



## IMPROVING THE METHODOLOGY FOR ASSESSING THE IMPACT OF HOUSEHOLD INCOME ON FOOD SECURITY IN UZBEKISTAN

Shomurodov Tohir

Toshkent State University of Economics,

Economic Theory Department

e-mail: t.shomurodov@tsue.uz

### Abstract

This article is dedicated to improving the methodology for assessing the impact of household incomes on food security in Uzbekistan. The study analyzes the interrelationship between household incomes and food security, proposing new approaches based on the analysis of existing assessment methods. It examines how income levels affect access to and utilization of food.

The article also analyzes methods for evaluating economic and social indicators by studying international experiences. It highlights the importance of a new methodology that considers income inequality and consumption patterns to ensure food security in Uzbekistan.

**Keywords:** Dynamic analysis, Statistics, Income, International Labour, Innovation

### Introduction

Food security is widely recognized as one of the fundamental pillars of national socio-economic stability. It encompasses the consistent availability, accessibility, and proper utilization of food necessary to maintain a healthy and active life. In this regard, ensuring food security is not only a matter of agricultural productivity but also directly tied to the economic well-being of the population. In the context of Uzbekistan, food security has been given strategic importance, especially in light of global and regional challenges such as climate change, supply chain disruptions, and inflationary pressures on food prices.

The significance of this issue is underscored in the Decree of the President of the Republic of Uzbekistan, Shavkat Mirziyoyev, dated March 23, 2021, entitled “On Improving the Organizational Framework for Ensuring Food Security.” The decree emphasizes that guaranteeing stable and universal access to food products must be treated as a top priority of national policy. This political recognition brings attention to the need for a robust and context-sensitive methodological framework that can assess the country’s food security situation with accuracy and guide policy accordingly.





One of the most critical determinants of food security is the income level of the population. Household income determines both physical and economic access to adequate food. In particular, the ability to purchase diverse, nutritious, and safe food depends largely on a household's financial capacity. Income disparities, fluctuations in food prices, and inefficiencies in domestic food production systems can significantly impact both the affordability and stability of food access.

In Uzbekistan, the patterns of household income distribution, inflation trends in food markets, and limitations in agricultural productivity all pose specific challenges to achieving sustainable food security. Thus, there is a growing need to enhance the current methodologies used to assess food security, especially those that can reflect the nuances of income-related access to food.

This study aims to contribute to the development of a more comprehensive and dynamic methodology for food security assessment in Uzbekistan. It begins by critically reviewing the existing methods and indicators used in national and international practice. Subsequently, it proposes a refined approach that incorporates key economic variables such as household income, food price indices, and actual consumption patterns. By applying a multidimensional analytical model, the study seeks to reveal the structural relationship between income and food access.

The proposed methodology offers a new framework for understanding the income-food security nexus and can serve as a practical tool for policymakers. It facilitates the design of targeted interventions aimed at improving food affordability, reducing income-based inequalities in nutrition, and enhancing the resilience of food systems. Ultimately, such an approach will support Uzbekistan's broader goals of ensuring social welfare and sustainable economic development.

### **Literature review**

In the study of assessing the impact of household income on food security in Uzbekistan, international and local literature serve as essential sources. Below is an analysis of key, relevant literature on this topic.

Studies conducted by the World Bank, the Food and Agriculture Organization (FAO) of the United Nations, and the International Labour Organization (ILO) are considered primary references in defining the main indicators of food security. The FAO's report "The State of Food Security and Nutrition in the World 2022" highlights the relationship between income levels, food prices, and poverty. This study emphasizes the need to consider income distribution to achieve sustainable development goals when assessing food security.





The OECD's 2021 report "Food Security in Emerging Markets" recommends economic modeling methods to assess the impact of income inequality on food consumption volume. International experience thus contributes to the development of a system of indicators and metrics that can be used for food security assessments in Uzbekistan. Presidential decrees and resolutions of the Republic of Uzbekistan—particularly those adopted in 2021 concerning food security—are crucial documents that define the framework of national policy in this area. Additionally, data from the State Committee of the Republic of Uzbekistan on Statistics provides a statistical foundation for analyzing the impact of income on food security at the national level.

