MACROECONOMIC DETERMINANTS OF UNEMPLOYMENT IN PAKISTAN: SOME POLICY IMPLICATIONS

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Abstract

Unemployment poses a significant threat to Pakistan's economy alongside other global countries. The current study tries to determine the substantial determinants affecting unemployment in the country. Data was retrieved from the worldwide development indicator (WDI) and worldwide governance indicators (WGI) by employing Time series analysis from 1996 to 2021. Augmented Dicky Fuller and Philips-Perron Unit root test were employed to check the stationary of the data. To figure out the short-run and long-run cointegration among variables, the model Autoregressive distributed lag (ARDL) was applied. Findings indicate that all variables were statistically significant. Inflation, FDI and GDP are negatively affecting unemployment. While population growth, external debt and governance index have a positive association with unemployment. Growing population and external debt are substantial contributors to unemployment, while governance reveals inadequate effectiveness in addressing this challenge. Study recommended to improve FDI and GDP growth in Pakistan to reduce unemployment. Furthermore, govt stability and effective policies are necessary to overcome the problem of unemployment.

Keywords: Unemployment, population, inflation, governance, foreign direct investment, gross domestic product, governance, external debt

JEL Classification: J64, E31, F35, F43, G34, H68, P23

Introduction

Unemployment has remained a critical challenge in Pakistan. Unemployment is defined as the percentage of the labor force annually unable to secure employment (IMF, 2023), while the International Labor Organization (ILO) (2023) describes it as the state of being out of work, actively seeking employment, and available for work within a specified timeframe. Unemployment signifies a workforce capable of working but unable to find suitable employment, presenting significant social and economic ramifications (Agustina

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et al., 2023; Ahmed Raza Cheema, 2014; Elhaj & Ali, 2011; Harsono et al., 2023; Pardosi & Septriani, 2023; Torruam & Abur, 2014).

Unemployment remains an important factor that influences economic prosperity and tarnishes the well-being of society in the developed and developing world. (Akinyele et al., 2023). This situation is obvious in Pakistan as the country stands high in the unemployment rankings globally. (Azhar et al., 2019; Minhaj & Imran, 2021; Muhammad Atif Adeem et al., 2019). Some significant factors contributing to the unemployment landscape in Pakistan include socioeconomic disparity, weakening situation of law and order, less foreign direct investment (FDI), and swift population growth. Further issues that serve as fuel to the fire are limited resources and poor governance. (Ahmed Raza Cheema, 2014; Harsono et al., 2023; Hasan & Zaheer, 2022; Imtiaz et al., 2020; Mazher et al., 2019).

Political instability, rising energy prices, and soaring unemployment put pressure on Pakistan's economy which primarily relies on its agriculture and industrial sectors. The increasing population and declining opportunities provoke individuals to look for opportunities abroad, creating a brain drain and threatening the country's future (Mazher et al., 2019; Minhaj & Imran, 2021; Muhammad Atif Adeem et al., 2019). Out of 71.76% of labor force, 67.25% employed while 4.51 % are unemployed (Initiatives, 2020).

While extensive research exists on unemployment, its determinants and its broad implications for economic development, there remains a noticeable void in studies addressing the explicit determinants of unemployment within Pakistan. Much of the existing literature focuses on general trends without adequately examining how critical factors such as population dynamics, GDP, external debt, governance, and foreign direct investment (FDI) interact to shape unemployment in Pakistan.

This study seeks to fill this gap by uncovering the significant drivers of unemployment, with a particular emphasis on the role of the governance index, a crucial yet often overlooked determinant. Governance plays a pivotal role in shaping economic opportunities and employment landscapes. By integrating governance into the analysis, this research not only provides a more comprehensive understanding of the unemployment crisis but also highlights actionable insights for policymakers.

Ultimately, the study aims to offer data-driven recommendations for government interventions, empowering stakeholders to design targeted strategies that address unemployment challenges and foster sustainable economic growth in Pakistan.

Literature Review

Unemployment is a serious problem in developing as well as developed countries. Since unemployment has become an important issue in Pakistan which creates economic problems. Various studies investigated factors of unemployment.

Senci et al; (2024) identified the main reasons for unemployment in the study. The period from 2013 to 2022 was examined by building an econometric model for Slovakia's registered unemployment rate, and a dummy variable was included to account for the

COVID crisis's influence. The factors exports, average interest rates, corruption index, imports, government spending, GDP, gross minimum wage, inflation, and COVID-19 crisis were determined as potential causes of unemployment in the study. The study has valuable insights for government to design policies to reduce unemployment.

