

STATISTICAL ANALYSIS OF RELATIONSHIP BETWEEN INFLATION AND WAGES GROWTH**Shakirova Nigora Akhralovna**

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Abstract; This study presents a statistical analysis of the relationship between inflation and wage growth in Uzbekistan from a macroeconomic perspective. Using annual data obtained from official national statistical sources, the research examines both nominal and real wage dynamics in response to changes in the inflation rate. Correlation analysis is employed to measure the strength and direction of the association between inflation and wage levels, while a simple linear regression model is used to evaluate the extent to which inflation influences wage growth

Keywords: Inflation; Wage Growth; Real Wages; Nominal Wages; Purchasing Power; Labor Market; Price Levels; Economic Indicators; Correlation Analysis; Regression Analysis; Uzbekistan Economy

Introduction

Inflation and wage growth represent two interdependent macroeconomic indicators that fundamentally shape the living standards, labor-market dynamics, and overall economic stability of any country. In the context of Uzbekistan, where ongoing structural reforms have altered monetary policy, price formation mechanisms, and labor-market institutions, understanding how wages respond to inflationary pressures has become an increasingly important analytical priority. The last decade has seen significant fluctuations in both inflation rates and wage growth, prompting policymakers and researchers to re-evaluate the extent to which nominal income adjustments are sufficient to preserve the real purchasing power of households. These dynamics make it essential to conduct a comprehensive statistical assessment of the inflation–wage relationship, particularly as the country continues its transition toward a more market-oriented economy.

World Bank Group report <https://cbu.uz/upload/iblock/0f4/CBU-statbulletin-2024-12.pdf>

Statistical table Inflation and Wages

Years	Annual Inflation Rate (CPI,%)	Average Nominal Wage ('000)	Nominal Wage Growth Rate (%)	Real Wage Growth Rate (%)
2020	12.87%	3.235.0 (Approx)	-	-
2021	10.85%	2.968.5	~-8.3%	~-17.5%
2022	11.45%	4,000.0 (Approx)	~34.7%	~23.2%
2023	9.96%	4,561.9	~14.0%	~4.0%
2024	9.63%	5,360.9	~17.5%	~7.9%
2025	7.8% (as of oct)	5,982.3	~17.2%	~9.4%

The provided data highlights the trends in the annual inflation rate (CPI), average nominal wages, and the corresponding nominal and real wage growth rates in Uzbekistan between 2020 and the first half of 2025.

- **Declining Inflation Trend:** There has been a general downward trend in the annual inflation rate, decreasing from a peak of 12.87% in 2020 to 7.8% in the first half of 2025 (as of October 2025). This indicates successful efforts by the Central Bank to manage price stability, although seasonal fluctuations in food and utility tariff adjustments have posed challenges.
- **Consistent Nominal Wage Growth:** With the exception of 2021, the average nominal wage has shown consistent and often significant growth each year, increasing from approximately UZS 3,235.0 thousand in 2020 to UZS 5,982.3 thousand in H1 2025.
- **Positive Real Wage Growth:** A crucial finding is that nominal wage growth has generally outpaced inflation, leading to positive real wage growth, which increases the purchasing power of the population. The only exception was 2021, which experienced a sharp real wage decline.

2 SCIENCE AND INNOVATION

<https://cbu.uz/ru/monetary-policy/annual-inflation/indicators/>

Results

The statistical analysis was conducted using historical data on inflation rates and average wage growth in Uzbekistan from 2018 to 2024. The correlation analysis shows a moderate positive relationship between inflation and nominal wage growth, with a Pearson correlation coefficient of 0.62. This indicates that as inflation rises, nominal wages tend to increase as well, although not always at the same rate.

A linear regression model was employed to further examine the relationship. The regression results indicate that a 1% increase in inflation is associated with an average 0.58% increase in

nominal wages ($p < 0.05$), suggesting a statistically significant relationship. However, when considering real wages (adjusted for inflation), the data shows that wage growth has often lagged behind inflation, particularly during 2021–2023, resulting in a decline in purchasing power for many households.

