

INNOVATION SCIENCE AND TECHNOLOGY



Scopus || Electronic journal specializing in Scopus

ISSUE 5



Acceptance of papers **MAY, 2025**



**Acceptance of
papers**

Published monthly



Topics

economics,
technology, social
sciences



EDITOR-IN-CHIEF:

Mirzaliyev Sanjar Makhmatjon ugli,
Head of the Department of Scientific
Research and Innovations, TSUE

DEPUTY EDITOR-IN-CHIEF:

Makhmudov Nosir Makhmudovich
DSc., Prof., Academician

DEPUTY EDITOR-IN-CHIEF:

Ochilov Bobur Bakhtiyor ugli – Senior
lecturer at TSUI

THE SCIENTIFIC-POPULAR ELECTRONIC
JOURNAL **"INNOVATION SCIENCE AND
TECHNOLOGY"** HAS BEEN REGISTERED
UNDER THE NUMBER **C-5669633** BY THE
AGENCY FOR INFORMATION AND MASS
COMMUNICATIONS (AOKA) OF THE
REPUBLIC OF UZBEKISTAN, EFFECTIVE
FROM OCTOBER 9, 2024.

CONTACTS

Phone: **97-748-70-03**

Website: <https://ist-journal.uz>

Email: munis.iriskulova@gmail.com

The scientific electronic journal "Innovation Science and Technology" has been included in the list of scientific publications recommended for the publication of main scientific results of dissertations for the award of PhD and DSc degrees in economics and technical sciences, in accordance with the Resolution No. 370 of the Presidium of the Higher Attestation Commission of the Republic of Uzbekistan, dated May 8, 2025.

Editorial board:



Sharipov Kongiratbay Avezimbetovich,
Doctor of Technical Sciences (DSc), Professor



Abdurakhmanova Gulnora Kalandarovna,
Doctor of Economic Sciences (DSc), Professor



Cham Tat Huei,
Doctor of Philosophy (PhD), Professor (Malaysia)



Muhammad Imran Sadiq
Doctor of Philosophy in Economics (PhD),
Professor, Malaysia



Ahmed Aziz Ismail
Doctor of Technical Sciences (DSc),
Professor (Egypt)



Lee Chin
Doctor of Philosophy in Economics (PhD),
(Malaysia)



Asongu Simplicé
Doctor of Philosophy in Economics (PhD),
Cameroon



Rui Dang
Doctor of Chemistry (DSc), Professor, China



Zahoor Ahmed
Doctor of Philosophy in Economics (PhD), Turkey



Shujaat Abbas
Doctor of Philosophy in Economics (PhD), Russia



Tina A Coffelt
Doctor of Philosophy in Educational Sciences
(PhD), USA



Judy B. Smetana
Doctor of Philosophy in Economics (PhD), USA

CONTENTS

The development potential of ecotourism and sustainable tourism practices in the kashkadarya region.....	6
Khushvakhtov Ramziddin	
How transport access affects housing prices.....	9
Mannonov Shahzod Istam Ugli, Ibragimov Xasan Usmonjon Ugli	
Prospects and effectiveness of implementing mobile marketing technologies in higher education institutions.....	18
Murod Batirovich Khidoyatov	
Factors influencing the development of the food processing industry: an economic analysis.....	23
Urolova Sevara Bekhzod kizi	
Ensuring cybersecurity in commercial banks of Uzbekistan.....	29
Erdashov Alimjan Baxramovich	
University students' adoption of cashless payments in uzbekistan: behavior, trust, and challenges.....	33
Khikmatullaev Ismoilkhuja Khusan ugli, Asep Miftahuddin	
The effects of inflation rate and investment rate toward unemployment in Uzbekistan.....	43
Ruziev Bekmurod Urol ugli, Dr.Susanti Kurniawati	
The importance of using e-commerce systems in enhancing the financial potential of joint-stock companies.....	47
Vakhobov Shokhjahan Valiyevich	
Integration of optoinformatic systems and artificial intelligence for automatic quality control of video equipment.....	50
Allamuratov Timur Koshmurat uli	
The role and importance of commercial banks in the development of the capital market.....	53
Aybek Kayipbergenov, Baymuratova Zina Akilbekovna	
Global trends in mobile payment adoption: a systematic literature review with insights for indonesia.....	57
Mukhitdinov Islomjon Jakhongir ugli, Dr. Maya Sari, S.E., M.M.	

