ACADEMIA International Journal for Social Sciences
Volume 5, Issue 3(s4), 2026 ISSN-L (Online): 3006-6638

Unemployment's Role in Shaping Inflation in Pakistan: A Detailed Examination through Time Series Data

Zinaz Aisha
zinaz_aisha@yahoo.com
Assistant Professor, Department of Economics, Sardar Bahadur Khan Women's University Quetta, Pakistan.

Hina Ali
hinaali@wum.edu.pk
Professor, Department of Economics, The Women University Multan, Pakistan.

Pinky Shaukat
pinkyshaukat006@gmail.com
PhD Scholar, Department of Economics, The Women University, Multan, Pakistan.

Corresponding Author: Hina Ali hinaali@wum.edu.pk

Received: 28-01-2026 **Revised:** 13-02-2026 **Accepted:** 28-02-2026 **Published:** 17-03-2026

ABSTRACT

This study uses time series data from 1990 to 2025 to investigate the influence of unemployment and inflation rates in Pakistan. Employing econometric and statistical techniques, the study first checks the stationarity of the data by applying the Augmented Dickey-Fuller test. This test verifies the stationarity of the variables. The results indicate that all variables are integrated in order I(0) or I(1), prompting the researcher to use the ARDL technique. The variables under consideration include unemployment, population growth, household data, domestic credit to the private sector, and the current account balance. Literature suggests that the relationship between inflation and unemployment is inverse. In the long-term, the relationship between inflation and unemployment and domestic credit to the private sector is negative, whereas population growth, household data, and the current account balance have a positive relationship. The empirical results of this study reveal that inflation and unemployment are statistically significant. Research results show that both unemployment and inflation rates have a detrimental impact on economic growth.

Keywords: *Inflation rate, Unemployment, Time series analysis, ARDL test, Pakistan.*

INTRODUCTION

The term "employment" refers to the effort of various persons to earn pay to support their everyday lives. On the other hand, unemployment is a period in which people are looking for work and psychologically preparing themselves to work at whatever salary level. In developing countries, unemployment is one of the major problems. In South Asian countries there is a high unemployment rate which distinguishes them from those of developed countries. The level of the unemployment rate has a negative efficient on economic conditions. The phrase unemployment refers to a scenario when a person actively seeks employment but is unable to obtain a job. (Kanwal et al., 2023; Shah et al. 2025).

Unemployment is a major indicator of economic health. The unemployment rate is the percentage of the labor force that is jobless, eager to work, and actively seeking work. The unemployment rate is the most used metric of unemployment. It is computed by dividing the number of jobless persons by the number of labor force members. However, economic conditions have an impact on the relationship between inflation and unemployment. The economy produces less and has a higher unemployment rate during cost-push inflation. When salaries and raw materials rise, cost-push inflation occurs, which raises prices overall. Cost-

push inflation, such as wage increases for manufacturing staff when the minimum wage per worker rises, can be caused by higher labor costs. The Phillips curve indicates that inflation and unemployment have an inverse relationship. Higher inflation correlates with lower unemployment, and vice versa. (Anum 2021; Blanchflower et al., 2014; Ramzan, 2021).

This study examines both the beneficial and detrimental effects of unemployment on inflation. Unemployment is a stage in which people actively seek jobs and psychologically prepare themselves to work at any salary level that is currently available in the market. There are many challenges depending on the requirement and relevance of the topic matter. In recent decades, the main factors of inflation. So, finding these two factors will offer perspectives into economic challenges including a critical look at the research of inflation and unemployment and their relationship. Relevant data about the phenomenal associations between inflation and unemployment are in this research study. According to methodological findings for these factors, inflation, and unemployment. In this respect, the empirical findings concluded essential implications for inflation and unemployment. It is that both inflation and unemployment precede gross domestic product. These studies' pragmatic proposals were set up as a significant effort for this economic problem.

Objective of the Study

1. To investigate the effects of unemployment on inflation in Pakistan.
2. To evaluate the historical patterns of inflation in Pakistan.
3. To explain the policy implications for promoting economic growth.

LITERATURE REVIEW

Zaman et al. (2011) studied the results of inflation, unemployment, and the rate of non-accelerating unemployment (NAIRU) in Pakistan. Data used for the study was extracted from 1975-2009. Philips curve examined the development that is a nonproportional negative association among both variables inflation and unemployment. Inflation was the study's dependent variable, while unemployment was the study's independent variable. There is a non-proportional negative relationship between inflation and unemployment. The cointegration test has applied the overall relationship among the variables (Berentsen, Menzio & Wright 2011).

