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# The Impact of Unemployment on Economic Growth in Pakistan: An Empirical Investigation

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**ABSTRACT**

This study has attempted to scrutinize the impact of unemployment on the growth rate during the period 1974 to 2020 in Pakistan. This study has employed the Autoregressive Distributed Lag (ARDL) technique for empirical investigation. GDP growth rate is a dependent variable, employed as a proxy for economic growth. In the present study, explanatory variables are unemployment, population growth rate, rate of inflation, foreign direct investment and government expenditure. The empirical findings from the study show that unemployment and inflation rates both show a negative relationship with economic growth and are significant statistically. The population growth rate has a positive and statistically significant impact on economic growth. Short-run cointegration exists between the variables. It is suggested from the results that government should adopt adequate measures to generate employment opportunities to accelerate economic growth and reduce unemployment in the country.



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## 1. Introduction

Unemployment is one of the mega issues of the developing world. Various studies have been presented across the world, to address the issue of unemployment and growth rate. An increase in the unemployment rate of an economy reflects its low level of income and output. This further presents the low standard of living of the people in the economy. Tanha (2018) stated that economic stabilization can be achieved by reducing inflation and unemployment rate, by designing wise macroeconomic policies. Chowdhury and Hossain (2014) concluded that the relation of real GDP and exchange rate on unemployment is negative. Khobai, Kolisi, and Moyo (2018) stated that in the long and short run, a negative relationship exists between unemployment and economic growth.

Employment is taken into account as a key variable that stimulates economic growth (Nawaz, Azam, & Bhatti, 2019). High labor force participation in economic activities helps to improve the standard of living of the poor segment of society. Pakistan stands at the 5$^{th}$ position among the high populous countries and has the 9$^{th}$ largest labor force in the world. As reported by the National Institute of Population Studies (NIPS) the growth rate of the population in Pakistan is 1.80 percent and the population amounted to 215.25 million during the year 2020.

The population density was 270 per $km^2$. The 59 percent of the population in Pakistan belongs age cohort of 15-59 years and 27 percent of the population lies between the age cohort of 15-29 years. It was also reported that 61 percent of the population belongs to the age cohort of 15-64 years in Pakistan (Economic Survey of Pakistan, 2020-2021). As reported by the Pakistan Bureau of Statistics (2020), before Covid-19, the working class of the population was 35 percent, amounting to 55.75 million, in Pakistan. Covid-19 along with other external factors has forced this percent to decrease, amounting to 35.04 million, mainly due to the lockdown and shutdown of business activities in Pakistan. After July 2020, the circumstances were improved, as the statistical data shows that the working class has resumed their economic activities. This amounted to 52.56 million which is now 33 percent working population. The performance of the sectors was adversely affected by the pandemic resulting in the loss of income as well as jobs. The most vulnerable sectors affected by the pandemic were transportation, manufacturing, wholesale & retail, construction and communication. According to the Economic Survey of Pakistan (2020-2021), almost 80 percent labor has lost their job and are unable to find work in the construction sector. The same scenario was faced by the manufacturing sector, reporting 72 percent of labor/workers lost or couldn't find a job, this results in the fall of the purchasing power of an individual. A similar situation had prevailed in various other sectors like transportation, retail, wholesale and storage businesses, showing a 63 percent to 67 percent of labor/workers have failed to find a job due to the pandemic in Pakistan (Hao, Shah, Nawaz, Nawazc, & Noman, 2020). According to the ILO (2021) estimates, the total unemployment rate of Pakistan during the year 2020 was 4.65 percent (as a percent of the total labor force).

Table 1 shows the performance of various variables, examined underpinning the present study. The statistical data of the rate of inflation showed that it was 2.45 percent during the year 2018, later it has been increased to 8.62 percent and 10.1 percent during the years 2019 and 2020, respectively. The population growth rate shows a decline from 2.06 percent to 1.97 percent, during the period from 2018 to 2020. The foreign direct investment was 0.79 percent of GDP during the year 2019 and 0.67 of GDP during the year 2020. The last column shows the GDP growth rates in Pakistan. The GDP growth rate was higher during the year 2018 presenting 5.83 percent, later it is showing a negative figure. i.e., -0.93 percent during the year 2020, respectively.

