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ESTIMATING THE DETERMINANTS OF UNEMPLOYMENT IN PAKISTAN: EVIDENCE FROM PANEL DATA ANALYSIS

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Abstract
The study estimates unemployment and gender discrimination at the national level and provincial levels with rural/urban breakup in Pakistan. The study uses the ten data sets of Pakistan Social and Living Standard Measurement surveys from 1998-99 to 2018-19. The results show that unemployment remained fluctuating over time. Unemployment peaked in 2001–02 and 2005–06 and was at its lowest level in 2004-05. Regional-level analysis depicts that urban labour markets consistently exhibited higher unemployment rates than rural labour markets. Further, the results depict that gender discrimination also fluctuated over time. It was lowest in 2004-05 and highest in 2001-02 and 207-08. Further, the regional level analysis depicts that it was higher in rural areas as compared to urban counterparts. After this, the study estimates the role of gender discrimination in affecting unemployment. For this purpose, the study applies panel data techniques. Econometric results indicate that unemployment increases with gender discrimination, household size, and educational attainment, while economic growth contributes to its reduction. The policy implications are that Policies should aim at reducing gender-based disparities, household size, and creating job opportunities, and promoting sustained broad-based economic growth in Pakistan.

1.INTRODUCTION
One of the biggest problems in emerging nations like Pakistan is unemployment. It is one of the key markers of the health of an economy. Poor physical or mental health might arise from losing one's job (Dooley, Fielding, & Levi, 1996). Increased mortality or morbidity is correlated with higher unemployment (Stern, 1983). Financial difficulties, homelessness, criminal activity, frustration, and a host of other issues like conflict and family strife, social alienation, and a decline in confidence and self-worth are all consequences of unemployment. These all play a part in the disintegration of a stable society (Maqbool, Mahmood, Sattar, & Bhalli, 2013; Aqil, Qureshi, Ahmed, & Qadeer, 2014). The literature on unemployment highlights the shortcomings of current studies even more. Numerous research has been carried out to investigate the variables influencing unemployment. It has been suggested that economic expansion plays a significant role in lowering unemployment (Okun, 1962). Trade openness was revealed to be another factor influencing unemployment (Matusz, 1996; Dutt et

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Volume 4 • Issue 4 • August 2026

al, 2009). It increases productivity, which lowers unemployment. Additionally, it encourages the creation of more jobs, which lowers unemployment. Kim (2011) discovered that trade increases the labor's marginal output, which explains why trade and unemployment have an inverse relationship. Zaman et al. (2011), Ademola & Badiru (2016), and Chowdhury and Hossain (2014) discovered an inverse correlation between inflation and unemployment. According to estimates of Shahid (2014), Riaz and Zafar (2018), and Hossain (2018), economic growth has had a significant role in lowering unemployment. Another crucial factor in determining unemployment is foreign direct investment, or FDI for short. It supports the nation's economic growth, stability, and development as well as employment opportunities (Habib & Sarwar, 2013; Rizvi & Nishat, 2009). Additionally, FDI encourages the transfer of technology, the creation of new jobs, and overall economic growth in the host country. Foreign companies' presence puts local businesses in rivalry with one another. Local companies are therefore forced to use new technologies and make better use of the resources at their disposal (Zeb, Qiang, & Sharif, 2014). Additionally, education plays a significant role in lowering unemployment (Aden, 2017; Eggert, Krieger, & Meier, 2010; Horner, Zhang, & Furlong, 2018; Lewis, 2004; Turay, Yang, Issa, & Sheriff, 2021; Venturini & Villoso, 2004. Higher education reduces the unemployment rate in comparison to people with less education (Aubyn, Garcia, & Pais, 2009). So, it can be said that many factors have been explored using the macro/time series data to find the determinants of unemployment. Unemployment is estimated from the micro data of different surveys, and there are breaks between these surveys. So, for missing years, the unemployment was interpolated. So, the results may be misleading.