Umair and Ullah (2013) inspected the impact of the gross domestic product rate (GDP) and inflation on unemployment. The data used for the study was extracted from 2000- 2010. The data had secondary sources human development index. The dependent variable was inflation, GDP and the rate of unemployment. Inflation had a role which influencing GDP and the level of unemployment with an insignificant level in the macroeconomics factor of Pakistan's economy (Leduc & Liu 2012, September; Freund & Rendahl 2020; Safdari et al., 2016).

Arslan and Zaman (2014) explored the impact of unemployment and its determinants. The data used for the study was extracted from 1999 to 2010. The dependent variable used in the study was unemployment (UnP) and the independent variables were FdI (foreign direct investment), GdP and PGr (population growth rate). The results of ordinary least squares (OLS) show the negative impact of the consumer price index (CPI) inflation rate, FdI, and GDP on Unp. The growth has a positive impact on unemployment (Saungweme & Odhiambo, 2021; Ali et al., 2021). Shahid (2014) explored the impact of determinants of unemployment empirical evidence from Pakistan. The data used for the study was extracted from 1976-2013. The dependent variable used in the study was unemployment and the independent variable was inflation, gross

domestic product, and foreign direct investment. There were various techniques for conducting the cointegration analysis among variables. The finding in improved the investment in another sector lower there one.

Ahmed (2020) inspected the economic effects of such as inflation and unemployment in Pakistan. This study used a series of data from 1991-2015. The independent variable variables used in the study were unemployment and inflation. The study applied the test of unit root such as augmented dickey-fuller. The imperial results of the study reveal that inflation was higher in the nineties. Simultaneous decrease unemployment trend was observed. Hassan et al. (2020) explored the effect that trade has on Pakistan's inflation and unemployment rates. Data used for the study was extracted from 1974 -2013. The dependent variable used in the study was trade and the independent variables were inflation and unemployment. The rate of interest has a significant impact on domestic credit to the private sector which is inversely related to the exchange rate. There all these factors may help in bringing macroeconomic stability to Pakistan's economy.

Yasmin et al. (2020) inspected the impact of Pakistani evidence for the causal relationship between growth of economy and unemployment. The data used for the study from 1976-2017. The dependent variable used for the study was economic growth and independent variable was unemployment. The test used for the study was Autoregressive Distributed Lag (ARDL) model. Finding the result are inverse impact of unemployment in the country. In Pakistan, Saeed et al. (2020) explored the connection between poverty and governance, unemployment. The data used for the study was extracted from 1984 to 2020. This study used the Empirical Model. The dependent variables used for the study were unemployment and governance and independent variables were poverty. This study demonstrated a nonlinear positive and significant relationship between poverty and unemployment.

Anum (2021) investigated the effects of unemployment, crime, and inflation on the socioeconomic drivers of crime in Pakistan. The data used for the study was extracted from 2015-2021. The dependent variable used for the study was crime and the independent variables were unemployment and inflation. There is an inverse link between inflation and unemployment. The findings of this study indicate a favorable association between unemployment and crime. As unemployment rises, so does the county's crime rate. Nosheen et al. (2021) investigated the influence of inflation and unemployment on economic growth. The study's data was collected between 1980 and 2018. The OLS approach is utilized in conjunction with several diagnostic preferences to determine the inquiry. The dependent variable used in the study was economic growth and independent variables were inflation and unemployment. The finding of the multiple regression model indicates that inflation and unemployment are statistically insignificant.

Ramzan (2021) inspected the impact of inflation and unemployment on economic growth in Pakistan. The data used for the study was extracted from 1980-2010. The data was collected from the World Bank. The dependent variable was economic growth and the independent variables were inflation and unemployment. He used the autoregressive distributed lag (ARDL) model. Finding the result that there is an inverse relationship between economic growth and unemployment.

Shah et al. (2025) inspected unemployment's influence on Pakistani economic growth. The study's data ranged from 1974 to 2020. For empirical examination, this work used Autogestion distributed lag (ARGL) approaches. The study's dependent variables were GDP growth, whereas the independent factors were unemployment, population growth rate, inflation, foreign direct investment, and government spending. The study's findings suggest that both unemployment and inflation rates have a detrimental impact on economic growth. Nawaz et al. (2025) explored the impact of unemployment, governance and migration flow in Pakistan. The data used for the study was extracted from 1990-2016. The independent variables used for

the study were unemployment, governance, and migration. According to the research, unemployment has a helpful and considerable influence on migration, resulting in brain drain.

