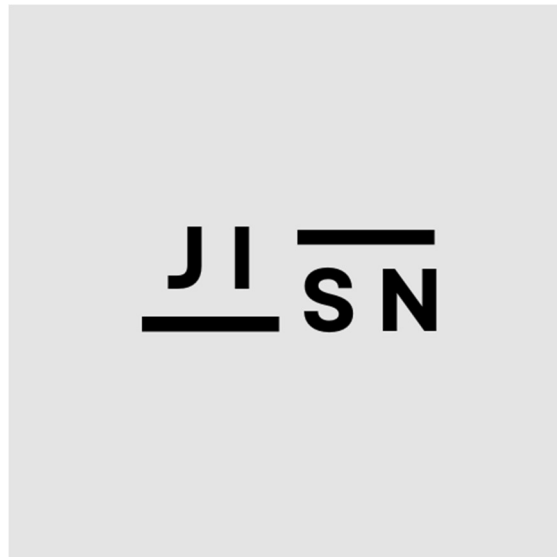


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DETERMINANTS OF INFLATION IN UZBEKISTAN: AN ECONOMETRIC ANALYSIS OF INCOME AND LABOR MARKET DYNAMICS

¹ Madina Eshboyeva, ² Saitov Sirojiddin

¹ Sophomore Student, Department of Economics Jizzakh Branch of the National University of Uzbekistan

² Teacher, Department of Economics Jizzakh Branch of the National University of Uzbekistan

e-mail: madinaeshboyeva885@gmail.com



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ANNOTATION:

This study examines the macroeconomic determinants of inflation in Uzbekistan using an econometric approach. Specifically, the impact of real income and employment level on the Consumer Price Index (CPI) is analyzed based on annual data from 2010 to 2020. A logarithmic regression model is employed to estimate the relationship between variables and interpret elasticities. The results indicate that real income has a statistically significant positive effect on inflation, suggesting that increased purchasing power contributes to higher demand-driven price pressures. In contrast, employment level does not show a statistically significant direct effect on CPI within the selected model. Diagnostic tests confirm the absence of multicollinearity and heteroskedasticity, while the Durbin–Watson statistic suggests potential positive autocorrelation. The findings highlight the importance of demand-side factors in shaping inflation dynamics in Uzbekistan. However, the study also acknowledges limitations related to model simplicity and data scope. The results provide useful insights for policymakers in balancing income growth and price stability.

KEYWORDS:

inflation, CPI, real income, employment, econometric model, Uzbekistan.

Introduction:

Inflation remains one of the most critical macroeconomic indicators influencing economic stability, purchasing power, and policy effectiveness. In developing economies such as Uzbekistan, understanding the determinants of inflation is particularly important due to ongoing structural reforms and market liberalization processes, as price level fluctuations directly affect household welfare, investment decisions, and long-term economic planning [1]. The Consumer Price Index (CPI) is widely used as a primary measure of inflation, reflecting changes in the cost of a basket of goods and services consumed by households [2]. Various macroeconomic factors, including income levels, employment, money supply, and exchange rates, may influence CPI dynamics. This study focuses on two key variables—real income and employment—where real income represents aggregate demand conditions, while employment reflects labor market dynamics and overall economic activity. The objective of this research is to evaluate the impact of these variables on inflation in Uzbekistan using an econometric framework. The novelty of this study lies in its empirical assessment of demand-side factors using a logarithmic regression model combined with diagnostic testing to ensure model reliability. Previous studies highlight the importance of both demand-side and supply-side factors in determining inflation; for instance, Mankiw (2018) argues that inflation in the short run is largely driven by aggregate demand fluctuations [2], whereas Friedman (2008) emphasizes the role of money supply, suggesting that inflation is primarily a monetary phenomenon [7]. Empirical studies in developing economies further indicate that real income growth may lead to increased consumption demand,

thereby exerting upward pressure on prices, while labor market indicators such as employment may influence inflation indirectly through income and productivity channels [6]. However, the relationship between employment and inflation is not always consistent, as the Phillips Curve suggests an inverse relationship, yet recent empirical findings demonstrate that this relationship may weaken or become unstable over time, particularly in transition economies [3].

Methodology

This study employs a logarithmic regression model to analyze the relationship between inflation and selected macroeconomic variables using annual data for Uzbekistan covering the period from 2010 to 2020. The model is specified as

$$\ln(\text{CPI}) = \beta_0 + \beta_1 \ln(\text{Income}) + \beta_2 \ln(\text{Employment}) + \varepsilon,$$

where CPI represents the Consumer Price Index as the dependent variable, while real income and employment level serve as independent variables capturing demand-side and labor market dynamics, respectively. The logarithmic transformation allows for interpreting coefficients as elasticities and improves the statistical properties of the model by stabilizing variance and reducing potential skewness in the data [5]. Estimation is conducted using Stata software, which is widely applied in econometric analysis due to its reliability and flexibility. To ensure the robustness of the model, several diagnostic tests are performed, including the Variance Inflation Factor (VIF) to detect multicollinearity, the Breusch–Pagan test to assess heteroskedasticity, and the Durbin–Watson statistic to evaluate autocorrelation. These tests provide a comprehensive assessment

of the model's statistical validity and reliability [5,6].

Results

The regression results indicate that the model explains approximately 48.8% of the variation in CPI ($R^2 = 0.4887$), suggesting a moderate level of explanatory power within the simplified model framework. Real income demonstrates a statistically significant positive effect on inflation ($p = 0.029$), implying that a 1% increase in income leads to a 0.0037% increase in CPI, which supports the theoretical expectation that higher purchasing power contributes to increased demand and upward pressure on prices. In contrast, employment does not show a statistically significant effect ($p = 0.942$), indicating that its direct impact on inflation is not confirmed within the model and may operate through indirect channels. Diagnostic tests further confirm that multicollinearity is not present ($VIF = 1.11$), and heteroskedasticity is not detected ($p = 0.5265$), suggesting that the model is statistically stable. However, the Durbin-Watson statistic (1.13) indicates the possibility of positive autocorrelation, which should be considered when interpreting the results, particularly in the context of time-series data.

Discussion

The results should be interpreted in the context of Uzbekistan's economic transformation, where structural reforms, exchange rate liberalization, and increasing integration into global markets have significantly influenced price dynamics in recent years. The positive relationship between real income and inflation suggests that demand-side pressures play a significant role in shaping price levels, as rising incomes lead to increased consumption and aggregate demand [1]. However, inflation dynamics in Uzbekistan

may also be affected by external factors such as import prices and exchange rate fluctuations, indicating that domestic variables alone may not fully capture the complexity of inflation processes. The lack of statistical significance of employment suggests that labor market effects may be transmitted through indirect mechanisms, such as wage adjustments, productivity changes, or shifts in consumption patterns. Therefore, the findings imply that inflation cannot be fully explained by a limited set of variables and that a broader modeling framework is required for a more comprehensive analysis.

Conclusion

This study analyzed the impact of real income and employment on inflation in Uzbekistan using an econometric approach and found that real income has a statistically significant positive effect on CPI, while employment does not demonstrate a direct impact within the selected model. These findings highlight the importance of demand-side factors in inflation dynamics, particularly in the context of economic transformation and structural reforms. However, the study is subject to several limitations, including a simplified model structure and a relatively small sample size, which may restrict the generalizability of the results. Future research should incorporate additional macroeconomic variables such as money supply, exchange rate, and interest rates, as well as apply more advanced econometric techniques to improve analytical depth. From a policy perspective, maintaining a balance between income growth and inflation control remains essential for achieving sustainable economic development, as excessive demand-driven inflation may undermine economic stability.

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