Journal of Research in Social Development and Sustainability
ISSN (Print): 2959-1325, ISSN (Online): 2959-1333
Volume 1, Issue 2, Page 1-12, December 31, 2022

FACTORS RESPONSIBLE FOR UNEMPLOYMENT IN PAKISTAN: A TIME SERIES EVIDENCE

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Abstract

The research intended to determine the factors responsible for increasing unemployment in Pakistan. The purpose has been accomplished by examining the yearly statistics of Pakistan over the time from 1970-2019. The explanatory variables used in the study are Foreign direct investment (FDI), Population growth, GDP growth, Inflation, and External debt. The stationarity of data has been inspected by employing Augmented Dicker-Fuller Test. Results of the unit root test indicate that some variables are stationary at a level whereas others are stationary at first difference. In the presence of diverse stationarity levels, the ARDL technique is the most appropriate approach in examining the long- and short-term association among variables. The empirical result indicates that FDI, Inflation, and Population Growth have an inverse relation with unemployment. The Phillip curve approach is employed to understand the relationship between inflation and unemployment. While GDP growth is shown to be positively linked with unemployment, which proves that in the case of Pakistan, Okun's law does not hold any place.

Keywords: Auto Regressive Distributed Lag, GDP growth, FDI, Inflation

Introduction

Showing the inverse out-turn of real GDP growth on employment the "Okun's Law" proclaims that for every 1 percent rise in the rate of unemployment, a country's GDP will be approximately 2 percent lower than its potential GDP. In other words, 2% upsurge in production out-turn a 1% decline in the unemployment ratio. Okun's law is employed by forecasters as a device for short-term trend investigation amongst unemployment and real GDP, instead of long run analysis.

The Phillips curve approach revealed that a negative relationship exists amongst the ratio of unemployment and the consistent inflation ratios in the short-run, presenting a trade-off that might not be detected in the long run. However, the concept was empirically disproved with the occurrence of stagflation in the 1970s, when there were high levels of both unemployment and inflation.

This research has been directed to analyze the source of increasing unemployment rate in Pakistan and to check whether rate of inflation and GDP growth

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has any relationship with unemployment and to what extent the relationship persists, either long-run or short-run. The study also determines whether the unemployment in Pakistan follow the Okun's law and Phillip's theory or not.

Concepts of Unemployment: Unemployment is a state in which labors are eager and are capable to do the job at the existing pay and however they cannot get a job. Types of unemployment can be defined as follows.

A person is said to be involuntarily unemployed when they decide not to work for the pay rate that is presently being offered to seek better pay and stable living arrangements. On the other hand, involuntary unemployment describes the dismissal of people who are willing to work for a livable wage but are unable to find employment. Fractional unemployment is the potential of layoffs even in a thriving economy. It is the kind of duplication that occurs when a person switches jobs and locations.

Unemployment that is related to the economic cycle is known as cyclical unemployment. It might get worse during a depression and get better when the economy begins to recover. While seasonal unemployment refers to the redundant status of people who labor for a specific period of the year but are unemployed the rest of the time. The amount of output and the redundancy rate vary seasonally in industries like farming.

Technological unemployment is the consequence of employing technologies as a replacement of labor force. Technological progress in countries results in the occurrence of this type of unemployment. Structural unemployment can be explained as a type of involuntary unemployment occur due to a mismatch between the services that labors in the economy can offer, and the skills required of labors by employers. Hidden unemployment: also known as disguise unemployment, is a scenario in which although people are technically in employment, but their productivity is negligible. It is a term used to describe persons, who are not counted in official unemployment statistics.

Starting with introduction, the review of literature is followed in the section 2. The research objective is stated in 3rd section, while the methodology is discussed in the 4th section. The empirical framework and estimation outcomes are presented in 5th section and 6th section respectively. The final section concludes the study with suggestions for policy implication and direction for further research.

Research Objectives

This research has been directed to analyze the origin of increasing unemployment in Pakistan and to check whether rate of inflation and GDP growth has any relationship with unemployment and to what extent the relationship persists, either long-run or short-run. The study also determines whether the unemployment in Pakistan follow the Okun's law and Phillip's theory or not.

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Review of Literature

Unemployment is one of the major financial and social issues that agricultural nations face, including Pakistan. This writing survey gives an outline of the variables liable for unemployment in Pakistan.

As per Khan and Ali (2018), the main considerations that add to unemployment in Pakistan incorporate an absence of financial development, low venture, and unfortunate administration. The creators utilized time-series information to research the connection among unemployment and monetary development, venture, and administration. The outcomes showed that an absence of financial development, low speculation, and unfortunate administration were critical determinants of unemployment in Pakistan.