Khan et al. (2023) explored the impact of causality in economic development by applying the model ARDL. The data used for the study was extracted from Pakistan central bank from 1985-2019. The dependent variable used for the study was unemployment and the input variables were export and private investment. The results are a negative relationship between private investment & unemployment (Kanwal et al., 2023). Furthermore in Pakistan Talha and Billah (2024) explored the effects of public debt on inflation. The study's data came from the years 1986 to 2020. The data were World Development Indicator and International Monetary Fund. The dependent variable used in the study was inflation and the independent variables are public debt. The study found that public debt has a short-term positive and significant effect on inflation. The relationship was positive but insignificant (Hongo et al., 2020).

DATA COLLECTION AND METHODOLOGY

In this researcher discusses model specification, data and methodology and variables description. Firstly, we discuss the data sources from which we collect the data. Here we explained in detail the technique that we use in this study for the estimation.

Model Specification

$$INFG_t + \beta o + \beta 1 UM_t + \beta 2 PG_t + \beta 3 HNF_t + \beta 4 DCP_t + \beta 5 CAB_t + \mu_t \quad \ldots\ldots(1)$$

Were, INFG = Inflation, gross domestic product deflator, UM = Unemployment, male national estimates, PG =Population growth, HNF =Household & non-profit institution serving household (NPISHS) final consumption expenditures per capita growth, DCP =Domestic credit to private sector, CAB =Current account balance.

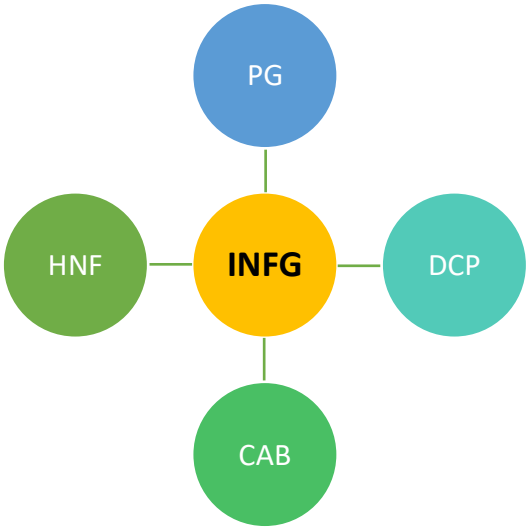

Figure 1. Research Method

Data Collection

This study aims to examine the impact of Unemployment on inflation in Pakistan. The data on Inflation, gross domestic product deflator, Unemployment, male national estimates, Population growth, Household & non-profit institution serving households (NPISHS) final consumption expenditures per capita growth, Domestic credit to private sector, Current account balance from World Development Indicator (WDI). The researcher used time series data from 1990 to 2025 (World Bank, 2023).

Statistical Examination

Descriptive Statistics

Descriptive analysis to prove the quantitates description of the data. The data is from the period 1990 to 2025 table shows mean, median, and standard derivation Jarque-Bera of all variables that have been in this research.

Table 1: Descriptive Statistics

	INFG	UM	PG	HNF	DCP	CAB
Mean	10.23	3.43	2.41	1.85	0.20	-2.61
Median	8.58	3.71	2.25	1.31	0.19	-2.77
Maximum	38.51	6.24	3.37	10.08	0.31	4.82
Minimum	3.25	0.40	1.29	-4.46	0.09	-9.20
Std. Dev	6.89	1.85	0.60	3.37	0.05	2.99
Skewness	2.57	-0.23	-0.19	0.49	0.12	0.49
Kurtosis	10.96	2.05	1.95	3.04	2.76	3.72
Jarque-Bera	108.67	1.32	1.49	1.17	0.14	1.83
Probability	0.00	0.51	0.47	0.55	0.93	0.39
Sum	296.82	99.53	70.16	53.73	5.84	-75.95
Sum Sq Dev	1329.57	96.72	10.27	318.71	0.08	251.44

Note: All calculation is carried by E-views

Descriptive analysis to prove the quantitative description of the data. The data is from the period 1990 to 2025. This table shows mean, median, standard deviation, skewness and Jarque-Bera of all variables that have been in this research. Analysis of descriptive statistics to portray the quantitative interpretation and to sum up the characteristics of the data set. This study. Employing data of inflation Gross domestic product (GDP) deflator, unemployment, population growth, domestic credit to private sector and current account balance from 1990 to 2025.