Similarly, Minah & Sekaringsih (2023) studied the effect of major macroeconomic variables on unemployment rates in Indonesia. A panel data study was conducted by taking data of 33 provinces of Indonesia for the period of 2011-2021. The variables inflation, investment, Regional minimum wage, Human Development Index (HDI), have a substantial impact on the unemployment rate. The study also found that Gross Regional Domestic Product (GRDP) variable does not affect Indonesia's unemployment rate during 2011-2021.

Moreover, Hassan & Zaheer (2022) identified the causes of unemployment in Pakistan. Data had been taken from Pakistan annual statistics from 1970 to 2019. Foreign direct investment (FDI), GDP growth, population growth, external debt and inflation were the explanatory variables employed in the study. The study has applied the Augmented Dicker-Fuller Test to examine the stationarity of the data. The empirical findings showed that there was an opposite relationship between unemployment and FDI, inflation, and population growth. The relationship between inflation and unemployment is accomplished through the application of the Phillip curve technique. Okun's law is irrelevant in case of Pakistan, as evidenced by the positive correlation between GDP growth and unemployment.

Siddiqa, A. (2021) focused on the factors that influence unemployment in developing nations. The study has chosen 10 developing nations and data was taken from WDI for the period from 2000 to 2019. The Augmented Dickey-Fuller (ADF) test was used to verify stationarity of variables. The results indicated that all variables were stationary at first difference. After using the Generalized Method of Moments (GMM) model, the findings indicated that every variable has statistical significance. Unemployment is positively impacted by population and foreign debt, while it is negatively impacted by GDP, inflation, remittances, currency rates, and spending on education. To lower unemployment rate in developing economies, the study recommended to manage population growth, close the balance of payments deficit, manage inflation, increase GDP, earn a higher exchange rate from increased exports, receive foreign remittances, and increase budgetary allocations for education.

Similarly, Minhaj & Imran (2021) elaborated the effects of unemployment and population on the economic progression of Pakistan. This was done through the Time series data analysis for the period 1990-2017. ARDL bounds test model is selected to find out the results. The study found that increase in population has direct effect on economic growth of Pakistan. Furthermore, capital technology is also very necessary along with the human resources. This will ultimately reduce unemployment in the country and will improve economic growth.

Another interesting empirical study was carried out by Imtiaz et al. (2020), which explored the factors influencing young unemployment in Pakistan. The study investigated the reasons of unemployment among youth and identified several contributing variables,

such as the unpredictability of politics, low investment, overcrowding, and the outdated state of the agricultural industry. The study looked at how young people (15–24 years old) have been extremely impacted by the present crisis. The reason behind this analysis is the greater number of young people in the world who are facing a high rate of unemployment. Further the authors want the governments to address and take actions to alleviate the issue which the current generation is facing. It also addressed policy analysis, the need for a robust work environment, and an assessment of the arguments in favor of giving young people access to higher-level employment.

Adeem et al. (2019) also investigated the determinants of employment in the short and long term. ARDL bound tests were applied for this study by taking data for the period 1972 to 2016. The findings of the study indicated that government spending and GDP per capita have a strong positive correlation with employment over the long and short terms. Long-term gross fixed capital formation data demonstrate a remarkable empirical association, however, short-term data indicate a detrimental relationship with employment. In the short and medium term, FDI exhibits a strong positive correlation. Enrollment in secondary school has a strong and positive relationship with employment throughout the long and short term. There is a positive correlation between the money supply and employment in the long run, but in the short term, there is a significant but inverse link. The two primary determinants of an economy's strength are trade and political stability.

Furthermore, Azhar et al. (2019) examined the influence of macroeconomic factors on variations in the unemployment rate in Pakistan by estimating a dynamic model. The study used the Vector Error Correction approach to observe the short-term behavior of the variables, and the Johansen Co-Cointegration test was employed to determine the degree of the long-term link among them. According to the empirical results, Okun's law and the Phillips curve will likely be prevalent in Pakistan's economy. The analysis discussed the degree of energy supply and economic uncertainty makes a significant additional contribution. It also indicated that unemployment is more significant in the short term, while population growth has a greater long-term impact.