Abbas et al. (2017) analyzed the connection among training and unemployment in Pakistan. The creators found that a more significant level of training diminished the probability of unemployment in the country. Notwithstanding, the nature of training and its importance to the gig market likewise assumed a basic part in deciding the business possibilities of people.

Khan and Amin (2018) explored the effect of globalization on unemployment in Pakistan. The creators observed that the effect of globalization on business was blended. While globalization decidedly affected work in certain areas, it likewise adversely affected others. The review proposed that policymakers ought to painstakingly consider the likely effect of globalization on various areas of the economy to limit the adverse result of globalization on work.

Siddiqui and Ahmed (2017) researched, the effect of the energy emergency on unemployment in Pakistan. The investigation discovered that the energy emergency adversely affected work in the country. The creators recommended that tending to the energy emergency could assist with diminishing unemployment in Pakistan.

Baig et al. (2020), examined the connection between population development and unemployment in Pakistan. The investigation discovered that population development emphatically affected unemployment, recommending that population control arrangements could assist with decreasing unemployment in the country.

Ahmed and Naeem (2021) analyzed the effect of the casual economy on unemployment in Pakistan. The investigation discovered that the casual area assumed a basic part in giving work open doors in the country. Notwithstanding, the concentrate likewise featured the difficulties of casual business, like low wages, unfortunate working circumstances, and restricted admittance to social security.

Farooq and Shahzad (2019) explored the effect of exchange transparency on unemployment Pakistan. The investigation discovered that exchange receptiveness decidedly affected business, proposing that approaches advancing worldwide exchange could assist with decreasing unemployment the country.

Ali et al. (2022) analyzed the effect of digitalization on work in Pakistan. The investigation discovered that digitalization decidedly affected business, especially in the administrations area. The creators recommended that arrangements advancing digitalization could assist with setting out new business open doors in Pakistan.

Pakistan is facing unemployment problem since beginning and in past few years this problem has been further escalated, which directly or indirectly creates many economic and social problems. A lot of literature is available that highlights various causes of increasing rate of unemployment. Rafiq. M and et.al (2010) using the data over the period of ten years from 1998-2008, examined the issues accountable for unemployment in Pakistan. The findings of SELRM estimation suggests that population growth increases unemployment. While, FDI has an adverse influence on unemployment. The outcome also confirms a trade-off amongst unemployment and inflation in economy of Pakistan.

Berentsen (2011) designed explicit micro foundation model of money and unemployment and describe a positive long-run relationship among the variables. The research also modeled labor and goods market theory using search and bargaining approach, of which the result is tractable simply by shifting curves.

Raja (2011) analyzing the impact of worldwide financial calamity on unemployment particularly on long term unemployment discover that the Great Recession effect diversely on different countries. The study uses panel data of thirty OECD countries over the period of three years from 2007 2010. It has been found that the countries facing substantial economic crisis and breakdown of the housing market bubble had huge increase in long term unemployment.

Maqbool (2013) empirically proved using the ARDL approach, that in both short and long-run, GDP, inflation, FDI, and population are substantial elements of redundancy in Pakistan. the research is established over the data of period 1976-2012.

Tahir (2014) in attempt to investigate the association amongst unemployment and various macroeconomic variables, use yearly data from 1990-2010 of Pakistan. Forward selection technique is employed for model selection. The study confirms that labor force and unemployment are positively related with each other whereas, the relationship of unemployment is negative with inflation and FDI.

Kamran (2014) with the objective of finding the determinants of unemployment in Pakistan, analyzed the data of the period of 1981-2010. The regression model included population growth, FDI, GDP and literacy rate as explanatory variables. The democracy regime has also been taken as dummy variable. The research concluded that population growth and real GDP has an adverse effect on unemployment while education and foreign direct investment effects positively.

Ozcelebi (2017) in order to determine the macroeconomic factors that affects the changing aspects of unemployment, extracted the data of G10 countries over the period of 1995 to 2014. The study in line with the Phillip’s theory evaluated the significance of

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expansionary macroeconomic policies in maintaining economic and financial stability and reducing unemployment specifically in long run.

Soylu (2018) indicating economic growth and unemployment as the most important variable in modeling economic policies, examined their relationship in light of Okun's law. A panel frame work consists of eight Eastern European countries, and period of 22 years from 1992 to 2014 is designed to perform panel stationarity test, panel OLS and Johansen co-integration tests. The empirical evidence confirms that an increase in Gross Domestic Product by 1percent will decrease the rate of unemployment by 0.08 percent.