The mean value of the percentage of the inflation gross domestic product deflator, percentages of unemployment, percentages of population growth, percentages of domestic credit to private sector, percentages of current account balance are 10.23, 8.58, 38.51, 3.25, 6.89, 2.57, respectively. Variance estimates the distribution of the data point around the mean values while the square root of the variance standard deviation.

Matrix of Correlation for the model

The correlation matrix depicts the relationship between two variables. The expected outcomes are based on the study's possibilities. To other variables like unemployment and the research variables, inflation is our primary focus. The model's independent variables do not have a perfect or zero correlation with this variable.

Table 2: Correlation Matrix

	INFG	UM	PG	HNF	DCP	CAB
INFG	1.00					
UM	-0.11	1.00				
PG	0.25	0.20	1.00			
HNF	-0.31	0.02	-0.37	1.00		
DCP	0.00	-0.31	0.51	-0.33	1.00	
CAB	-0.05	0.47	-0.03	-0.20	0.09	1.00

The correlation illustrates that there is a negative association between (INFG) and (UM) This explains that both variables depend upon each other positively and less sensitively. Any increase in the INFG directly affects the UM. Further positive interdependency between (INFG) and population growth. The results suggest that the amount of a positive connection between unemployment and population growth is moderate, at 0.25. It suggests that any rise in population growth will increase vice versa. The remaining explanatory factors, including domestic lending to the private sector, are adversely linked with inflation. The table indicates that inflation is inversely related to inflation. The correlation efficiency of these two variables is only -0.31.

Time Series Plot of all variable

A line graph called a time series plot depicts measurements, sales, or frequency over a certain time period. They may be used to demonstrate a scenario or trend in the data and are useful for forecasting the future, such as determining weather conditions or monetary development.

This section is explained in below figure.