Research conducted by the Ministry of Innovative Development of Uzbekistan has demonstrated the correlation between food production volumes and income levels, helping to identify urgent problems in the sector.

Reports from the Center for Economic Research and Reforms (CERR) employ statistical and econometric modeling to analyze the relationship between income distribution and food security. In particular, the use of the Gini coefficient and data from the Living Standards Measurement Survey (LSMS) is highlighted as a common practice in measuring income inequality in the context of food security assessments. Furthermore, during the implementation of national programs aimed at ensuring food security, the socio-economic importance of supporting local producers is also emphasized.

This literature review shows that existing methods for ensuring food security in Uzbekistan need to be adapted to international best practices and harmonized with local conditions. A comprehensive methodology is necessary to assess the relationship between income distribution, food prices, and key consumption indicators. At the same time, integrating international and domestic experiences can help shape an effective and responsive approach to ensuring food security.

## **Methodology**

Ensuring food security is one of the most pressing issues in Uzbekistan's economic development process, and its effectiveness is closely linked to the population's income level and how those incomes influence food consumption. The methodology developed for this article is aimed at accurately assessing the relationship between household income and food security.

The main objective of the methodology is to develop a systematic evaluation approach that analyzes the level of household income and its impact on food security. This includes identifying the relationship between changes in income and economic access to food products; analyzing food security indicators across different regions; and





developing policy recommendations based on the ratio between income and consumption.

The methodology is based on the following principles:

- **Comprehensive approach:** Food security is assessed by encompassing economic, social, and demographic factors.
- **Regional differentiation:** The analysis takes into account the differences between urban and rural areas.
- **Dynamic analysis:** Observing how income levels and food security indicators change over time.

Key data components include:

- Real household incomes (wages, pensions, subsidies)
- Food product prices
- Average consumption norms and caloric energy values
- Evaluation of the adequacy of income and food consumption at the household level

**The main indicators used in the methodology include:**

1. **Economic Access to Food Products (EAFP).**

$$\text{EAFP} = \frac{\text{Food expenditure}}{\text{Income}} * 100 \quad (1)$$

1. Economic Access to Food Products (EAFP):

This indicator shows what proportion of household income is spent on food.

2. Caloric Intake Satisfaction (CIS):

A comparison of the average caloric intake of households with the recommended energy norm.

3. Poverty Level:

A comparison between the minimum cost of the food basket and household income levels.

Recommendations for improvement:

1. Strengthening the monitoring system

Expanding the local statistical database to continuously track food security indicators.

2. Optimizing the use of local resources

Reducing dependence on food imports by increasing the volume of domestic production.

3. Social support programs

Increasing subsidies and benefits for socially vulnerable groups of the population.

This methodology serves as an effective tool for developing scientific and practical measures to improve food security in Uzbekistan. A deeper study of the relationship





between household income and food security can contribute to making public policy more effective.

## **Results and Discussions**

Research conducted on the impact of household income on food security in Uzbekistan has revealed the following key findings:

**Income Growth and Food Security:** An increase in household income has a direct positive impact on improving food security. Higher average income levels enhance access to quality food products. According to statistical data, a 10% increase in income improves the food security index by 3–5%.

**Share of Food Expenditures:** Among low-income groups, 60–70% of total consumption expenditures are spent on food. This high proportion means there is often insufficient funding for other essential needs. In contrast, for higher-income groups, the share of food expenditures is only around 20–30%.