Khan (2018) using population growth, government expenditure, inflation, and FDI as explanatory variables, employed simple linear regression technique to determine the features responsible for unemployment in Pakistan over the time duration between 1981-2016. The research concluded that however, the increase in rate of population growth stimulates unemployment, by increasing inflation, government expending, and foreign direct investment the ratio of unemployment can be decreased.

Different examinations have investigated the reasons for joblessness, however there gives off an impression of being a hole in research since many have not considered significant macroeconomic variables that might influence joblessness rates. One such concentrate by Kalim in 2003 just seen two elements, in particular populace and Gross domestic product, as reasons for joblessness.

To give a more far-reaching examination, this study plans to look at different components like FDI, outside obligation, populace development, expansion, and Gross domestic product development, which might add to joblessness rates in Pakistan. A broad data set was utilized in the review to guarantee precision and legitimacy of the outcomes.

The investigation discovered that populace development, expansion, and outer obligation are huge determinants of joblessness in Pakistan. Higher populace development can bring about a bigger workforce, which may not be consumed by the economy, prompting higher joblessness rates. Expansion, then again, can decrease the buying force of people, in this manner prompting diminished interest for labor and products, which can bring about a decrease in financial action and expansion in joblessness.

Besides, outside obligation can restrict the public authority's capacity to put resources into work creation drives and may prompt lower financial development and higher joblessness. Nonetheless, FDI and Gross domestic product development were not found to altogether affect joblessness rates in Pakistan.

Data and Methodology

Data of dependent variable (Unemployment) as well as all the explanatory variable including GDP growth, Population growth, Foreign Direct Investment, Inflation, and External debt over the period of 1970-2019, has been taken from World Development Indicator (WDI) official website.

Augmented Dicker Fuller test has been employed to check the stationarity of series. For showing the cointegration among variables, out of various techniques like the maximum likelihood and residual based method, this research used ARDL technique for cointegration, that was invented by Pesaran and Shin. ARDL test has various benefits over Johansen as this technique does not need the categorization of variables into binary numbers I (0) or I (1), while the other techniques necessitate that the variables have the same direction of integration.

To check the model stability CUSUM and CUSUMSQ test has been applied. Breusch-Godfrey LM Test is used to check the presence of Heteroscedasticity, while Jarque-Bera test has been employed to confirm the normality of series.

Empirical Framework

A contemporary model is designed to inspect the discrepancies in the unemployment ratios in Pakistan. There are numerous reasons that effect the unemployment rate. The model in its functional form is as follows:

UE = f (GDPGR, LPG, FDI, INFL, EDEBT)

Where, UE is the percentage of unemployed population out of total population, GDPGR is the gross domestic product (annual %), PG is population growth (annual %), FDI is the Foreign Direct Investment net inflows (% GDP), INFL is the rate of inflation, EDEBT is the External Debt as a percentage of GNI.

$$UE_t = \beta_0 + \beta_1 GDPGR_t + \beta_2 PG_t + \beta_3 FDI_t + \beta_4 INFL_t + \beta_5 EDEBT_t + \mu_{it}$$

With regards to measurable examination, β_0, β_1-β_5, and μt are terms used to portray a numerical model that is being assessed. In this specific model, there are a few boundaries that should be assessed, in particular β1-β5, alongside a consistent term β0 and a blunder term μt.

The model plans to inspect the connection among unemployment and a few financial factors like expansion, outer obligation, unfamiliar direct venture, Gross domestic product development, and population. The coefficients β_1, β_3, β_4, and β_5 are supposed to have a negative relationship with unemployment, implying that an expansion in these factors will probably bring about a diminishing in unemployment. Then again, population is supposed to have a positive relationship with unemployment, implying that an expansion in population will probably bring about an expansion in unemployment, and thus $\beta_2 > 0$.

The invalid speculation of no cointegration in this model accepts that every one of the coefficients are zero, while the elective speculation expresses that something like one of the coefficients isn't equivalent to nothing. The objective is to decide if there is a huge connection between the factors and unemployment.

ISSN (Print): 2959-1325, ISSN (Online): 2959-1333
Volume 1, Issue 2, Page 1-12, December 31, 2022

Estimation Result

Table 1 shows the result of testing the request for combination of a few factors. This implies checking whether the factors are steady after some time or whether they change eccentrically. To lead the test, the scientists utilized the ADF test, which is a factual strategy that assists with deciding if a series is fixed or not.