Further, this study introduces Gender Discrimination as an important factor affecting unemployment that has never been used in the literature, at least in Pakistan. According to the UNDP (2014), gender equality is a fundamental human right. Employee productivity rises as a result, which eventually raises wages. It was part of the United Nations' Millennium Development Goals (MDGs) and later became the fifth Sustainable Development target (SDG) to be achieved by 2030. The Sustainable Development Summit, which took place in September 2015, saw member nations of the UN execute this target. With about 50% of the population, women make up a significant portion of our society. Gender inequality persists in developing nations despite its significance, particularly in the fields of employment and education (Malhotra et al., 2003; Richard, 2007). The gender wage gap has two primary causes: First, it results from variations in productive traits, which include varying degrees of lucrative abilities like education, experience, and so forth. These variations can be seen and are referred to as explained variables. Second, discrimination based on gender is to blame. When there is an income disparity even when productive skill levels are equal. It is commonly referred to as workplace discrimination and is caused by favorable behavior with male employees; this is characterized as the "unexplained part" (Blinder, 1973; Oaxaca, 1973). Women become less productive as a result of gender wage disparities. Esteve Volart (2004) and Alam (2011) have shown how women's lower incomes slow economic growth and lower GDP per capita. Blinder (1973), Oaxaca (1973), Ashraf and Ashraf (1993), Siddiqui et al. (1998), Nasir and Nazli (2000), Siddiqui et al. (2006), Yasin et al. (2010), Ñopo et al. (2011), and others have all acknowledged the existence of gender discrimination in the global and Pakistani labour markets. Therefore, gender discrimination was calculated using the Pakistan Social and Living Standard Measurement (henceforth PSLM) surveys for various time periods (2005–06, 2013–14, 2018–19) or for certain Pakistani districts. It has not been estimated using all of the PSLM surveys that are currently accessible. This study may be the first to estimate it using all of the PSLM surveys and to

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identify how gender discrimination affects unemployment, at least in Pakistan.

The scheme of the study

After the introduction, the second section discusses the literature review. The third section explains the data and methodology. The fourth section presents the results and discussion. The final section concludes the paper and gives policy implications.

2. Literature review

Lauer (2003) investigated the relationship between (henceforth, btw) educational attainment and unemployment risk in a French-German comparison (henceforth, btw). The risk of becoming unemployed and the chance of not finding work again were the two components of the unemployment risk. The study looked at how education affected both risk factors. Due to a higher chance of becoming unemployed and a lower risk of failing to find employment after becoming unemployed, France has a higher unemployment rate than West Germany. Poorly educated French workers have a larger chance of being unemployed than higher education graduates, but this danger is bigger in Germany than it is in France. At all educational levels, but especially for the unemployed with a low education level, the reemployment prospects of the unemployed were greater in France than in West Germany. All other things being equal, the impact of education on the two risk factors was not statistically different for each gender.

Osinubi (2005) used time series data covering 31 years, from 1970 to 2000, to investigate the relationships between growth rate, unemployment, and poverty in Nigeria. Although the analyzed model showed that there was no such direct relationship, the study used the 3SLS technique to confirm that there was a substantial relationship between unemployment and destitution.

Noor et al. (2007) investigated the connection between output and unemployment in Malaysia. The study utilized time series data from the period (1970-2004). The ARDL test was utilized in the research to determine the association btw variables over the long and short terms. The results demonstrated that output and the unemployment rate have a bad long-term connection. The findings of Granger causality demonstrated that there is a two-way causal connection btw productivity and unemployment.

Noor and Ghani (2007). examined the Okun link between yield and unemployment in Malaysia from 1970 to 2004. The findings indicated a negative link btw yield growth and unemployment. The existence of a two-path cause-and-effect relationship btw GDP and unemployment in the Malaysian economy was also confirmed.

Kreishan (2011) looked into the association btw the UN and EG in Jordan through the implication of Okun's law using the time series data from 1970 to 2008. Okun's coefficient was estimated in this study. Real output product served as the study's dependent variable, and UN served as the study's independent variable. To determine the association btw UN and EG, the study used the ADF unit root, cointegration test, and simple regression. The results discovered a negative link btw the UN and EG.

Lin and Liu (2012) looked into the association btw China's UN, EG, and inflation rate. Throughout the project, annual time series data were used (1978-2010). The study implemented the ADF test to determine the stationarity of variables. The results showed that at the first difference, all variables were stationary. The outcomes showed a long-term inverse relationship btw EG and the UN, but a positive link existed btw economic growth and inflation. Also, the findings demonstrated a short-term, positive link btw EG and underemployment. Whereas inflation has a negative association with EG. Furthermore, Granger causality results demonstrated a one-way causal link between UN and EG as well as a two-way link btw inflation and EG.

Umar and Ulla (2013) looked at the influence of EG and inflation on the UN for the case of

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Volume 4 • Issue 4 • August 2026

Pakistan using data from 2000 to 2010. The study used the UN as a dependent variable while inflation and EG were used as independent variables. The analysis discovered a negative but minor correlation between Pakistan's EG and inflation and the UN. The study discovered a slight but positive correlation btw unemployment and inflation. The study also discovered a negative correlation between Pakistan's EG and the UN.