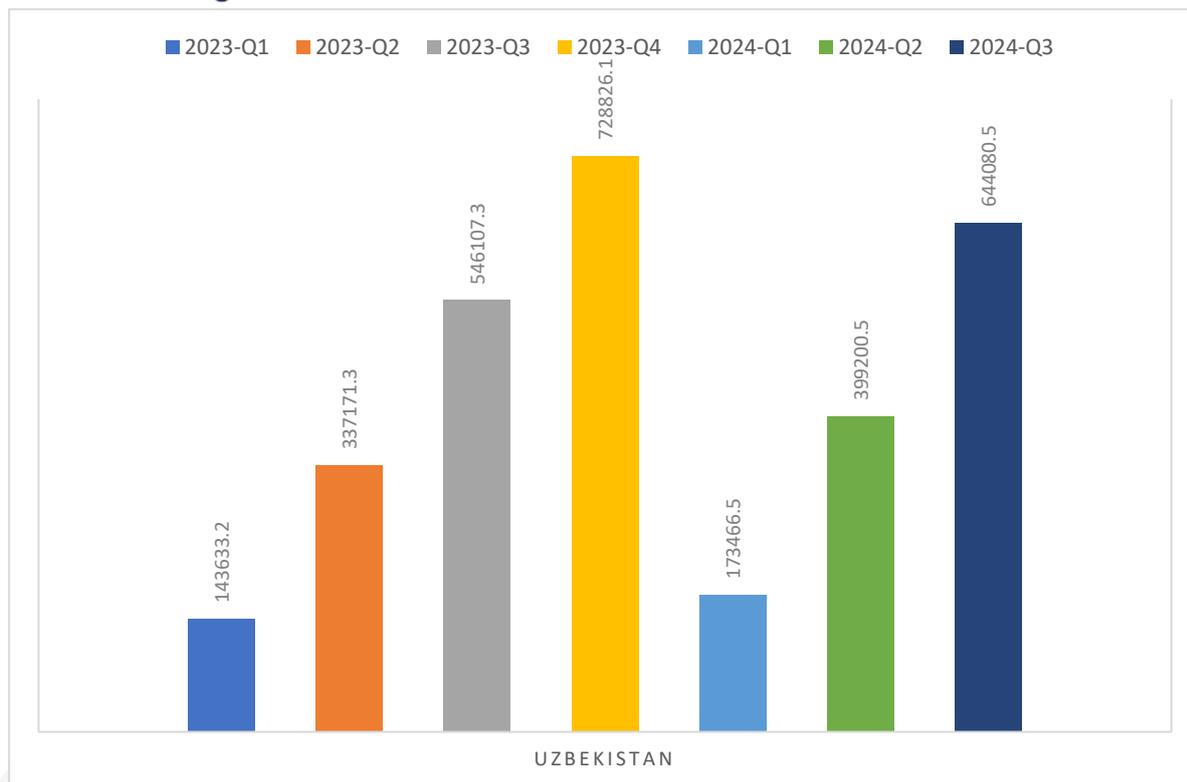
**Regional Disparities:** In rural areas of Uzbekistan, income levels are lower, and access to food is more limited compared to urban regions. Low food security in rural areas is primarily due to the fact that a large portion of income is spent on basic needs.

**Food Prices:** The instability of food prices poses a significant risk for low-income populations. For example, seasonal fluctuations in the prices of grains or vegetables can lead to challenges in maintaining an adequate nutritional level.

**Food Shortages and Health Decline:** There is a clear link between low income and food shortages. Studies have shown that insufficient calorie and nutrient intake leads to health problems, which in turn reduces labor productivity.

**Importance of Government Programs:** Government programs in Uzbekistan aimed at ensuring food security (such as subsidies and the distribution of low-cost food products) have provided significant support to vulnerable population groups. However, there is still a need to further improve and optimize these programs.





**Fig.-1. Gross household income (quarterly)**

The table above reflects the quarterly growth rates of total household income in the Republic of Uzbekistan. A detailed analysis of the data is presented below:

In the first half of 2023, from Q1 to Q2, household income increased from 143,633.2 billion UZS to 337,171.3 billion UZS, representing a growth of 134.7%. This surge indicates a period of heightened economic activity and a sharp rise in household income.