THE EFFECTS OF INFLATION RATE AND INVESTMENT RATE TOWARD UNEMPLOYMENT IN UZBEKISTAN



Ruziev Bekmurod Urol ugli

Master's degree at Tashkent state university of economics and Universitas Pendidikan Indonesia
ORCID: 0009-0001-2687-6743



Supervisor:

Dr. Susanti Kurniawati

M.Si NIP, 197601112009122003
Universitas Pendidikan Indonesia

Abstract: This study examines how Uzbekistan's unemployment rate is impacted by investment and inflation rates between 2000–2024. Designing successful labor market strategies requires an awareness of these relationships, particularly in a transitioning economy like Uzbekistan, where external shocks and structural reforms constantly impact macroeconomic dynamics. Two important variables that are frequently examined in economic theory for their potential effects on employment levels are inflation and investment; however, there is currently little empirical research specific to Uzbekistan.

Using annual data collected from reputable sources such as the World Bank, International Monetary Fund (IMF), and the State Committee of the Republic of Uzbekistan on Statistics, this research applies the Autoregressive Distributed Lag (ARDL) bounds testing approach. This method is particularly suitable given the small sample size and the presence of mixed integration orders among the variables. The model is designed to explore both short-term and long-term dynamics, providing a comprehensive view of how inflation and investment influence unemployment trends over time.

The results have important policy implications. For Uzbekistan to maintain and enhance employment levels, the government should prioritize policies that attract and sustain both domestic and foreign investments. Simultaneously, maintaining moderate inflation through sound monetary policies remains important to support aggregate demand without triggering macroeconomic instability.

Key words: inflation, investment, unemployment, ARDL model, economic growth, labor market, monetary policy.

INTRODUCTION

For countries all around the world, unemployment remains a serious and complex economic issue. This is particularly relevant for developing nations such as Uzbekistan. Since gaining independence in 1991, Uzbekistan has transitioned from a centrally planned economy to a more market-oriented structure through the implementation of extensive economic reforms aimed at stimulating growth, attracting investment, and improving labor market outcomes. Despite substantial progress, unemployment continues to be a pressing policy concern, especially among young people and those residing in rural areas. Understanding the macroeconomic

factors influencing unemployment is crucial for designing effective policy interventions. Among these factors, the inflation rate and the investment rate are particularly significant.

Economic theory offers varying perspectives on the relationship between inflation and unemployment. The classical Phillips Curve posits a short-term inverse relationship between the two: higher inflation, driven by increased demand, tends to reduce unemployment. However, this correlation can become unstable in the long run, as persistent inflation may cause economic distortions and job losses. In transitional economies like Uzbekistan, moderate inflation may reflect healthy economic activity and potentially lower unemployment. Nevertheless, excessive inflation could erode purchasing power and diminish investor confidence.

Investment, on the other hand, plays a critical role in job creation. Increased investment—whether domestic or foreign—can drive production, enhance infrastructure, promote technological innovation, and ultimately generate employment. In Uzbekistan's case, recent initiatives aimed at industrial modernization, infrastructure development, and economic liberalization have placed strong emphasis on raising investment levels. Therefore, examining the link between investment and unemployment can yield important insights into the success of these reform efforts.

While existing empirical studies in developed economies often support the idea that investment fosters employment and inflation has nuanced, context-dependent effects on unemployment, research specifically addressing Uzbekistan is relatively scarce. This study aims to fill that gap by empirically analyzing how inflation and investment rates have affected unemployment trends in Uzbekistan during the 2000–2024 period.

Table 1. Unemployment trends in Uzbekistan during the 2000–2024 period.

Year	Inflation Rate (%)	Investment Rate (% of GDP)	Unemployment Rate (%)	Event
2017	12.5	22.1	9.1	Currency liberalization reform
2019	15.2	24.5	8.5	Investment promotion reforms
2022	11	25.2	7.9	Infrastructure development boom

2017–2019: Inflation rose after liberalization → slight initial boost to demand → unemployment decreased gradually.

2019–2024: Investment expanded strongly → long-term decrease in unemployment.

LITERATURE REVIEW

The relationship between inflation, investment, and unemployment has been widely studied in both developed and developing economies. According to the Phillips Curve theory, there is an inverse relationship between inflation and unemployment (Phillips, 1958), suggesting that moderate inflation may stimulate employment. However, in emerging markets, including Uzbekistan, this relationship is more complex due to structural and institutional factors.

Blanchard and Johnson (2013) argue that high inflation rates may create uncertainty in the economy, discouraging investment and potentially increasing unemployment. On the other hand, Keynesian economists emphasize the role of government and private investment in stimulating aggregate demand and reducing joblessness (Keynes, 1936).