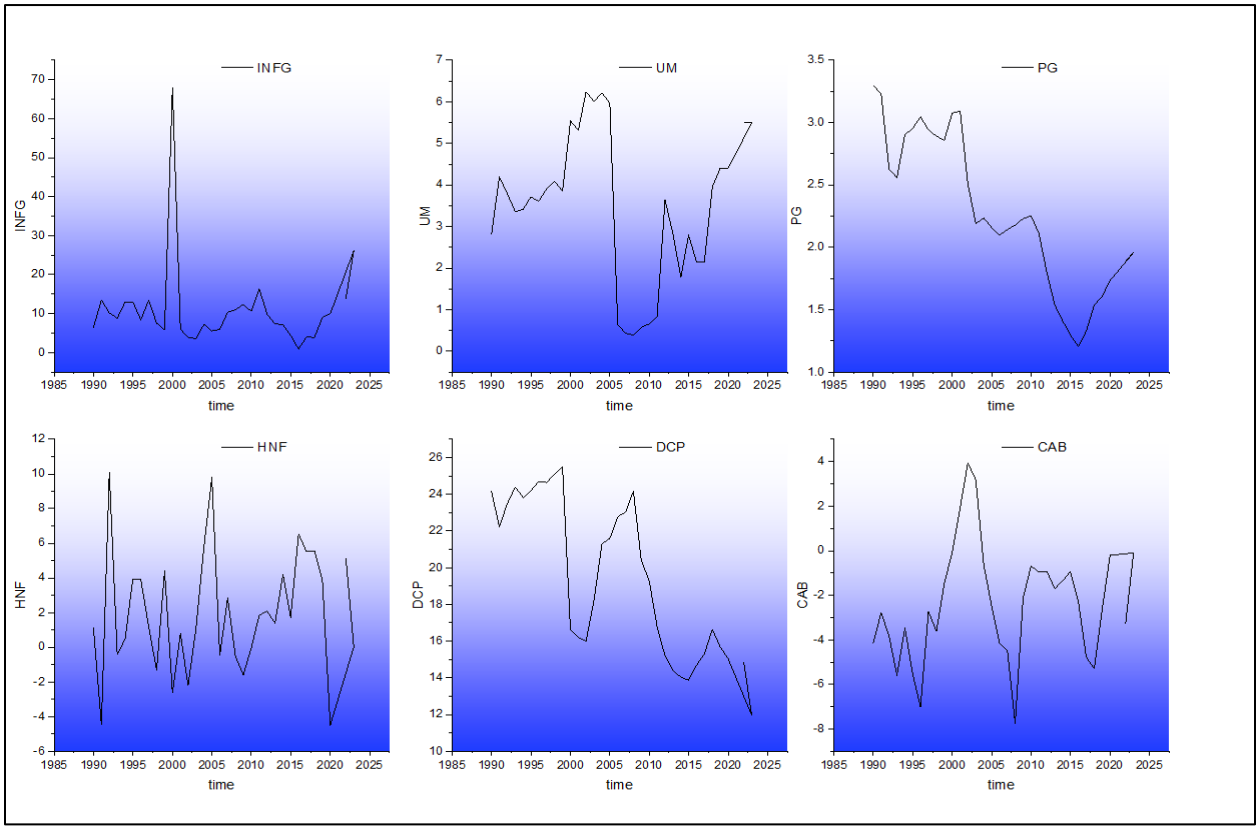

Figure 2. Time Series plot of all the Variables

3D contour plot for All Variables

This section explained the 3D contour plot for all input and output variables used in model estimation shown in Figure 3. The x-axis and y-axis show all input variables such as UM (Unemployment, male national estimates), PG (Population growth), HNF (Household & non-profit institution serving households (NPISHS) final consumption expenditures per capita growth), DCP (Domestic credit to private sector), CAB (Current account balance) and z-axis shows the outcome variables that are INFG Inflation, gross domestic product deflator.

Every line or curve on a contour plot indicates a function's constant value. The contour line spacing shows the rate of change of the function's value. To better comprehend how the function varies across different locations, Color Mapping is employed to show various value ranges.