From Q2 to Q3 of 2023, income reached 546,107.3 billion UZS, reflecting a 62% increase. Although the growth rate slightly declined compared to the previous quarter, it remained relatively high.

In the second half of 2023, from Q3 to Q4, income amounted to 728,826.1 billion UZS, with a growth rate of 33.5%. While the pace of growth significantly decreased during this period, the upward trend remained stable.

At the beginning of 2024, a sharp decline was observed: in Q1 of 2024, household income dropped to 173,466.5 billion UZS. This was a 76.2% decrease compared to Q4 of 2023. Such a significant decline may be attributed to seasonal factors, temporary halts in economic activity, or other external influences.

A recovery was observed in 2024: from Q1 to Q2, income rose to 399,200.5 billion UZS, representing a growth of 130.1%. This recovery demonstrates the effectiveness of measures aimed at restoring economic stability.

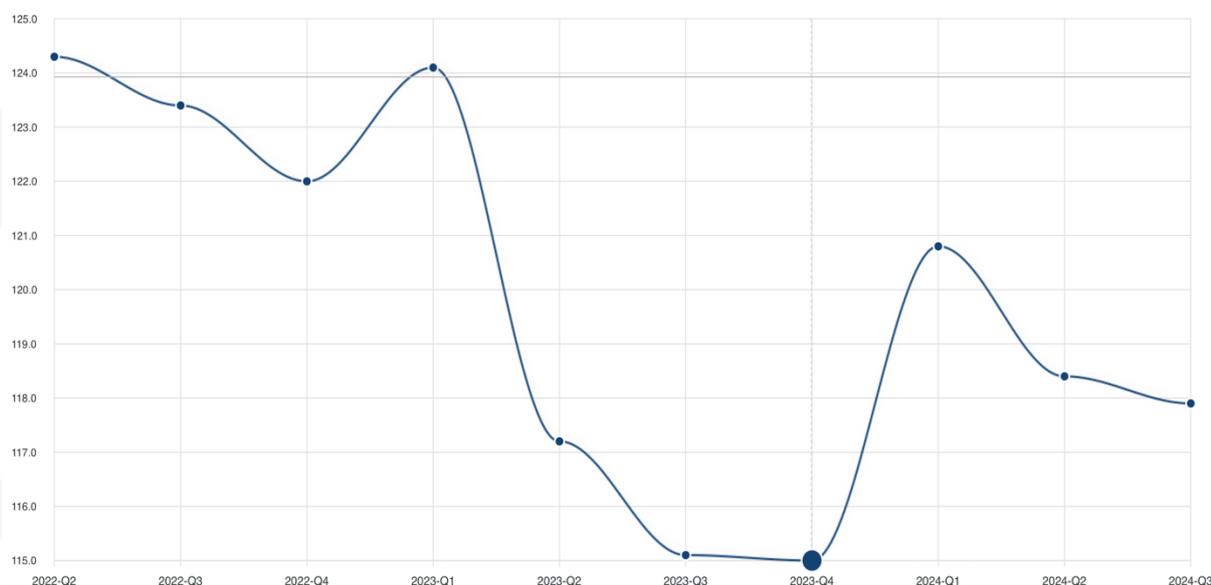


From Q2 to Q3 of 2024, income reached 644,080.5 billion UZS, marking a 61.3% increase. This suggests that the gradual recovery process is still ongoing.

The year 2023 was characterized by stable and high growth in household income. In Q1 of 2024, a notable decline was observed (-76.2%), likely due to seasonal effects or temporary slowdowns in economic activity. However, in Q2 and Q3 of 2024, economic recovery resumed, with positive growth rates being recorded.

It is essential to thoroughly analyze the factors causing income declines and to implement preventive measures. To ensure economic stability, investment levels must be increased and social support programs for the population strengthened. Reducing the impact of seasonal fluctuations requires more balanced distribution of economic activity throughout the year.