Furthermore, Azhar & Dhalam (2019) examined the relationships between unemployment and macroeconomic factors like FDI, energy usage, GDP growth, population, and inflation deflator during 1970-2018 in the long run and short run. Auto-Regressive Distributed Lag (ARDL) bounds test has been used after applying augmenting Dickey-Fuller (ADF) tests with Schwarz Info Criterion (SIC), Phillips-Perron (PP) and Akaike Info Criterion (AIC) for unit-root. The regression results suggested that FDI and Population have caused long-term unemployment to increase under short- and long-term energy usage. The strong negative coefficient of error correction suggested a rapid adjustment to reach long-term equilibrium. The study suggested that the government increases aggregate supply, job creation and economic growth, fosters a hopeful atmosphere to fascinate foreign direct investments (FDI), controls population growth, and encourages entrepreneurs to invest more, which ultimately increases employment opportunities.

The present study has conducted a comprehensive evaluation of many studies on the factors that contribute to unemployment. These studies lack to consider the significant macroeconomic variables that could impact unemployment in Pakistan. This research contributes to the literature by considering the significant macroeconomic variables, particularly governance indicators.

Data

The current study examines the macroeconomic indicators on unemployment rates (UNEM), such as Inflation (INF), Foreign Direct Investment (FDI), Population Growth (POP), Economic Growth (GDP), External Debt (EXD), and Governance (GI). This study covered the area of Pakistan and covered the time period from 1996 to 2021. The data on UNEM is quantified in (% Percentage). Data on the INF measured by (CPI), FDI (Net inflows, % of GDP), POP quantified in (Total population), GDP proxied by (Annual %), EXD calculated by (% of GNI), and GI which is calculated using PCA based on six diverse factors, namely Voice & Accountability, Control of Corruption Political Stability and Absence of Violence, Rule of Law, Government Effectiveness, Regulatory Quality (See Figure 1). It ranges from 0 -100; a higher value indicates good governance and a low value shows poor governance. Therefore, all data is taken through WDI (World Bank Development Indicators), excluding one variable, such as GI, whose data is obtained from the Worldwide Governance Indicators (World Bank, 2021). Table 1 contains a comprehensive explanation of the variables that are being considered.

Table - 1
Definition of Variables

Variables	Symbol	Unit of measurement	Source
Unemployment	UNEM	% Percentage	WDI
Inflation	INF	CPI	WDI
Foreign Direct Investment	FDI	Net inflows (% of GDP)	WDI
Population	POP	Total	WDI
GDP Growth	GDP	Annual %	WDI
External Debt	EXD	% of GNI	WDI
Governance	GI	Governance index using PCA (by taking six indicators: Voice & Accountability, Control of Corruption, Political Stability and Absence of Violence, Rule of Law, Government Effectiveness, Regulatory Quality)	WGI

Source: Authors Compilation

Figure 2 represents the methodological approach of the study. Table 2 represents the descriptive statistics of the variables used in the study.