**Table 1**
***Performance of Macro-Economic Variables in Pakistan***

| Years | Inflation Rate (%) | Population Rate (%) | Foreign Direct Investment (% of GDP) | GDP Growth Rate (%) |
|---|---|---|---|---|
| 2010 | 10.85 | 2.20 | 1.14 | 1.60 |
| 2011 | 19.64 | 2.16 | 0.62 | 2.74 |
| 2012 | 5.96 | 2.13 | 0.38 | 3.50 |
| 2013 | 6.96 | 2.10 | 0.57 | 4.39 |
| 2014 | 7.41 | 2.09 | 0.77 | 4.67 |
| 2015 | 4.11 | 2.09 | 0.61 | 4.73 |
| 2016 | 0.40 | 2.08 | 0.92 | 5.52 |
| 2017 | 4.01 | 2.07 | 0.81 | 5.55 |
| 2018 | 2.45 | 2.06 | 0.55 | 5.83 |
| 2019 | 8.62 | 2.03 | 0.79 | 0.98 |
| 2020 | 10.1 | 1.97 | 0.67 | -0.93 |

Source: World Bank database; Government of Pakistan, Economic Survey (various sources)

Pakistan is a developing country, facing countless issues simultaneously like poverty unemployment, inflation, unequal distribution of income, mal-nutrient and many more (Haq, Nawaz, Mahtab, & Cheema, 2012). Greater labor force participation in economic activities represent the prosperity of the economy, reflected through improve GDP growth rate. It significantly influences the human capital of the economy and improves the well-being of individuals and their households. Numerous pieces of research have studied the trends and

profile of unemployment in Pakistan. However, the present study has been focused on the period between 1974 to 2020. During the year 2020, the whole world was suffering from Pandemic Covid-19. It adversely affects socially, economically and mentally all the segments of the society belonging to the developed and developing countries. Due to the lockdown, banning the inter-city movement and stagnant business activities has raised the unemployment level in developing countries like Pakistan. The main objective of the present study is to investigate the impact of high unemployment in Pakistan. Different explanatory variables like Population growth rate (PGR), inflation rate (INF) and foreign direct investment (FDI) have also been examined to study their impact on the GDP growth rate in Pakistan. This section is followed by a review of the literature. Section 3 presents the data and methodology and then findings and interpretation of the results would be in section 4. Section 5 present the conclusion and policy recommendations depending upon the finding of the present study.

## 2. Literature Review

Okun (1962) contended a negative association lies among the unemployment and GDP growth rate of a country. Akinboyo (1987) stated that unemployment is a crucial issue to achieve economic growth. Khushnood, Rizwan, Memon, Tulliani, and Ferro (2014) studied the inflation and economic growth effect on unemployment in Pakistan. For estimation purposes, the authors used the Ordinary Least Squares (OLS) method by using annual data from the period 2000 to 2012. The empirical result of the study showed that gross domestic product (economic growth) had a positive relationship with unemployment. Moreover, inflation had a negative relationship with unemployment.

Cheema and Atta (2014) collected time series data during the period from1973 to 2010 in Pakistan. the authors examined the factors affecting unemployment and applied the (ARDL) technique for empirical investigation. The finding of the study showed that unemployment had a positive and significant effect on the output gap economic uncertainty and productivity. while unemployment had a negative relationship with fixed investment and trade openness (Shafiq, Hua, Bhatti, & Gillani, 2021). The results of the study suggest that government should encourage trade and private investment in the economy.

Aqil, Qureshi, Ahmed, and Qadeer (2014) collected the data during the period 1983- 2010 in Pakistan. By employing the Ordinary least Squares (OLS) method for the econometric analysis. The various factors underpinning the present study are GDP, inflation, foreign direct investment, population growth and unemployment rate. The findings of the study have revealed that economic growth (GDP) and inflation have no significant impact on unemployment. Moreover, it is also concluded that population and foreign direct investment had a significant and negative impact on unemployment in Pakistan.