Stationarity is significant in factual examination since it considers more solid ends to be drawn. A non-fixed series can prompt fake outcomes and make it hard to decide causal connections between factors. Hence, by testing the request for combination, specialists can more readily comprehend the attributes of the factors they are contemplating.

The result of the tests shows that the Unemployment, FDI, and Outside Obligation series are not fixed at their underlying level, yet become fixed when the main distinctions are determined. Then again, Expansion, Gross domestic product development, and Population development are as of now fixed at their underlying level. This data is significant for scientists who need to involve these factors in their examination, as they presently know whether they need to change the information to accomplish dependable outcomes.

Table 01: Unit Root Analysis

	I (0) CONSTANT	I (0) C/T	I (1) CONSTANT	I (1) C/T
UE	-2.329 (0.167)	-2.299 (0.427)	-7.174 (0.000)	-7.096 (0.000)
INFL	-3.282 (0.021)	-3.468 (0.055)	-6.716 (0.000)	-6.669 (0.000)
FDI	-2.904 (0.052)	-3.289 (0.081)	-4.786 (0.000)	-4.751 (0.002)
GDPGR	-6.162 (0.000)	-6.093 (0.000)	-11.603 (0.000)	-11.414 (0.000)
PG	-1.688 (0.431)	-4.689 (0.002)	-4.932 (0.000)	-6.215 (0.000)
EDEBT	-0.952 (0.763)	-1.608 (0.775)	-5.733 (0.000)	-5.693 (0.000)

Source: Author’s Estimation

In Table 2, result of Bond Test is showing the presence of cointegration among variables, as the calculated value of F-statistic = 4.114940 is more than the upper bond critical value at both 5% and 10% significance level. Therefore, null hypothesis of no long run association is rejected

Table 02: ARDL Bounds Test		
Significance	I (0)	I (1)
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68
Test Statistics	Value	k
F- statistic	4.114940	5

Source: Author's Estimation

The result of long-run coefficients under ARDL procedure are introduced in Table 5. Results uncover that Gross domestic product development isn't genuinely significant in any case, population development, expansion, outside obligation and unfamiliar direct speculation affect unemployment. Conferring to theory and as per expectation, Inflation and FDI are likely to have contrary effect on unemployment. Both short-run and long run coefficient of these variables goes with the theory. However, Population is anticipated to have an optimistic relation with unemployment but in case of Pakistan it is showing an inverse relation.

Despite the short-run coefficient shows an inverse impact of external debt on unemployment, the relation become positive in long-run. This means that external debt is not reducing unemployment in long-run and with every 1% increase in external debt unemployment increases by 0.214%. the result is logical as in Pakistan loans taken by the government from World Bank and IMF are not utilized properly, especially these loans are not used for development projects. The government of Pakistan has to allocate a huge amount in the budget each year for paying debt servicing. Therefore, unemployment increases due to fewer development projects and low production capacity.

Table 03: Long Run Coefficient of the ARDL Model				
Variable	Coefficient	Standard Error	T- Statistic	Probability
FDI	-2.365	1.053	-2.247	0.032
EDEBT	0.214	0.059	3.616	0.001
INFL	-0.247	0.078	-3.176	0.003
PG	-3.365	1.467	-2.294	0.029
GDPGR	0.079	0.257	0.306	0.762
C	7.833	4.203	1.864	0.072

Source: Author's Estimation

ISSN (Print): 2959-1325, ISSN (Online): 2959-1333
Volume 1, Issue 2, Page 1-12, December 31, 2022

Table 04: Error Correction Result of the Selected ARDL Model				
Variable	Coefficient	Standard Error	T- Statistic	Probability
FDI	-1.643	0.567	-2.899	0.007
EDEBT (-2)	-0.120	0.061	-1.971	0.058
INFL	-0.026	0.055	-0.474	0.639
PG	-1.649	0.686	-2.404	0.023
GDPGR	0.039	0.128	0.303	0.764
Co-int Eq (-1)	-0.490	0.130	-3.760	0.001
R-squared	Adj R-squared	DW statistics	F-statistics	Probability F-stat
0.575	0.377	2.082	2.901	0.007

Source: Author's Estimation

Error correction depiction of above long-run connection is presented in Table 4 which shows the short-run dynamics of association amongst macro-economic factors and unemployment. Result of ECM demonstrates that the instability arising in the short-run will be fixed in long-run. The value of ECM (–1) is statistically inverse and substantial. The coefficient of ECM term shows that the speed of adjustment is 49%. The result of R^2 is 0.575 that demonstrates that 58% variation in the response variable is due to the explanatory variables. The value of F statistic is also substantial, which confirms that the model is good fit.