Figure 1. Indicators of Governance

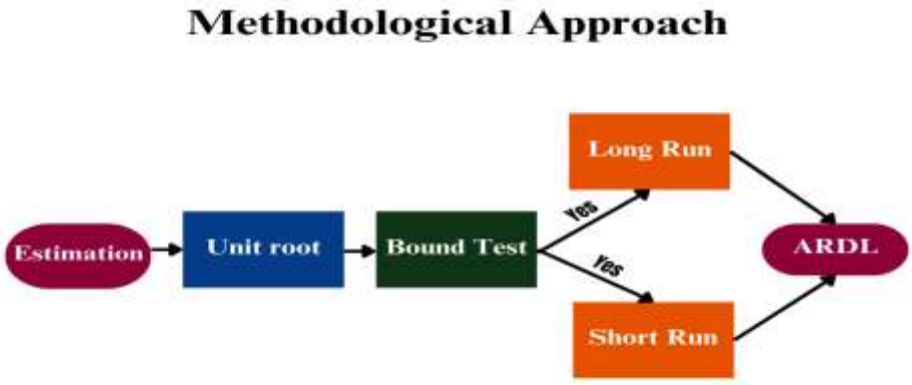


Figure 2. Methodological Approach

Table - 2
Descriptive statistics

	UNEM	POP	INF	GDP	FDI	EXD	GI
Mean	3.962	0.853	1.954	1.286	-0.048	3.574	0.0005
Median	4.170	0.827	2.034	1.465	-0.183	3.543	-0.017
Maximum	7.830	1.054	3.009	2.021	1.299	4.023	1.832
Minimum	0.400	0.707	0.927	-0.011	-0.979	3.221	-1.631
Std. Dev.	2.550	0.118	0.563	0.541	0.602	0.264	1.019
Skewness	-0.073	0.544	0.229	-1.061	0.712	0.346	0.00078
Kurtosis	1.696	1.832	1.987	3.351	3.033	1.717	1.744
Jarque-Bera	1.844	2.759	1.340	5.013	2.198	2.300	1.708
Prob.	0.393	0.251	0.511	0.081	0.333	0.316	0.425
Sum	103.018	22.203	50.829	33.450	-1.256	92.949	0.014
Sum Sq. Dev.	162.676	0.353	7.952	7.330	9.078	1.750	25.999
Obs.	26	26	26	26	26	26	26

Source: Authors Compilation (Using STATA)

Model Description

Diverse theories and hypotheses establish connections between unemployment and specific macroeconomic factors; nevertheless, the fundamental theoretical relationships are articulated by Phillips (1958) via the renowned Phillips curve and by Okun (1962) within the context of Okun's law. The Phillips curve delineates the correlation between inflation and unemployment, whereas Okun's rule articulates the connection between economic growth and unemployment. The explicit model for the determinant of unemployment is thus specified as follows:

$$UNEM_t = f\ (INF_t, FDI_t, POP_t, GDP_t, EXD_t, GI_t) \quad (1)$$

Where UNEM stands for unemployment rate, INF for inflation, POP for population, GDP represents economic growth, EXD represents external debt, and GI stands for governance index.

Once it is established that the variables under investigation are linearly related to one another, the model is represented by Eq. 2.

$$UNEM_t = \gamma_o + \gamma_1 INF_t + \gamma_2\, FDI_t + \gamma_3\, POP_t + \gamma_4 GDP_t + \gamma_5 EXD_t + \gamma_6 GI_t + \mu_t \quad (2)$$

The model can be stated in a log-linear form by applying the logarithm to Eq. 2, as shown in Eq. 3.

$$lnUNEM_t = \gamma_o + \gamma_1 lnINF_t + \gamma_2 lnFDI_t + \gamma_3 lnPOP_t + \gamma_4 lnGDP_t + \gamma_5 lnEXD_t + \gamma_6 lnGI_t + \mu_t \quad (3)$$

The symbol ln denotes the logarithmic form, the time is acquired by the symbol t, and the error term is defined as μ_t .

Methodology

Stationary Test

We used the Phillips-Perron (PP) tests (1988) and Augmented Dickey-Fuller (ADF) tests (1979) to determine whether the variables in time series data are stationary at level or first difference or both. Granger (1981) was the first person to establish the concept of testing stationarity between two variables. The null hypothesis is that there is a unit root. ADF and PP unit root tests are presented below in equations 4 and 5:

$$\Delta U_t = \gamma_0 + \gamma_1 U_{t-1} + \sum_{j=k}^{l} h_j \Delta U_{t-j} + W_i \quad (4)$$

$$\Delta U_t = \vartheta + i * U_{t-1} + W_i \quad (5)$$

In the above equations 4 and 5, the symbol Ut explains time-series data notation, Δ explains the first difference symbol, γ_0 demonstrates constant level, response variable. In above equation W_i Shows the white noise error term and the lag value is represented by 1. Eq 5 shows the PP unit root test. Both are based on t-statistics.

4.2 Autoregressive Distributed Lag Model

Autoregressive Distributed Lag Model (ARDL) developed by Pesaran and Pesaran (1997), Pesaran and Shin in 1998, and Pesaran et al. (2001). In this study ARDL model is established to examine the empirical association between dependent variable unemployment rate (UNEM) and independent variables inflation (INF), governance index (GI) and macroeconomic indicators such as foreign direct investment (FDI), economic growth (GDP), external debt (EXD) and population (POP). The ARDL model not only incorporates the flexible stationary features of variables but also finds the long-run and short-run equilibrium of time series data (Pesaran and Shin 1998). It also provides effective evidence for a small sample size. In addition, it accounts for the impact of endogeneity (Pesaran et al. 2001). The ARDL paradigm is mathematically represented by Eq. (6).