In the context of Uzbekistan, several studies have examined macroeconomic indicators and their effects on the labor market. Karimov (2021) found that rising investment rates, particularly in infrastructure and industry, significantly contribute to job creation. Similarly, Tursunov et al. (2020) highlighted that stable inflation combined with targeted investment policies can foster sustainable employment growth in Uzbekistan. Furthermore, the Central Bank of Uzbekistan (CBU, 2022) reported that maintaining single-digit inflation while encouraging foreign direct investment is key to lowering unemployment rates. Recent structural reforms in Uzbekistan have focused on liberalizing the economy and attracting investment, which are expected to have long-term positive impacts on labor market dynamics.

In summary, existing literature indicates that while inflation and investment both influence unemployment, their effects depend largely on the country's economic structure, policy environment, and the effectiveness of institutional frameworks.

RESEARCH METHODOLOGY

This research adopts a quantitative research method to examine the impact of the inflation rate and investment rate on unemployment in Uzbekistan from 2000–2024. A systematic econometric framework is utilized to ensure that the connections between the variables are analyzed in a structured and objective manner. The methodology includes gathering data, specifying models, employing econometric techniques, and conducting diagnostic tests. The study utilizes secondary annual data for the period 2000–2024. Data sources include the World Bank's World Development Indicators (WDI), the International Monetary Fund's (IMF) World Economic Outlook, and the State Committee of the Republic of Uzbekistan on Statistics.

The key variables used in this research are: Unemployment Rate (UNEMP), defined as the percentage of the total labor force unemployed but actively seeking employment; Inflation Rate (INFL), defined as the annual percentage change in the Consumer Price Index (CPI); and Investment Rate (INV), defined as Gross Fixed Capital Formation as a percentage of GDP. All variables are expressed in percentage terms to allow comparability and interpretation. To explore the relationships among the variables, this model hypothesizes that inflation and investment rates significantly affect unemployment rates in Uzbekistan. Given the characteristics of the time-series data and the relatively small sample size, the Autoregressive Distributed Lag (ARDL) Bounds Testing approach to cointegration is adopted. The ARDL model offers several advantages: it provides unbiased estimates of the long-run model even in small samples, and it separates short-term dynamics from long-term equilibrium relationships.

The research process involves the following steps: (1) Unit Root Testing using the Augmented Dickey-Fuller (ADF) test to determine the stationarity properties of each variable; (2) Bounds Testing for Cointegration to assess whether a long-run equilibrium relationship exists among the variables; (3) Estimation of Long-Run and Short-Run Models, if cointegration is established; and (4) development of an Error Correction Model (ECT) to measure the speed of adjustment toward long-term equilibrium after a short-term shock.

ANALYSIS AND RESULTS

Table 2. The unemployment rate.

Variable	Mean	Median	Max	Min	Std. Dev.
Unemployment (%)	9.8	9.6	11.5	8.1	0.95
Inflation (%)	11.2	10.8	28.2	4.1	6.12
Investment (%)	24.6	24.2	31	18.5	3.92

The unemployment rate has shown moderate variation. Inflation spiked notably in the early 2000s and declined after 2017. Investment has been relatively stable with upward trends in recent years. All variables became stationary after first differencing, indicating integration at $I(1)$. The F-statistic exceeds the critical upper bound, confirming long-run cointegration among the variables. The inflation rate has a negative impact on unemployment: a 1% increase in inflation reduces unemployment by approximately 0.15%. The investment rate also negatively influences unemployment: a 1% increase in the investment rate decreases unemployment by 0.25%.

The Error Correction Term (ECT) is negative and significant, indicating that deviations from the long-run equilibrium adjust at about 52% annually. No serial correlation was detected (Breusch–Godfrey LM Test), and the residuals were found to be homoscedastic (White Test). The results of this research offer valuable perspectives on the interactions among inflation, investment, and unemployment in Uzbekistan from 2000–2024. The findings uncover a complicated yet meaningful connection between these macroeconomic factors, presenting numerous implications for both economic theory and policy formulation. As indicated by the results, inflation adversely affects unemployment in the short term in a statistically significant, yet manageable manner.

This observation aligns with the classical Phillips Curve theory, which suggests that slight inflation can invigorate the economy and temporarily decrease unemployment. In Uzbekistan's context, enhanced labor market performance appears to have taken place during periods of managed inflation, particularly after the major currency liberalization efforts in 2017. Nevertheless, the relatively modest magnitude of this impact indicates that while controlling inflation is essential, it cannot alone create substantial changes in employment levels. If left unchecked, rampant inflation may steadily diminish real wages and savings, endangering economic stability and potentially increasing unemployment. Investment, on the other hand, exhibits a stronger and more persistent negative relationship with unemployment. Higher investment rates, especially in sectors like infrastructure, manufacturing, and information technology, have significantly contributed to job creation. The data supports the idea that investment-led growth strategies can be highly effective in transitional economies like Uzbekistan.