Figures 1 and 2 are screening the cumulative sum of recursive residuals the cumulative sum of squares of recursive residuals respectively. Both CUSUM and CUSUMSQ are within critical bounds of 5%, so it exposes that the model is stable. Figures 1

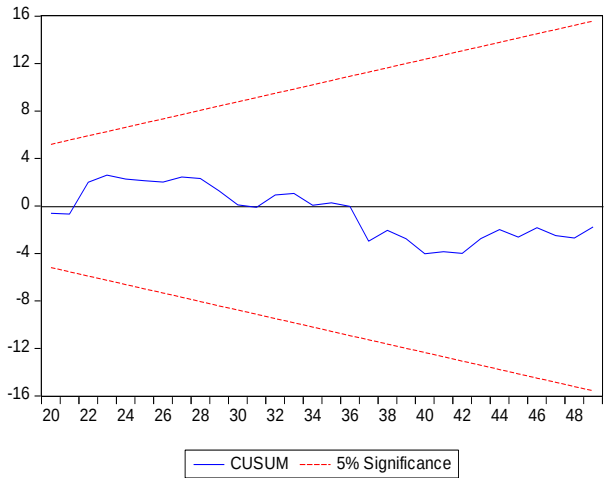
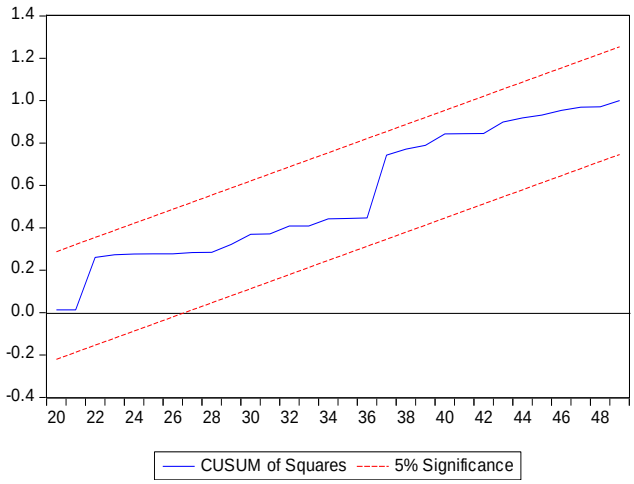


Figure 2



Source: Author's Estimation

Table 05: Serial Correlation LM Test			
F-statistics	Probability F	Obs R^2	Probability Chi-Square
0.918	0.469	5.567	0.234

Figure 3 is showing that residual series of the model is normally distributed, as probability of Jarque-Bera test is 0.578. In table 5, the result of Serial Correlation LM Test shows that there is no issue of heteroscedasticity exist in the model.

Conclusion and Policy Implication

The aim of this examination is to explore the explanations behind unemployment in Pakistan. The review analyzes the effect of different factors like population development, unfamiliar direct venture (FDI), total national output (Gross domestic product) development, expansion, outer obligation, and unemployment. The review plans to decide the power of these factors in impacting joblessness in Pakistan between 1970-2019. The review utilizes the autoregressive circulated slack (ARDL) way to deal with gauge the long-run and short-run connections between the reliant and autonomous factors.

The results of the observational examination demonstrate that FDI, expansion, and populace development have an opposite relationship with joblessness. The connection among expansion and unemployment in Pakistan follows the Phillips bend approach, which has been recently checked by Qazi (2010) and Khaliq (2012). In any case, the review shows that Gross domestic product development is emphatically connected with joblessness, demonstrating that Okun's regulation doesn't hold in Pakistan. Albeit outer obligation impacts joblessness, the relationship becomes positive over the long haul.

This study directs the policy makers to improve local environmental condition to attract foreign investments. Improvement in law-and-order condition is needed to increase

ISSN (Print): 2959-1325, ISSN (Online): 2959-1333
Volume 1, Issue 2, Page 1-12, December 31, 2022

both domestic and foreign investment and to reduce unemployment. The use of debt or loans should be directed towards development projects so as to increase production and reduce unemployment. Steps should be taken to control population growth up to the beneficial level. Government should work on the skill development, particularly the technical skills of the existing youth population. Quality of exports goods should be improved to increase exports. Government should provide subsidies to the exporters. Imports should also be regulated at the same time, in order to protect local industries. Variables such as net national saving, domestic investment, and debt service which are missing in this research, can be used to extend the study further. A comparative analysis of factors of unemployment in different developing countries would be a very useful study for reducing unemployment from developing countries.

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