$$\Delta lnUNEM_t = \gamma_o + \gamma_1 \sum_{i=1}^{k} \Delta lnUNEM_{t-1} + \gamma_2 \sum_{i=1}^{k} \Delta lnINF_{t-1} + \gamma_3 \sum_{i=1}^{k} \Delta lnFDI_{t-1} + \gamma_4 \sum_{i=1}^{k} \Delta lnPOP_{t-1} + \gamma_5 \sum_{i=1}^{k} \Delta lnGDP_{t-1} + \gamma_6 \sum_{i=1}^{k} \Delta lnEXD_{t-1} + \gamma_7 \sum_{i=1}^{k} \Delta lnGI_{t-1} + \gamma_8 lnUNEM_{t-1} + \gamma_9 lnINF_{t-1} + \gamma_{10} lnFDI_{t-1} + \gamma_{11} lnPOP_{t-1} + \gamma_{12} lnGDP_{t-1} + \gamma_{13} lnEXD_{t-1} + \gamma_{14} lnGI_{t-1} + \mu_t \quad (6)$$

In the above Eq, μ_t represents the error term and Δ denotes the difference operator. The symbol γ_o indicates constant. Eq. 6 represents the long-run relationship. It was determined that the AIC, SC, and HQC were the most effective methods for determining the best lag for each series and model. This methodology is usually utilized by numerous researchers attempting to accomplish various goals and variables (Ohlan, 2013; Liu & Bae, 2018; Khan et al., 2020). Wald test is used to find out the long-term relationship between variables in time series data. This analysis examines the overall importance of assessments that occurred in the past concerning the time-series data of the study (Pesaran et al. 2001). The null hypothesis is rejected when the calculated value of F statistics is greater than the upper critical bound value. The outcome is deemed inconclusive if the calculated F test value is contained between the lower and upper critical limits. The null hypothesis states no cointegration among the variables and is confirmed when the calculated F test value is less than the lower critical bound. Furthermore, the long-term coefficient is assessed if the examined variables exhibit a long-term relationship. The model for long-run estimation is denoted by Eq. (7).

$$\Delta lnUNEM_t = \vartheta_o + \vartheta_1 \sum_{i=1}^{k} \Delta lnUNEM_{t-1} + \vartheta_2 \sum_{i=1}^{k} \Delta lnINF_{t-1} + \vartheta_3 \sum_{i=1}^{k} \Delta lnFDI_{t-1} +$$

$$\vartheta_4 \sum_{i=1}^{k} \Delta lnPOP_{t-1} + \vartheta_5 \sum_{i=1}^{k} \Delta lnGDP_{t-1} \ \vartheta_6 \sum_{i=1}^{k} \Delta lnEXD_{t-1} + \ \vartheta_7 \sum_{i=1}^{k} \Delta lnGI_{t-1} + \mu_t \quad (7)$$

Additionally, in cases where empirical evidence indicates a prolonged correlation among the variables being analyzed, a short-term model will be constructed. The prediction and determination of the short-run model is accomplished through the utilization of Eq. (8).

$$\Delta lnUNEM_t = \rho_o + \rho_1 \sum_{i=1}^{k} \Delta lnUNEM_{t-1} + \rho_2 \sum_{i=1}^{k} \Delta lnINF_{t-1} +$$
$$\rho_3 \sum_{i=1}^{k} \Delta lnFDI_{t-1} + \rho_4 \sum_{i=1}^{k} \Delta lnPOP_{t-1} + \rho_5 \sum_{i=1}^{k} \Delta lnGDP_{t-1} +$$
$$\rho_6 \sum_{i=1}^{k} \Delta lnEXD_{t-1} + \ \rho_7 \sum_{i=1}^{k} \Delta lnGI_{t-1} + \varphi ECT_{t-1} + \mu_t \quad (8)$$

where φ denotes the coefficient of the Error Correction term in the above model.

5. Results & Discussion

5.1 Unit Root Test

Table 2 represents the empirical findings of the unit root tests conducted by the Augmented Dickey-Fuller (ADF), Phillip-Perron (PP) and structural breakpoint unit root test. The structural breakpoint unit root test is important for determining the statistics' structural alteration and break year. Therefore, the results of the PP and ADF tests demonstrate that some of the variables under investigation are stationary at the level I (0) while others are stationary at the first difference I (1). Structural breakpoint test confirms the time break (2007, 2008), (2009, 2010), 2011, 2019, (2012, 2020), (2005, 2008) and (2006, 2015) for UNEMP, INF, FDI, POP, GDP, EXD, and GOV, respectively. Based on these results, the ARDL model is the most appropriate to use.