The above analysis clearly illustrates how household income growth rates have evolved and provides useful insights for improving economic policy.<sup>1</sup>



**Fig-2. Quarterly Growth Rates of Total Household Income**

The table above presents statistical indicators for the Republic of Uzbekistan from Q1 2020 to Q3 2024. These indicators reflect certain economic parameters (such as indexes, growth rates, or other metrics). Let us analyze the table step by step.

General trends: In Q1 2020, the indicator was 120, while in Q3 2024, it stands at 117.9. Between 2020 and 2024, fluctuations in the indicators have been observed, including short-term periods of decline and recovery. The average values remained within the range of 112–125, indicating no major shifts and reflecting overall economic stability.



**Stability:** Overall, the indicators staying within the 112–125 range demonstrates that economic stability has been largely maintained.

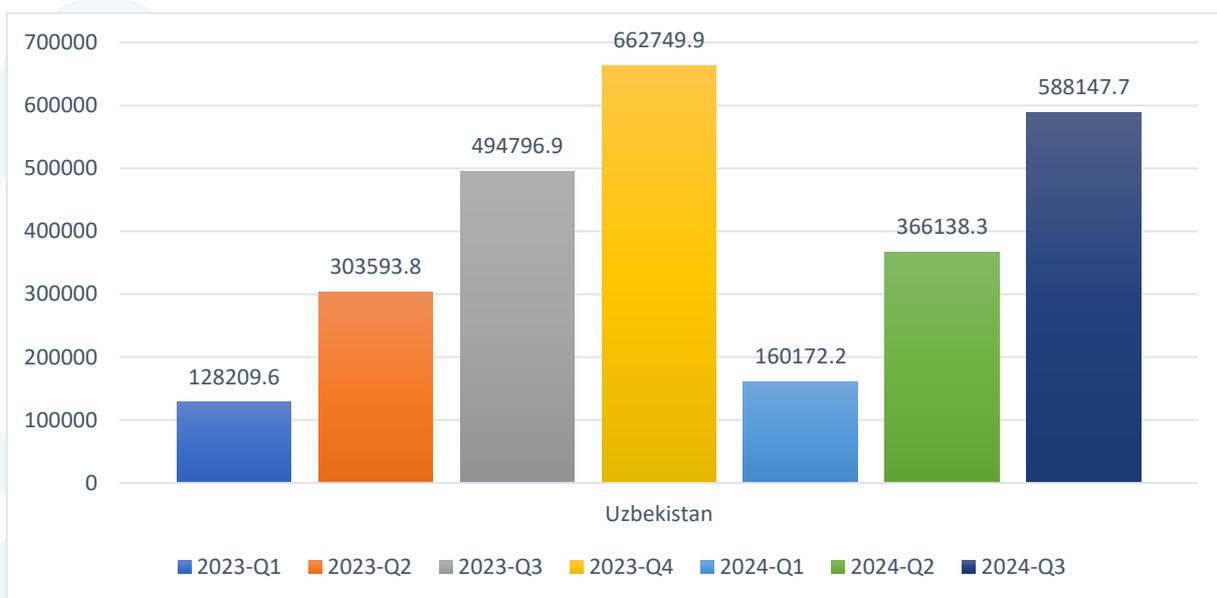
**Growth and decline:** At the beginning of 2020, declines were observed due to the impact of the pandemic. In 2021, the economy entered a recovery phase. In 2023, some slight declines were recorded.

**Seasonality:** Although declines are recorded in some quarters (especially in Q1), the following quarters show signs of recovery.

**Economic growth strategies:** To support sustainable growth, it is necessary to increase investment and expand production volumes.

**Analyzing decline factors:** The reasons for declines during periods such as Q1 and Q4 should be studied in depth, and preventive measures should be implemented.

**Dynamic monitoring:** It is essential to analyze the data regularly, identify changes in a timely manner, and develop policy measures aimed at preserving economic stability.<sup>2</sup>



**Fig-3. Quarterly Volume of Real Total Household Income**

The following statistical data covers the period from 2020 to the third quarter of 2024 for the Republic of Uzbekistan. These indicators reflect quarterly changes in the population's real total income. A dynamic analysis examines the data from the first quarter of 2020 to the third quarter of 2024.