Investigating the relationship between economic growth and unemployment, Abbas (2014) collected data during the period 1990 to 2006. the authors have employed the Autoregressive Distributed Lag (ARDL) method for the empirical findings. The results of the study conclude that there is no association between economic growth and unemployment in the short run. However, in the long run, a significant negative relationship is present between unemployment and economic growth in Pakistan. The study also concludes that the estimates of short-run parameters are insignificant. The results of the study suggest that different policy measures should be adopted to reduce the unemployment level in Pakistan.

While studying the relationship between inflation, unemployment and economic growth in Nigeria, Ademola and Badiru (2016) collected annual data during the year from 1981 to 2014. The authors have employed the Ordinary Least Squares (OLS) method for empirical results. The

findings of the study show that RGDP, unemployment, and inflation have a long-term relationship with each other. The findings from the study conclude that unemployment and inflation are positively associated with economic growth. Nigeria's RGDP has been increased due to oil revenue, which employs a small number of highly skilled workers, and the price of crude oil output is determined externally, which may not respond as expected to the country's output growth.

Seth, John, and Dalhatu (2018) collected time-series data to examine the impact of unemployment on economic growth in Nigeria. The authors consider the period from 1986 to 2015, for empirical estimation. The findings from the study have revealed that in the long-run no significant relationship is present between unemployment and economic growth. Unemployment had a positive and significant impact on economic growth (Bhatti & Fazal, 2020). The informal sector in Nigeria is playing a key role in generating economic growth. The Error Correction Term (ECT) presents a speed of adjustment, which shows that 65.5 percent exists between the short-run disequilibrium and long-term equilibrium.

Kukaj (2018) collected data during the year 2001-2015 to investigate the relationship between unemployment economic growth in Western Balkans. For estimation purposes, the author applied for STATA 12 program and took unemployment and economic growth as variables. The finding showed that there exists a trade-off between unemployment and economic growth. The study focused on the dependent variable as GDP-growth and independent variables are a foreign direct investment, unemployment, and remittances. The prevalence of unemployment in the western Balkans Needs attention and its relationship with economic growth is analyzed under the present study. Using the STATA12 the authors have conducted various empirical investigations by employing the Effective Effect Model, Random Effects methods in the study. The finding from the results concludes that a trade-off is present between unemployment and economic growth in Western Balkan economies (Ahmad, Shafiq, & Gillani, 2019; Yang & Shafiq, 2020).

Karikari-Apau and Abeti (2019) studied the impact of unemployment on economic growth in China. For this purpose, the authors used time-series data during the year from 1991 to 2018 and applied Autoregressive Distributed Lag (ARDL) model for the econometric analysis of the study. The result of the study concludes that a negative relationship exists between unemployment and economic growth in the long run and short run. It was also concluded from the results of the Granger causality test that, both unemployment and economic growth do not affect each other in China.

Khalid, Akalpler, Khan, and Shah (2021) collected the annual data to study the association between unemployment, inflation, unemployment and economic growth in South Africa. This study was based on annual data from 1980 to examine the cointegration between the variables under consideration in the present study. The study showed that there had a negative relationship between inflation and economic growth and a negative association between exchange rate and unemployment. It was also concluded that in the long-run negative significant response of the exchange rate to the unemployment rate is present, however, in the long run, the response of real GDP to the unemployment rate was positive and significant in South Africa.

## 3. Data and Methodology

Data that is time-variant is known as time-series data. Time series data is useful to predict future values by using previous data or information. The secondary data is collected during the year from 1974-2020, collected from World Development Indicators (WDI) and Economic Survey of Pakistan (2020-21; various issues). The primary objective of the study was to investigate the impact of unemployment on economic growth. For this purpose, various variables are examined

in this study. i.e., GDP growth rate (RGDP), (FDI) as a percent of GDP, inflation rate (INF), population growth rate (PGR), unemployment rate (UE) and government expenditures as a percent of GDP (GEXP). GDP growth rate is the dependent variable as a proxy for economic growth and the rest of all variables are independent variables, as presented in the econometric model below.