Table - 3
Unit Root Test

Variables	Level		First Difference		
Results					
ADF					
Intercept	**Trend & intercept**		**Intercept**	**Trend & intercept**	
UNEM	-1.484	-1.604	-4.946***	-4.853***	I(1)
INF	-2.103	-1.953	-4.725***	-4.722***	I(1)
FDI	-3.336**	-3.248	-4.436**	-4.296**	I(0)/I(1)
POP	-4.472***	-1.094	-9.700***	-13.687***	I(0)/I(1)
GDP	-2.621	-2.465	-4.204***	-4.095***	I(1)
EXD	-1.665	-1.459	-3.057**	-3.268*	I(1)
GI	-2.023	-1.951	-3.610***	-3.643**	I(1)
PP					
UNEM	-1.590	-1.763	-4.494***	-4.853***	I(1)
INF	-2.137	-1.980	-4.726***	-4.724***	I(1)
FDI	-2.103**	-2.125	-4.436***	-4.296***	I(0)/I(1)
POP	-0.595	-1.225	-1.901	-4.320***	I(1)
GDP	-2.738*	-2.599	-4.204***	-4.092***	I(0)/I(1)
EXD	-1.711	-1.073	-3.573**	-3.265*	I(1)
GOV	-1.556	-1.383	-3.227**	-3.128	I(1)
ZA					
UNEM	-6.044**	-12.226***	-10.154**	-12.226***	I(0)/I(1)
INF	-4.502**	-5.731	-7.790***	-9.618***	I(0)/I(1)
FDI	------	-------	-4.423*	-5.375***	I(1)
POP	-------	-------	-13.638***	-5.296***	I(1)
GDP	-------	-------	-4.720**	-4.659*	I(1)
EXD	-------	-------	-4.051*	-3.950**	I(1)
GI	5.815***	5.656***	-5.818**	-6.285***	I(0)/I(1)

Notes: ***, **, and * denote the 1 % ,5 % , and 10 % significance levels, respectively.
Source: Authors Compilation (using STATA)

5.2 ARDL Cointegration Test and Parameters Estimates

ARDL-bound testing is the procedure that is used to find out the cointegration association that exists between unemployment and other variables (including INF, FDI, POP, GDP, EXD, and GI). Pesaran et al. (2001) assume that the critical bounds values are the same for both the small and big sample sizes taken from the same population. According to the Pesaran critical value table, the null hypothesis will be accepted, and the alternative hypothesis will be rejected if the F statistics value is lower than the lower bound. This is because the lower bound is the highest possible value. Whenever the F-statistics value is more than the upper bound critical value, the null hypothesis will be rejected.

On the other hand, If the F-stat value lies somewhere between the higher and lower bounds, then there is bias inherent in the results. Table 4 demonstrates that the value of F-

statistics surpasses the upper bound critical value. It also exhibits statistical significance at the 1% and 5% levels. This suggests the presence of cointegration among the variables of unemployment rate, inflation rate, foreign direct investment, economic growth, external debt, and governance in Pakistan.

Table - 4
ARDL bounds test

Test statistic	**Value**	**K**
F-statistic	17.01817	6
Critical value bounds		
Significance	**I(0) bound**	**I(1) bound**
10%	2.33	3.25
5%	2.63	3.62
2.5%	2.9	3.94
1%	3.27	4.39

Source: Authors Compilation (using STATA)

5.3 Short-run and Long-run Estimates

Table 5 displays the results of the ARDL analysis conducted to observe the long- and short-term elasticity relationship between UNEM and various other variables, namely INF, FDI, POP, GDP, EXD, and GI. These results demonstrate the presence of both long-term and short-term correlation among the variables in the research time series. In case of long-run, the inflation rate related to the unemployment rate is negative at a 1% significance level (coefficient 2.661) in the case of Pakistan, which reveals that a 1% increase in the inflation rate may decrease the unemployment rate by 2.65%. These outcomes coincide with the results (Fagbemi et al., 2023). The impact economic growth on the unemployment rate is negative at a 10% significance level (coefficient 0.764), which reveals that a 1% increase in the economic growth may decrease the unemployment rate by 0.76%. This result is compatible with economic theory (Okun's law) that claimed that there is an inverse linkage between economic growth and unemployment rate. The inverse relationship between the unemployment rate and economic growth suggests that economic growth serves as a crucial mechanism for reducing and attaining the target employment rate. These outcomes coincide with the results of (Hjazeen et al., 2021). Further, the consequences of long-run investigation expose that foreign direct investment has an adverse relation with the unemployment rate having a coefficient (2.67) by P-value (0.0068), at a 1% significance level. This finding is consistent with (Fagbemi et al., 2023).

