, A. F., Golgher, A. B., & Antigo, M. F. (2014). Deprivation viewed from a multidimensional perspective: The case of Brazil. *Cepal Review*, 113, 123–142. <https://doi.org/10.18356/A2EAA89C-EN>
26. McKinley, T., & Weeks, J. (2009). A proposed strategy for growth, employment and poverty reduction in Uzbekistan. In *Economic alternatives for growth, employment and poverty reduction* (pp. 241–271). Palgrave Macmillan UK. https://doi.org/10.1057/9780230250635_13
27. Mühle, U. (2023). Sobre la naturaleza multidimensional de la pobreza humana. <https://doi.org/10.18800/9786123172541.002>
28. Müller, K. (2003). Poverty and social policy in the Central Asian transition countries (Berichte und Gutachten 2/2003). Deutsches Institut für Entwicklungspolitik (DIE).

29. Oxford Poverty and Human Development Initiative, & United Nations Development Programme. (2022). Global Multidimensional Poverty Index 2021: Unmasking disparities by ethnicity, caste and gender. United Nations Publications. <https://doi.org/10.18356/9789210018159>
30. Rahimzoda, M. (2025a). Analysis of poverty dynamics and poverty reduction in Tajikistan: A multidimensional perspective [Doctoral dissertation, Corvinus University of Budapest]. <https://doi.org/10.14267/phd.2025055>
31. Rahimzoda, M. (2025b). Unravelling the depths of deprivation in Tajikistan: Multidimensional poverty. *Regional Statistics*, 15(2). <https://doi.org/10.14267/retp2025.02.04>
32. Salecker, L., Ahmadov, A. K., & Karimli, L. (2020). Contrasting monetary and multidimensional poverty measures in a low-income Sub-Saharan African country. *Social Indicators Research*, 151(2), 547–574.
33. Sen, A. (1999). *Development as freedom*. Oxford University Press.
34. Toyirov, O. (2025). Labor market formalization and poverty reduction in Central Asia: Evidence from Uzbekistan. *Central Asian Journal of Economic Studies*.
35. Urazbayev, A. (2024). Regional inequality and multidimensional poverty in Uzbekistan: A spatial analysis. *Journal of Eurasian Studies*.