$$Yi = \beta 1 + \beta 2Xi + ui \quad (1)$$

$$\text{RGDP} = \alpha + \beta 1\,(\text{PGR}) + \beta 2\,(\text{INF}) + \beta 3\,(\text{FDI}) + \beta 4\,(\text{GEXP}) + \beta 5\,(\text{UE}) + \mu t \quad (2)$$

$\alpha$ = intercept
$\beta_1$ *to* $\beta_2$ = co-efficient of independent variables
$\mu_t$ = error term
t = Time

## 4. Results and Interpretation

### 4.1 Descriptive Statistics of Data

Table 2 presents the descriptive statistics of the data that explains the statistical well-being of the empirical model. The empirical model is measured in statistical terms and gives a detailed account of the strength of the model. The mean value of the RGDP growth rate is 4.82755 and the standard deviation is 2.029848. Skewness is positive and the kurtosis value is greater than 2 but less than 3 so it represents Mesokurtic. Jarque-Bera test is used to check the normality, so GDP growth rate is normally distributed. The mean value of the unemployment rate is 4.0848 and the standard deviation is 2.2982. The unemployment rate is positively skewed and kurtosis is Platykurtic. Unemployment is normally distributed. The mean value and standard deviation values of the rate of inflation are 9.679 and 6.694. It is positively skewed and normally distributed, and it is also called Leptokurtic. mean value of FDI is 0.802 and its standard deviation value is 0.7810. It is positively skewed and Leptokurtic. The population growth rate is negatively skewed and Platykurtic, as normally distributed. The mean value is 11.104 and the standard deviation is 1.9863. It is positively skewed and has Leptokurtic. It is normally distributed.

**Table 2**
***Descriptive Statistics of Data***

| | RGDP | UE | INF | FDI | PGR | GEXP |
|---|---|---|---|---|---|---|
| Mean | 4.827552 | 4.084891 | 9.679069 | 0.802419 | 2.680828 | 11.10499 |
| Median | 4.839699 | 4.065000 | 8.602925 | 0.597474 | 2.777067 | 10.98740 |
| Maximum | 10.21570 | 7.830000 | 38.51199 | 3.668323 | 3.363941 | 16.78491 |
| Minimum | 0.988829 | 0.400000 | 0.400236 | 0.044948 | 2.029215 | 7.346709 |
| Std. Dev. | 2.029848 | 2.298230 | 6.694207 | 0.781062 | 0.442194 | 1.986370 |
| Skewness | 0.199379 | 0.054221 | 2.205998 | 2.265181 | -0.039039 | 0.505893 |
| Kurtosis | 2.879402 | 1.921234 | 9.335770 | 8.080219 | 1.590117 | 3.782737 |
| Jarque-Bera | 0.332642 | 2.253032 | 114.2481 | 88.80454 | 3.821575 | 3.136408 |
| Probability | 0.846774 | 0.324161 | 0.000000 | 0.000000 | 0.147964 | 0.208419 |
| Sum | 222.0674 | 187.9050 | 445.2372 | 36.91125 | 123.3181 | 510.8296 |
| Sum Sq.Dev. | 185.4127 | 237.6837 | 2016.558 | 27.45263 | 8.799094 | 177.5550 |
| Observations | 46 | 46 | 46 | 46 | 46 | 46 |

Source: Author's calculation; Eviews10

## 4.2 Unit Root Test

Table 3 presents the unit root test estimation and found that GDP, inflation, population growth rate and foreign direct investment are statistically significant at the level. Unemployment and general equilibrium of expenditure are statistically significant at the first difference.

**Table 3**
***Unit Root Test***

| Variables | Level | First Difference | Result |
|---|---|---|---|
| | Intercept/ Trend | Intercept/Trend | |
| RGDP | -4.354 (0.0011) | ……. | I(0) |
| UE | …… | -6.203 (0.000) | I(1) |
| INF | -6.011 (0.0000) | ……. | I(0) |
| PGR | -4.1048 (0.0125) | ……. | I(0) |
| FDI | -2.9692 (0.0457) | ……. | I(0) |
| GEXP | …… | -5.4341 (0.0000) | I(1) |

Source: Author's calculation; Eviews10

## 4.3 Bound Test Results

Table 4 presents the bound test results of the data. ARDL bounds testing was developed by Pesaran, Shin, and Smith (2001) to test the existence of the long-run relation between the variables. Table 4 indicates the value of the estimated F-statistic (17.815), which is above the upper critical value of 5%. In short, the determinants of RGDP move together in the long run.