**Growth and decline rates of income:** Significant differences are observed across quarters. **General trend:** Changes in real income over time indicate either growth or decline.

<sup>2</sup> <https://siat.stat.uz/reports-filed/3977/table-data>





In 2023, quarterly income increased sharply. Notably, Q4 income ended with a significantly higher figure compared to previous quarters. In 2024, the growth rate of real income continues, indicating the stability of economic recovery.

2023 as a year of significant growth: The growth rate of real income in 2023 was high. This may be a result of restored economic activity and effective economic policy. The steady growth in real income indicates that the economy is developing.

Recommendations:

1. Ensuring sustainable growth: It is necessary to diversify economic sectors to continue the growth of real income.
2. Reducing periods of decline: Economic policies must be adapted to prevent seasonal and economic downturns.
3. Controlling inflation: It is essential to reduce the negative impact of inflation on real income.

This analysis provides a general understanding of changes in the volume of real total household income and can serve as a basis for making informed economic policy decisions.<sup>3</sup>

## Conclusion

Assessing the impact of household income on food security in Uzbekistan is a complex and multifaceted process. It is crucial to determine how income levels affect the population's real access to food products. By improving the methodology, it becomes possible to evaluate this impact more accurately and comprehensively.

**The relationship between household income and food security.** An increase in household income directly enhances people's ability to purchase food products in sufficient quantity and quality. However, factors such as unequal income distribution and inflation can negatively affect this process.

**Identifying food security indicators.** The assessment methodology focuses on average real household income, the share of food expenditures, food price indices, and levels of undernourishment. These indicators enable effective monitoring of food security.

In the current context, a multidimensional approach is necessary to assess food security. The following are proposed as part of this approach:

<sup>3</sup> <https://siat.stat.uz/reports-filed/3977/table-data>





- Calculating the elasticity coefficient between household income and food consumption;
- Assessing regional access to food products;
- Creating new indices that consider local economic and social factors.

Ensuring a balance between food security and income is closely tied to Uzbekistan's sustainable development goals, especially those related to eradicating hunger and reducing poverty.

In conclusion, improving food security in Uzbekistan can be achieved by increasing household income and ensuring fairness in income distribution. Enhancing the assessment methodology will allow for a deeper analysis of the process, identification of regional disparities, and the development of effective policy measures. This, in turn, will provide a solid foundation for ensuring economic stability and the well-being of the population.

## References

1. Food and Agriculture Organization of the United Nations (FAO). "The State of Food Security and Nutrition in the World" Reports. FAO, 2022. <https://www.fao.org/publications>
2. Decrees and Resolutions of the President of the Republic of Uzbekistan: Resolution on Measures to Ensure Food Security and Sustainable Agricultural Development. Document collection on the "Uzbekistan 2030 Strategy."
3. Global Food Security Index. Economist Intelligence Unit (EIU). Link: <https://foodsecurityindex.eiu.com>
4. Islomov, N. "Food Security in Uzbekistan's Economy and Its Sustainable Provision." Tashkent, 2020.
5. Jo'rayev, A. "The Interrelation of Household Income and Consumption Indicators." Economics and Statistics Journal, 2019.
6. Statistics Agency: "Socio-Economic Development Indicators of the Republic of Uzbekistan" (annual and quarterly reports). Analysis of Real Household Income and Food Consumption, 2023. <https://stat.uz>
7. Sachs, J. D. "The End of Poverty: Economic Possibilities for Our Time." Penguin Books, 2006.
8. Sen, Amartya. "Poverty and Famines: An Essay on Entitlement and Deprivation." Oxford University Press, 1981.





9. Global Food Security Index (Economist Intelligence Unit), 2022.
10. Reports from the International Food Policy Research Institute (IFPRI).
11. UzStat (Uzbekistan Statistics Agency): "Household Income and Consumption Expenditures." Annual data for 2020–2024.