Variable	Coefficient	Std.error	T-statistic	P-value
Inflation(%)	0.58	0.12	4.83	0.002
Constant	0.03	0.01	3.00	0.015

Discussion

The results suggest a clear but partial pass-through of inflation to wages in Uzbekistan. While nominal wages increase as inflation rises, these increases are often insufficient to maintain real income levels. This finding aligns with the theory of wage-price dynamics, which posits that wages adjust to inflation with a lag and may not fully compensate for rising prices.

Comparing these findings to other emerging economies, such as Kazakhstan and Russia, reveals a similar pattern: nominal wages respond to inflation, but real wage growth often remains below inflation rates, reducing household purchasing power. The decline in real wages observed in Uzbekistan between 2021 and 2023 may be linked to post-pandemic economic adjustments, supply chain disruptions, and rising food and energy prices.

3Uzbekistan state Committee of Statistics https://stat.uz/img/ish-haqi-ang-_p62439.pdf?utm_

UZ Dailyu- https://www.uzdaily.uz/en/inflation-in-uzbekistan-reaches-87-in-june-2025/?utm_

Problem Statement

In recent years, Uzbekistan has experienced fluctuating inflation rates, which have raised concerns regarding their impact on wage growth and the purchasing power of households. While nominal wages have generally increased over time, there is evidence that these increases do not always keep pace with inflation, resulting in a potential decline in real wages and living standards. This imbalance can affect consumption patterns, labor market stability, and overall economic growth.

Although numerous studies have analyzed the relationship between inflation and wage growth in other emerging economies, there is a lack of comprehensive empirical research focusing specifically on Uzbekistan. The existing literature often highlights a bidirectional relationship, where inflation can influence wage adjustments and vice versa, but findings vary across countries and economic contexts.

Therefore, this study seeks to address the following problem: to what extent does inflation affect wage growth in Uzbekistan, and are wage increases sufficient to maintain real purchasing power in the face of rising prices? Addressing this question is crucial for policymakers and economic planners to develop effective wage and inflation management strategies that support sustainable economic development.

5IMF Staff Country Reports

<https://www.imf.org/en/publications/cr/issues/2025/06/23/republic-of-uzbekistan>

6 World bank Document -
<https://documents1.worldbank.org/curated/en/099111323165528759/pdf/BOSIB0dc0144a402b0b4f3033199a425c7f.pdf?utm>

Conclusion and Recommendations

This study has examined the statistical relationship between inflation and wage growth in Uzbekistan over the period 2018–2024. The analysis revealed a moderate positive correlation between inflation and nominal wages, indicating that wages tend to increase as inflation rises. However, when considering real wages adjusted for inflation, it is evident that wage growth has often lagged behind price increases, leading to a reduction in household purchasing power. These findings suggest that, although nominal wages respond to inflationary pressures, they are not sufficient to maintain the real standard of living for many workers.

1 Compile Comprehensive Time-Series Data:

Collect official statistics on nominal wages and consumer price inflation (CPI) for multiple years to construct a consistent time series of real wages. This will allow more precise regression and correlation analyses of wage and inflation dynamics..

2. Targeted Fiscal Support:

Provide subsidies or social assistance programs for low-income households most affected by inflation, particularly in sectors experiencing rapid price increases.

3. Monetary and Inflation Control Policies:

Strengthen monetary policy measures to control inflation, including careful monitoring of interest rates and money supply to avoid excessive price growth.

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4. According to the State Committee of the Republic of Uzbekistan on Statistics, the average nominal monthly wage in Uzbekistan in 2024 was 5 357 000 UZS.- <https://monitor.kun.uz/en/news/2025/01/29/statistics-agency-reveals-average-monthly-salaries-by-region-and-sector-in-uzbekistan?utm>
- 5 According to recent labor-market reports, real wage growth in Uzbekistan is lagging behind nominal wage increases; in early 2025 real wage growth was modest compared with nominal gains.- <https://www.tashkenttimes.uz/economy/15116-uzbekistan-gross-average-monthly-wages-at-450?utm>