**Table 4**
***Bound Test Results***

| F- Statistic | 17.815 | |
|---|---|---|
| | **Critical values bound** | |
| **Significance** | **I0 bounds (lower bounds)** | **I1 bounds (upper bounds)** |
| 10% | 2.08 | 3 |
| 5% | 2.39 | 3.38 |
| 1% | 3.06 | 4.15 |

Source: Author's calculation; Eviews10

**Table 5**
***Long-Run Estimation***

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| UE | -0.599 | 0.127 | -4.718 | 0.0001 |
| INF | -0.394 | 0.061 | -6.383 | 0.0000 |
| FDI | -0.816 | 0.404 | -2.021 | 0.0568 |
| PGR | 3.175 | 0.496 | 6.398 | 0.0000 |
| GEXP | -0.718 | 0.118 | -6.074 | 0.0000 |
| C | 10.908 | 2.041 | 5.343 | 0.0000 |

Source: Author's calculation; Eviews10

Table 5 presents that the coefficient value of the unemployment rate depicts a negative relationship with GDP growth rate and is statistically significant. The coefficient value of the

unemployment rate is -0.59 and it is statistically significant. This shows that a 1 percent increase in the unemployment rate leads to reducing the GDP growth rate by .59 percent. The result of the study is similar to the finding of Makaringe and Khobai (2018). The reason for the negative relationship in Pakistan may be that unemployment inversely affects the income of consumers, decreases purchasing power, falls employee determination and decrease the output in the country.

**Table 6**
***Diagnostic Test***

| Diagnostic Test | | |
|---|---|---|
| Test name | Test statistics | p-values |
| R-squared | 0.8652 | ……. |
| F-Statistic (overall significance of model) | 6.1129 | 0.000076 |
| Durbin-Watson stat | 1.86 | …… |
| Adjusted R Squared | 0.723 | …… |

Source: Author's calculation; Eviews10

The inflation rate shows a negative relationship with the GDP growth rate and is statistically significant. The coefficient of inflation is -0.39 which shows that a 1 percent increase in inflation leads to a decreasing GDP growth rate by -0.39%. These results support the finding by Shahid (2014) between inflation and economic growth. The reason is that as inflation increases, the purchasing power of people reduces, resulting in depressing growth rates. The coefficient of foreign direct investment is -0.81 which shows that a 1 % increase in foreign direct investment leads to a decrease the economic growth by -0.81 %. This result is similar to the finding of Saqib, Masnoon, and Rafique (2013), The shows that in developing countries like Pakistan, the foreign investors/companies or countries interfere in economic policies, adversely affecting the domestic investment (Kamran, Qaisar, Sultana, Nawaz, & Ahmad, 2020). The government expenditure shows a negative impact on GDP and is statistically significant. The coefficient value of government expenditure is -0.71. These findings are similar to the study by Mehmood and Sadiq (2010). When government spends more of its income on unproductive purposes, it will badly affect the GDP (Gillani, Shafiq, & Ahmad, 2019). Generally, the rise in public expenditure results in a fiscal deficit (Fazal, Bhatti, & Ahmad, 2019).

Table 6 shows that in the estimate equation, the value of R square lies (0 to 1) or near 1 then this clarified the model is ideal. If estimations of R Squared are not lie in that range, then it implies an issue exists in the model. In the above table, R Square is 0.86, which means that 86% variation in GDP (economic growth) is due to variation in all dependent variables. The estimation of Durbin Watson is 1.86, which means that no autocorrelation exists between variables.