The results also expose that external debt, governance, and population growth have a positive linkage with the unemployment rate with having values (2.437), (0.988) and (6.810) and probability values (0.0001), (0.00407) and (0.0407) correspondingly. The empirical findings of external debt estimation are supported by prior empirical studies such as (Mupunga & Roux 2014; Awan et al., 2015; Cahyadin & Ratwianingish, 2020; Alnaa & Matey). Additionally, our findings of governance are mostly in line with some of the previous findings in the literature. For instance, Bauer (2018) emphasized the significance of government initiatives to mitigate the detrimental impacts of unemployment and to enact policies that facilitate reintegration into the labor market,

underscoring that combating the adverse effects of unemployment is a primary objective of governments. Furthermore, Roth et al. (2011) posited that rising unemployment correlates with diminishing trust in governmental institutions, based on an analysis of 27 European Union nations. Similarly, Roth et al. (2011) discovered that, particularly in the EU-15 nations, diminishing trust in governmental efficacy correlates with rising unemployment across all periods, not exclusively during crises. Moreover, Battaglini and Coate (2016) highlighted that the inefficacy of governmental actions may contribute to the rising unemployment rate, as unemployment persists despite its occurrence. The impact of population in this context suggests that rising population growth without corresponding enhancements in economic performance may hinder the economy's capacity to provide jobs, thus leading to an increase in the unemployment rate. The study justifies the direct correlation between population and unemployment due to the significant and frequently uncontrollable population expansion, which appears to have intensified the country's unemployment crisis. This supports that inadequate management of population increase may exacerbate significant socioeconomic crises (Shabbir et al., 2021; Fagbemi & Fajingbesi, 2022).

Furthermore, Table 5 represents the short-run empirical findings. The variables of population growth, external debt, and governance demonstrate a statistically significant and positive influence on the unemployment rate, with significance levels of 1% and 5%. In the short run, a 1% increase in Population growth, external debt, and governance increases the unemployment rate by 5.2%, 4.5%, and 0.90%, respectively. (Chêne, 2014; Sanz et al., 2022; Ighoshemu & Ogidiagba, 2022; Kırşanlı, 2023, Abbas et al., 2024). Therefore, Inefficient governance systems will be widely prevalent, exacerbating the vital issue of unemployment. Furthermore, political stability does not mitigate youth unemployment in highly corrupt nations abundant in natural resources (Ndjie et al., 2019). In contemporary Pakistan today, significant unemployment has led to a brain drain. Finally, the inflation rate and economic growth coefficient have a negative relationship. The results are significant at the 1%, 10% level, which means that a 1% increase in the inflation rate will decrease the unemployment rate by 2.6% in the long run and 2.3 % in the short run. In contrast, foreign direct investment is found to be negatively associated and reduces unemployment by 2.1%, while it is statistically insignificant in the short run.

Table - 5
Long- and Short-run Estimates

Variables	Coefficient	Standard Error	T-Test	Prob. Values
Long-run Estimates				
INF	-2.661	0.517	-5.142	0.000***
FDI	-2.167	0.638	-3.395	0.006***
POP	2.437	0.374	6.509	0.000***
GDP	-0.764	0.365	-2.095	0.062*
EXD	6.810	2.899	2.348	0.040**
GI	0.988	0.272	3.622	0.004***
Constant	28.910	1.900	15.209	0.000***
ECT (-1)	-1.091	0.071	-15.213	0.000***

Short-run Estimates				
INF	2.370	0.462	5.128	0.000***
FDI	-0.412	0.555	-0.742	0.475
POP	5.244	4.970	1.054	0.316
GDP	-0.699	0.359	-1.194	0.080*
EXD	4.477	1.957	2.287	0.045**
GI	0.904	0.225	4.005	0.002***
R2	0.944			
Adjust R2	0.924			
D.W				2.841
Normality	3.028			
Heteroskedasticity	0.573			0.827
F-statistic	38.268			
Prob.	0.000***			

Notes: ***, **, and * denote the 1 % ,5 % , and 10 % significance levels, respectively.
Source: Authors Compilation (using STATA)

Graphical results are presented below in figure 2.