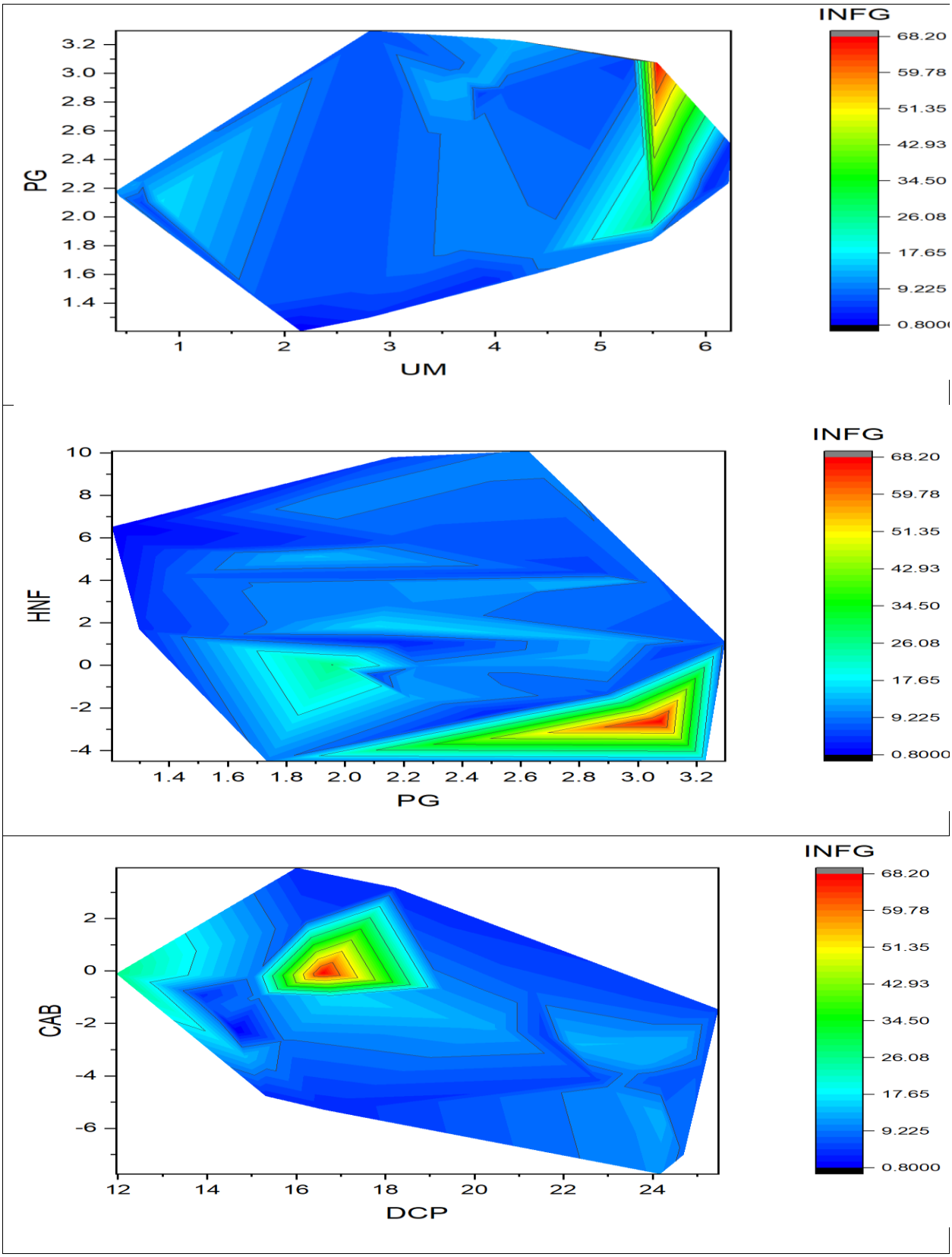

Figure 3. 3D contour plot for All Variables

The Test for Unit Root

The stationary distribution of the selected variables was determined with the help of a unit root test. The coefficient will not have any BLUE characteristics if there is an incorrect regression. This test is useful for determining the sequence of addition and expressing the type of move that should be used for analysis.

Table 3: Unit Root Test

Variable	At level intercept	Trend & Intercept	At 1st diff Intercept	Trend & intercept	Conclusion
INFG	-5.95 (0.00)	-5.96 (0.00)	-6.77 (0.00)	-6.63 (0.00)	I (0,1)
Um	1.34 (0.59)	-1.54 (0.78)	-4.49 (0.00)	-4.37 (0.01)	I (1)
PG	0.46 (0.98)	-1.92 (0.60)	-5.78 (0.00)	-5.64 (0.00)	I (1)
HNF	-6.50 (0.00)	-6.68 (0.00)	-10.45 (0.00)	-10.22 (0.00)	I (0,1)
DCP	-2.38 (0.15)	-3.07 (0.12)	-5.55 (0.00)	-5.44 (0.00)	I (1)
CAB	-2.50 (0.12)	-2.45 (0.34)	-5.23 (0.00)	-5.13 (0.00)	I (1)

This table represents that the inflation (INFG), and household (HNF) are stationed at level (0,1) while unemployment (um), population growth (PG), domestic credit to private sector (DCP), and current account balance (cab) are stationary at first difference.

Auto-regressive Distributed-lag Model (ARDL)

The (ARDL) has the advantage of estimation when the series is non-stationary and there is cointegration among the variables. So, it is an important strait for checking the long run associations among the economic variables.

The below table shows the short run results of the considered variables which in over identified model illustrate the short-run estimates of the analysis, articulating a negative relation of inflation gross domestic product deflator with unemployment. Consequently, a one-unit change in inflation gross domestic product

deflator inflows unemployment rate decline by "-1.16530" units. when numerous individuals are employed, they have the power to spend, leading to boost in demand (Khalid et al. 2011).

Table 4: Short-Run (ARDL Test)

Variable	Coefficient	Std. Error	t-Statistics	Prob
C	13.94	7.92	1.76	0.09
INFG (-1) *	-1.16	0.18	-6.24	0.00
UM (-1)	-6.07	1.49	-4.07	0.00
PG**	16.04	4.37	3.66	0.00
HNF (-1)	2.15	1.03	2.08	0.05
DCP (-1)	-88.21	35.92	-2.45	0.02
CAB**	2.25	0.77	2.91	0.01
D(UM)	-2.35	1.29	-1.82	0.08
D(HNF)	1.08	0.58	1.83	0.08
D(DCP)	144.77	37.24	-3.88	0.00

The short-run estimates of the analysis, articulate a positive relationship between population growth with inflation gross domestic deflator. When the population rate of a country increases over time, this means that the demand for overall goods and services will increase also. Arslan et all (2014) government should control the inflation rate by controlling unemployment policymakers.

In the short-run Household (HNF) has a positive relationship with inflation. Families with limited resources are disproportionately affected by inflation because rising food and housing prices account for a larger portion of their consumption. In the near run, the current account balance correlates positively with inflation. Inflation may significantly affect a country's balance of payments. When inflation is excessive, the native currency depreciates, making imports more costly and exports cheaper. This might result in a trade imbalance, which has a negative influence on the balance of payments.

Long-Run Estimates ARDL

The variables' long-term results are shown in the table below, which also plays a crucial role in comprehensive analysis. In the long term, (UM) and (DCP) have a negative and meaningful relationship. While the other variables (PG.) Households (HNF), (DCP) have positive and meaningful relationships. The table shows the lonrun link between variables. UM has a non-positive impact on (INFG) and is statistically significant. In this table, the value of the coefficient of Unemployment is -5.2157 and it is negative because the relationship between (UM) and (INFG) is non-positive Khalid et al. (2011) there is a non-proportional negative interaction between (UM) and (INFG). The most carefully watched economic indicators are (UM) and (INFG), as their connection influences the total economy. When unemployment rises along a particular wage-setting curve, worker bargaining leverage increases.