## 4.4 ARDL ECM result

The error correction representation of the ARDL technique is:

$$\Delta \mathrm{RGDP}_t = \beta_0 + \sum_{j=1}^{k} \partial_1 \, j\Delta \mathrm{GDP}_{t-j} + \sum_{j=1}^{k} \beta_1 \, j\Delta \mathrm{UE}_{t-j} + \sum_{j=1}^{k} \beta_2 \, j\Delta \mathrm{PGR}_{t-j} + \sum_{j=1}^{k} \beta_3 \, j\Delta \mathrm{INF}_{t-j} + \sum_{j=1}^{k} \beta_4 \, j\Delta \mathrm{FDI}_{t-j} + \sum_{j=1}^{k} \beta_5 \, j\Delta \mathrm{GEXP}_{t-j} + \pi \mathrm{ECM}_{t-1} + \mu_t \quad (3)$$

$$\mathrm{RGDP}_t = \beta_0 + \sum_{j=1}^{k} \partial_1 \, j \, \mathrm{GDP}_{t-j} + \sum_{j=1}^{k} \beta_1 \, j\mathrm{UE}_{t-j} + \sum_{j=1}^{k} \beta_2 \, j \, \mathrm{PGR}_{t-j} + \sum_{j=1}^{k} \beta_3 \, j \, \mathrm{INF}_{t-j} + \sum_{j=1}^{k} \beta_4 \, j\mathrm{FDI}_{t-j} + \sum_{j=1}^{k} \beta_5 \, j \, \mathrm{GEXP}_{t-j} + \epsilon_t \quad (4)$$

Table 7 shows the short-run relation between variables. In the short-run, Error correction the value must be negative and statistically significant. In the above rough statement, the ECM value is negative 1.5477 and also statistically significant 0 .000076.

**Table 7**
***ARDL ECM Results***

| Dependent variable: RGDP | | |
|---|---|---|
| **Independent Variables** | **Coefficients** | **t-values** |
| UE | 0.089 | 0.7241 (0.4774) |
| INF | -0.0605 | -2.3298 (0.030) |
| FDI | 0.5062 | 1.1482 (0.2644) |
| PGR | 42.561 | 2.3052 (0.032) |
| GEXP | -0.364 | -1.8268 (0.082) |
| ECM (-1) | -1.5477 | -12.732(0.0000) |

Source: Author's calculation; Eviews10

Table 8 present the result of the diagnostic test. These tests tell us that this model is stable; has no autocorrelation normality of the model and heteroscedasticity problem. These results show that our model is stable.

**Table 8**
***Diagnostic Test***

| **Breusch-Godfrey Serial Correlation LM Test** | | | |
|---|---|---|---|
| F-statistic | 0.236101 | Prob. F(2,18) | 0.7921 |
| **Heteroskedasticity Test: Breusch-Pagan-Godfrey** | | | |
| F-statistic | 0.927921 | Prob. F(21,20) | 0.5678 |

## 5. Conclusion and Recommendations

In this study, we examine the impact of unemployment on the GDP growth rate. For this purpose, time-series data has been collected from the WDI database, during the period 1974-2019. The GDP growth rate has been employed as a dependent variable in the present study. Population growth rate (PGR), inflation rate (INF), foreign direct investment (FDI), government expenditure (GEXP) and rate of unemployment (UE) are used as self-sustaining variables.

In long run, the unemployment rate shows a negative impact on economic growth (GDP) and is statistically significant. When unemployment increases in the economy, the real GDP and per capita income decrease, resulting in low standards of living. Simultaneously, it stimulates, depression, misery and crimes in the economy. The inflation rate shows a negative impact on GDP and is statistically significant. When inflation increases the purchasing power of the masses will be reduced. The population growth rate has a positive and statistically significant impact on economic growth.

In short-run estimation, the ECM value is negative -1.5477 and statistically significant. In short-run estimation, foreign direct investment and population growth have a positive relationship with the GDP growth rate. Inflation shows a negative relationship in the present study. In the short run, the values are varying with time. The low economic performance of macroeconomic variables is responsible for the high rate of inflation and unemployment in Pakistan. The results from the study suggest that government should undergo various development expenditures to generate employment opportunities for the people living in the rural and areas of Pakistan. Government should design adequate Monetary and Fiscal policies to combat inflationary pressure in the economy.

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