METHODS FOR ASSESSING AND ANALYZING STRUCTURAL CHANGES IN THE ECONOMY: THEORETICAL FOUNDATIONS AND EVIDENCE FROM UZBEKISTAN

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Abstract: *Structural change represents one of the most important dimensions of economic development, reflecting the transformation of relationships among sectors, industries, and economic agents over time. The ability of an economy to adapt to technological progress, globalization, demographic shifts, and external shocks largely depends on the quality and direction of structural transformations. This study examines the theoretical and methodological approaches used to assess and analyze structural changes in economic systems. Particular attention is given to quantitative measurement techniques, including Gatev, Ryabtsev, Shift-Share, and Input-Output methods. Using statistical evidence from Uzbekistan, the article investigates recent changes in sectoral composition, employment patterns, and gross domestic product structure. The findings demonstrate that structural analysis serves as an essential instrument for identifying economic imbalances, evaluating development strategies, and improving resource allocation efficiency. The study concludes that the integration of digital analytical tools and econometric modeling can significantly enhance the effectiveness of structural policy formulation.*

Keywords: *structural change, economic transformation, Gatev index, Shift-Share analysis, Input-Output model, economic structure, Uzbekistan, sectoral development, structural dynamics, economic policy.*

Economic development is not merely associated with quantitative growth indicators such as Gross Domestic Product (GDP) expansion. Sustainable development also requires qualitative transformations within the economic structure. Structural changes refer to alterations in the relative proportions of sectors, industries, employment, investments, exports, and technological capacities within an economy.

Economic history demonstrates that successful countries experience systematic transitions from agriculture-based production toward industrialization and subsequently toward service-oriented and knowledge-intensive activities. Such transformations increase productivity, strengthen resilience against external shocks, and improve long-term competitiveness.

For transition economies such as Uzbekistan, structural reforms have become particularly important during the last decade. Economic liberalization policies, increased foreign investment, industrial diversification, and digitalization initiatives have accelerated

structural shifts across multiple sectors. Consequently, measuring and evaluating these changes has become a critical task for policymakers and researchers.

The concept of structural transformation has been extensively explored in development economics. Classical theories developed by Chenery and Syrquin emphasized that economic growth is accompanied by predictable shifts in production, employment, and consumption structures.

Structural analysis seeks to answer three fundamental questions:

1. How rapidly is the economic structure changing?
2. What factors drive these changes?
3. Are the changes improving economic efficiency and productivity?

The assessment of structural dynamics generally combines system-based approaches with quantitative analytical methods. Structural indicators measure changes in sectoral shares, while econometric techniques identify causal relationships between structural transformation and economic performance.

Several methodological tools are commonly employed to evaluate structural transformations.

The Gatev Index measures the intensity of structural shifts between two periods by comparing changes in sectoral shares.

Its primary advantage lies in its ability to quantify overall structural movement while accounting for all components of the economic system simultaneously.

Since 2017, Uzbekistan has implemented extensive economic reforms aimed at liberalization, industrial modernization, and export diversification.

According to official statistics, significant changes have occurred in the composition of GDP.

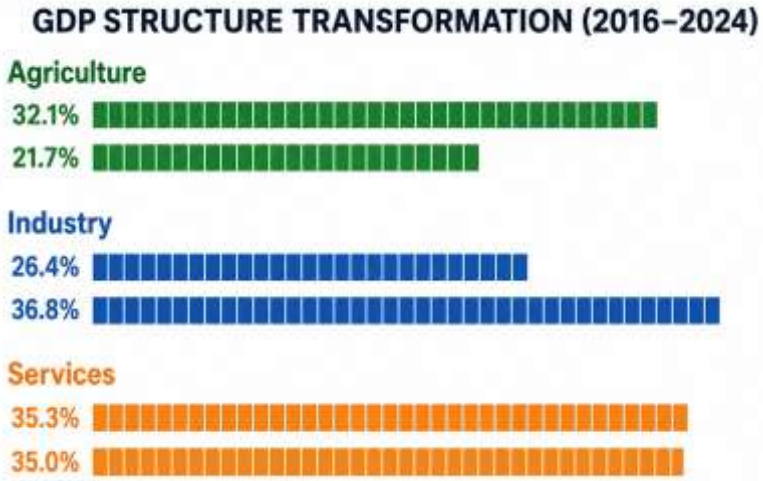
Table 1. Sectoral Structure of GDP in Uzbekistan (%)

Sector	2016	2020	2024
Agriculture, Forestry and Fisheries	32.1	27.01	21.07
Industry	26.04	33.1	36.8
Construction	06.02	06.08	06.05
Services	35.3	33.0	35.0

Source: Compiled from data of the Statistics Agency of Uzbekistan and World Bank databases.

The data reveal a substantial decline in the agricultural share of GDP and a corresponding increase in industrial output. Such developments are characteristic of economies undergoing industrial transformation.

Scientific Diagram 1. Structural Evolution of Uzbekistan's Economy



The diagram illustrates the gradual movement of economic activity from agriculture toward industrial production.

Structural transformation is often reflected in labor market dynamics.

The reduction in agricultural employment combined with the expansion of industrial and service-sector jobs indicates increasing labor productivity and economic diversification.

These changes are consistent with international development patterns observed across emerging economies.

Despite methodological advances, several challenges remain.

First, structural indicators often capture outcomes rather than causes. Therefore, quantitative measures should be complemented by institutional and qualitative analysis.

Second, rapid technological change creates new sectors that may not be adequately represented within traditional classifications.

Third, globalization has increased interdependence among economies, making structural dynamics more complex and multidimensional.

Consequently, contemporary research increasingly combines classical structural indicators with econometric models, machine learning techniques, and big-data analytics.

The digital transformation of economic systems is changing the nature of structural analysis.

Artificial intelligence, machine learning algorithms, and real-time economic monitoring systems provide opportunities to identify structural shifts more rapidly than traditional statistical approaches.

For Uzbekistan, future structural analysis may increasingly focus on:

- Green economic transformation;
- Digital economy development;
- Knowledge-intensive industries;
- Regional competitiveness;
- Innovation ecosystems.

Such directions will support evidence-based policymaking and strengthen economic resilience.

Structural change constitutes a fundamental mechanism through which economies achieve sustainable growth and adapt to changing internal and external conditions. Effective assessment and analysis of structural transformations require the integration of quantitative indices, sectoral analysis, and system-based approaches.

The experience of Uzbekistan demonstrates significant structural shifts characterized by declining agricultural dependence, expanding industrial production, and increasing diversification of exports and employment. These transformations reflect broader modernization processes and contribute to enhanced economic resilience.

The application of Gatev, Ryabtsev, Shift-Share, and Input-Output methodologies provides valuable insights into the scale, direction, and effectiveness of structural changes. In the context of digitalization and growing economic complexity, future research should increasingly incorporate advanced analytical technologies to improve the precision and policy relevance of structural assessments.

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