Table 5: Long-Run (ARDL Test)

Variables	Co-efficient	Std. Error	Statistic	Prob
UM	-5.21	1.31	-3.95	0.00
PG	13.77	3.53	3.90	0.00
HNF	1.85	0.92	1.99	0.06
DCP	-75.70	29.70	-2.54	0.02
CAB	1.93	0.65	2.95	0.00
C	11.9659	6.67	1.79	0.09

Overall, the value of the coefficient of population growth (PG) is 13.77 and it is positive because of the relationship between population growth. The multiple regression model's results show that inflation and unemployment are statistically inconsequential, whereas the model itself is statistically significant. There is preliminary evidence that the link between population growth and inflation is nonlinear, with population decrease having a greater impact than population rise. Arslan et al. (2014) found a positive correlation between population growth and inflation. The market's overall demand rises with the population. Furthermore, inflation is brought on by excessive demand.

The coefficient of households is 1.85, which is positive. People feel that the expense of living affects their everyday lives. However, rising costs disproportionately affect middle class and low-wage earners. There is some evidence that living with family members and other unrelated people may be a significant method that workers utilize to get through a period of unemployment. Ghulam et al. (2020) it causes to increase cost of production of goods which leads to inflation. Inflation refers to an increase in the price of goods and services. It reduces the buying power of money, raising the cost of a representative basket of goods and services.

Overall, the coefficient of domestic credit to the private sector is -75.70, which is a negative number since the link between domestic credit to the private sector and inflation is negative. When inflation raises prices, the demand for borrowing rises, raising interest rates, and benefiting lenders. While domestic credit to the private sector is negative, money supplies are the primary cause of inflation. There is a negligible relationship between the domestic and private sectors. Sumera and Amjad. (2016) The rate of interest affected control over domestic credit to the private sector and inflation. Overall, the value of the coefficient of current account balance current account is 1.93 and it is positive because the relationship between current account balance and inflation is positive.

The impact on domestic inflation overall was inverse and statistically significant as an increase in the current account deficit by one led to lower domestic inflation in the long run. An increase in the current account will cause an increase in inflation in the short run but it will decrease overall. Tallah et al. (2020) This study shows the positive significant impact of current account balance and inflation in long run were the short run.

ARDL Bound

This study will use the bound test to ascertain the variables' long-term relationship after completing the model's ARDL equation. The variables with lag will be subjected to the bound test, and the F-statistics value will then be determined.

Table 6: F-Bound Test

Statistics.	Value.	K.
F-statistics	7.148116	5
Critical bound value.		
Rate of Significance.	(I0) _bound.	(I1)_bound.
10%	2.08	3
5%	2.39	3.38
2.5%	2.7	3.73
1%	3.06	4.15

Note: All calculation is carried by E-views

F-statistics have a value that is greater than the critical value boundaries, as shown in the table above, indicating that there is no long-term association.

CONCLUSION

This study uses time series data from 1990 to 2025 to investigate the influence of unemployment on inflation. The dependent variable is inflation, while the explanatory factors are unemployment, population growth, household statistics, domestic credit to the private sector, and current account balance. To ensure that the variables are stationary, we implement the unit root test. The findings show that unemployment, population growth, household data, and current account balance are statistically significant at the first difference, but inflation and domestic credit to the private sector are statistically significant at the level. In the near run, the error correction term must be negative and statistically significant in order to exhibit equilibrium adjustment. The analysis found a strong negative long-run link between unemployment and inflation. As the unemployment rate rises, workers' negotiating leverage decreases when demanding higher salaries because they become more easily replaced. As a result, enterprises may delay raising prices while the cost of one of their primary inputs—wages—falls. As a result, inflation and unemployment have a steady, inverse connection.

POLICY IMPLICATIONS

The government of Pakistan should prioritize controlling the inflation rate through a multifaceted approach. Firstly, it should focus on creating employment opportunities to enhance economic efficiency and mitigate inflationary pressures. Secondly, adjusting monetary policies, including interest rates and fiscal measures such as reducing spending and increasing taxes, can effectively curb inflation. Learning from past

challenges, effective regulation of money circulation is crucial. Additionally, regulating prices of goods and services and improving institutional frameworks and public policies are essential steps. Enhancing productivity growth, investing in education, and improving the labor force's educational attainment and work experience can further contribute to managing inflation. Last but not least, comprehensive strategies for maintaining stable inflation rates should include addressing the natural unemployment rate.