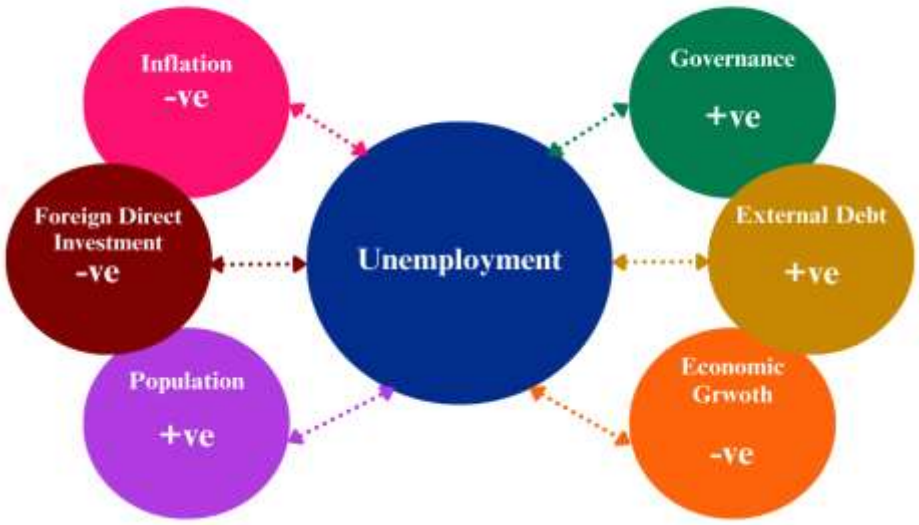


Fig 2: Graphical Results

Conclusion

Unemployment is a prevalent global concern. Researchers measured different dimensions of unemployment. The current study focuses on the determinants of unemployment. The present research based on the annual time series data from 1996-2021and applied the Augmented Dickey-Fuller and Philips-Perron test to verify the stationary of the data series. Further, ARDL was applied to find out the cointegration between variables. The study examined the relationship between unemployment and population growth, foreign direct investment, gross domestic product, external debt, governance, and inflation.

Results showed that foreign direct investment, inflation, and Gross domestic product have a negative relationship with unemployment, as with the increase in FDI, GDP and Inflation, unemployment leads to a decrease, and this relationship is statistically significant. However, the population, external debt, and governance index have a substantial positive association with unemployment, and they contribute to unemployment. An increase in population and external debt increases unemployment in Pakistan's Economy. Furthermore, the role of governance is limited to reducing unemployment in Pakistan. Highlighting that the government's ability to carry out efficient employment creation plans and policies is limited due to financial constraints, bureaucratic inefficiencies, and institutional instability in the political landscape. Frequent shifts in government priorities hinder the ability to engage in long-term planning and ongoing initiatives aimed at tackling unemployment. Additionally, the education system in Pakistan repeatedly fell short of providing young individuals with the skills required by the labor market. In addition, corruption and a lack of transparency in governance serve to further constrain the effectiveness of employment programs by redirecting resources away from their original objectives and damaging public confidence in government initiatives. This hinders the successful implementation of employment efforts on a big scale. Finally this study contributes into the broader understanding of the reasons and factors of unemployment in Pakistan and emphasize the incremental role of government policies in tacking the menace of unemployment.

Policy Recommendation

The outcome of the study leads to some considerable policy implications that might help the policymakers in making pro-poor policies that pave the way for a reduction in unemployment.

A mechanism should be built to attract Foreign Direct Investment (FDI). This could be achieved by introducing some incentives, rebates, and business-friendly regulations. The ease of doing business is important. One window operation could help in the removal of unnecessary hurdles in the process of registration of business entities. As a confidence-building measure for investors, inflation should be controlled, and price stability should be ensured through some regulations.

Advocacy programs related to population control with a focus on comprehensive family planning should be integrated into the mainstream economic development agenda to achieve sustainable growth. Improving governance, transparency, and rule of law is essential to create a conducive environment for local and foreign investment, which in turn will stimulate job creation. Additionally, public investment should target job-intensive infrastructure projects, and human capital development should be prioritized

through education and skills training initiatives. Sustainable economic growth strategies must be implemented to diversify the economy and promote SMEs, ensuring long-term job creation and economic stability. Regular monitoring and evaluation of policy impact will be crucial to refining strategies and achieving tangible reductions in unemployment rates.

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