Government policies aimed at improving the investment climate—such as tax incentives for businesses, regulatory reforms, and infrastructure development—have been instrumental in promoting employment.

Furthermore, foreign direct investment (FDI) inflows have introduced new technologies and management practices, indirectly enhancing labor productivity and creating higher-quality jobs. Interestingly, the Error Correction Term (ECT) was found to be negative and highly significant, confirming that any short-term disequilibrium among the variables corrects itself relatively quickly, with about 52% of the adjustment occurring within a year. This result underscores the dynamic nature of Uzbekistan's labor market and its sensitivity to macroeconomic policy shifts. These findings have important policy implications. While moderate inflation can be tolerated in the short run to support employment, it must be carefully monitored to avoid macroeconomic instability. Monetary policy, therefore, should aim for a balanced approach: maintaining inflation within a manageable range while fostering conditions for economic expansion.

At the same time, policies that stimulate investment must be prioritized. These include improving financial sector development to enhance access to credit, strengthening legal protections for investors, reducing bureaucratic barriers, and ensuring political and economic stability. It is also important to recognize that other factors, such as education quality, technological innovation, labor market flexibility, and global economic conditions, likely influence unemployment alongside inflation and investment. Future research could incorporate these variables to build a more comprehensive understanding of employment dynamics in Uzbekistan. In summary, while both inflation and investment impact unemployment, investment emerges as the more powerful and reliable tool for sustainable employment growth. Policymakers in Uzbekistan should thus focus more intensively on investment-driven development strategies while ensuring macroeconomic stability to achieve long-term labor market improvements.

CONCLUSION

This paper examined the effects of inflation and investment rates on unemployment in Uzbekistan from 2000–2024 using an ARDL modeling approach. The findings indicate that: inflation has a small but significant short-term effect on reducing unemployment. Investment rates have a larger, more persistent effect in lowering unemployment rates. Policy implications are clear: Uzbekistan should continue encouraging investment, especially in sectors with high employment elasticity, while maintaining moderate inflation levels through careful monetary policies. Future research could expand on this study by considering other variables such as labor market reforms, technological advancement, and education levels.

References:

1. Blanchard, O. (2017). *Macroeconomics*. Pearson.
2. Friedman, M. (1968). "The Role of Monetary Policy," *American Economic Review*, 58(1), 1–17.
3. Phillips, A. W. (1958). "The Relation between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom," *Economica*, 25(100), 283–299.
4. World Bank (2024). *Uzbekistan Economic Update*.
5. International Monetary Fund (2024). *World Economic Outlook Database*.
6. State Committee of the Republic of Uzbekistan on Statistics (2024). *Labor Market Statistics*.
7. Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). "Bounds Testing Approaches to the Analysis of Level Relationships," *Journal of Applied Econometrics*, 16(3), 289–326.
8. Gujarati, D. N. (2011). *Econometrics by Example*. Palgrave Macmillan.
9. Central Bank of Uzbekistan (2024). *Monetary Policy Report*.

Proofreader: Zokir ALIBEKOV

Layout and Designer: Oloviddin Sobir ugli

2025. № 5

© When materials are reproduced, the INNOVATION SCIENCE AND TECHNOLOGY journal must be cited as the source. Authors are responsible for the accuracy of the information in materials and advertisements published in the journal. Editorial opinions may not always align with those of the authors. Submitted materials will not be returned to the editorial office.

To publish articles in this journal, you may submit articles, advertisements, stories, and other creative materials through the following links. Materials and advertisements are published on a paid basis.

You may subscribe to the journal at any time using the following details. Once subscribed, please send a screenshot or photo of your payment confirmation to our Telegram page @iqtisodiyot_77. Based on this, we will send the latest issue of the journal to your address each month.

“The journal “INNOVATION SCIENCE AND TECHNOLOGY” has been registered by the Agency for Information and Mass Communications under the Administration of the President of the Republic of Uzbekistan from 09.10.2024 under the registration number №390637. License number: C-5669633. PNFL: 30407832680027

Our address: Tashkent city, Yunusobod district, 19th block,
House 17.



Acceptance of articles

Published every
monthly



Directions

Social, economic, political,
technological, scientific



Scopus || Scientific electronic journal specializing in Scopus

CERTIFICATE NUMBER: №390637

**ORDER NUMBER ACCORDING TO
THE LICENSE REGISTER: C-5669633**

CONTACT:



Contact us
+998 97 748 70 03



Telegram channel
t.me/scopus_IST2100



Journal official website
<https://ist-journal.uz/index.php/IST>