REFERENCES

Ahmed, B. (2020). Inflation and unemployment in Pakistan: An empirical analysis. *Pakistan Soc. Sci. Rev*, *4*, 306-318.

Ali, H., Ali, M. Z., Nosheen, F., & Din, A. S. U. (2021). Unemployment and Monetary Policy Dynamics in Pakistan: Evidence from Cointegration Analysis. *Pakistan Journal of Humanities and Social Sciences*, *9*(1), 01-09.

Arslan, M., & Zaman, R. (2014). Unemployment and its determinants: a study of Pakistan economy (1999-2010). *Journal of Economics and Sustainable Development*, *5*(13), 20-24.

Berentsen, A., Menzio, G., & Wright, R. (2011). Inflation and unemployment in the long run. *American Economic Review*, *101*(1), 371-398.

Blanchflower, D. G., Bell, D. N., Montagnoli, A., & Moro, M. (2014). The happiness trade-off between unemployment and inflation. *Journal of Money, Credit and Banking*, *46*(S2), 117-141.

Freund, L., & Rendahl, P. (2020). Unexpected effects: uncertainty, unemployment, and inflation.

Hassan, M. U., Shaheen, S., & Ullah, S. (2020). Macroeconomic variables and income inequality nexus: Time series analysis of Pakistan. *Pakistan Economic and Social Review*, *58*(1), 97.

Hongo, D. O., Li, F., Ssali, M. W., Nyaranga, M. S., Musamba, Z. M., & Lusaka, B. N. (2020). Inflation, unemployment and subjective wellbeing: nonlinear and asymmetric influences of economic growth. *National Accounting Review*, *2*(1), 1-25.

Kanwal, A., Hassan, M., & Butt, H. (2023). Analyzing the Financial Sector Nexus Economic Growth of Pakistan: New Insights from ARDL Approach. *iRASD Journal of Economics*, *5*(4), 873-889.

Khan, M. I., Ghauri, S. P., Siddiqui, A. A., & Iqbal, A. (2023). Causality between Economic Development and Unemployment: Using ARDL Model. *International Journal of Social Science & Entrepreneurship*, *3*(1), 466-488.

Leduc, S., & Liu, Z. (2012, September). Uncertainty, unemployment, and inflation. Federal Reserve Bank of San Francisco.

Nawaz, A., Shakeel, M., & Mushtaq, S. (2025). Unemployment, Governance And Migration Flows In Pakistan. *Bulletin of Business and Economics (BBE)*, *11*(2), 31-43.

Nosheen, F., Nasir, N., Ali, H., & Zahra, F. (2021). Interrelationship among Inflation and Saving: Empirical Evidence from the Emerging Economy of Pakistan." *Harf-o-Sukhan, 5(1)*, 18-44.

Ramzan, M. (2021). Impact of inflation and unemployment on economic growth of Pakistan. *European Journal of Business and Management Research*, *6*(4), 282-288.

Safdari, H., Hosseiny, A., Farahani, S. V., & Jafari, G. R. (2016). A picture for the coupling of unemployment and inflation. *Physica A: Statistical Mechanics and Its Applications*, *444*, 744-750.

Saungweme, T., & Odhiambo, N. M. (2021). Inflation and economic growth in Kenya: An empirical examination. *Advances in Decision Sciences*, *25*(3), 1-25.

Shah, S. Z. A., Shabbir, M. R., & Parveen, S. (2025). Does Human Capital Contribute to Achieving Economic Growth Path in Pakistan? An Empirical Investigation. *iRASD Journal of Management*, *4*(1), 51-60.

Talha, M., & Billah, M. (2024). Quantile-On-Quantile Connectedness between Macroeconomics and Stock Market Return in Vietnam. *Kurdish Studies*, *12*(2), 3338-3356.

Umair, M., & Ullah, R. (2013). Impact of GDP and inflation on unemployment rate: A study of Pakistan economy in 2000-2010. *International review of management and business research*, *2*(2), 388.

Yasmin, F., Shaheen, R., Yasin, A., & Naseer, S. (2020). An analysis of causal relationship between economic growth and unemployment: Evidence from Pakistan. *Annals of Social Sciences and Perspective*, *1*(1), 09-17.

Zaman, K., Khan, M. M., Ahmad, M., & Ikram, W. (2011). Inflation, Unemployment and the NAIRU in Pakistan (1975-2009). *International Journal of Economics and Finance*, *3*(1), 245-254.