Maqbool (2013) investigated Pakistan's dedication to unemployment. The study utilized information collected from 1977 to 2012. Population, inflation, EG, and external debt were utilized as independent variables in the study, whereas unemployment was treated as a dependent variable. The ADF test was utilized in the study to analyze the variables' stationarity. The results demonstrated that UN and EG are stable at the first difference, whereas inflation, population, and foreign debt are stationary at the level. The ARDL model was employed in the study to find long-term associations between variables. The study's results demonstrate that the economy of Pakistan's population, EG, inflation, FDI, and external debt are significant determinants of both short- and long-term UN. The findings indicate that these factors significantly and negatively influence the UN over the long and short terms.

Aqil et al. (2014) investigated the factors that contribute to Pakistan's unemployment rate. The study used data from the IMF, World Bank, and Mundi for the years 1983–2010. Unemployment served as the study's dependent variable, while GDP, inflation, FDI, and population growth rate served as its explanatory variables. The results of correlation and multiple regression demonstrated that there is an inverse association between FDI, population, and GDP with unemployment.

Abbas (2014) estimated the influence of EG on the UN rate in Pakistan. The study used data from 1990 to 2006, and the study utilized ADF and PP were employed in the research to verify the stationarity of the data. Both the UN rate and the EG were stationary at the first difference, as determined by the outcomes of the unit root and PP tests. The outcomes of the ARDL bound testing indicated that while there was no short-term association between these two variables, there was an inverse and substantial long-term association btw economic growth and the rate of unemployment.

Cheema and Atta (2014) assessed the causes of unemployment in Pakistan using data from 1973 to 2010. The OG, ER, gross fixed investment, productivity, economic uncertainty, and trade openness were the independent factors in the study, whereas unemployment was the dependent variable. The ADF test results show that variables are fixed at I(0) and I(1). The ARDL and error correction model results showed that unemployment had negative correlations with GFI and TO in both the short and long term. Conversely, there are statistically significant and positive correlations between unemployment and the output gap, productivity, and economic uncertainty.

Khaliq et al. (2014) looked at the connection rates of GDP growth and unemployment in 9 Arab countries. The research applied the use of panel data spanning 16 years, from (194-2010). The data were collected from Islamic countries' statistical, economic, and social research training centers (SRTCIC). To determine the degree to which the variables are stationary. Pooled EGLS techniques and the unit root test were employed in the investigation. In this analysis, the growth rates of the GDP, unemployment, and population were used. The results showed a negative and significant link btw economic progress and the unemployment rate. While the population growth rate has a positive and substantial influence on the unemployment rate, the mean unemployment rate will decrease by 0.16% for every 1% rise in GDP.

Shahid (2014) looked into how inflation and the UN impacted Pakistan's EG. The analysis uses time series data from the World Bank covering the years 1980 to 2010. The Phillips-Perron test and the ADF unit root test were used in the study to assess the data's stationarity. The findings showed that EG is stationary on both the level and the first

JOURNAL FOR SOCIAL SCIENCE STUDIES
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ISSN (Online): 3006-2071 | ISSN (Print): 3006-2063
Volume 4 • Issue 4 • August 2026

difference, in contrast to UN and inflation, which are stable on the first difference. To determine the long-term association btw the variables, the research implemented the Autoregressive Distributed Lag approach. The Autoregressive Distributed Lag result demonstrates that the variables have a long-term association.

Mahmood et al. (2014) examined the factors that contribute to the UN in Pakistan (2011) by using yearly data for the years 1990–2010 from secondary sources such as the International Labor Force Survey (2010–11) and publications by Ahmad and Cheema. In the study, the labor force, GDP, FDI, budget deficit, inflation, LR, and population growth rate were utilized as independent factors, whereas the UN was considered a dependent variable. Population and labor force have a favorable impact on unemployment, according to ADF and Ordinary Least Squares studies, but FDI, literacy rates, and growth rates have an adverse influence.

Zeb et al. (2014) demonstrated the impact of foreign direct investment on unemployment in Pakistan. By using time series data from the years 1995 to 2011. The study utilized Multiple regression analysis to examine the relationship btw the variables. The study's findings showed that while there was a positive correlation btw the UN and the population, there was no relationship btw corruption and unemployment. The findings also demonstrated that FDI and inflation had a significant and detrimental effect in Pakistan. According to the study, Pakistan should make a concerted effort to lower unemployment, and FDI can be a significant factor in doing so.

Oniore et al. (2015) analyzed the causes behind the UN rate in Nigeria. The study utilized time series data from the World Bank and the Nigeria Statistical Bulletin from 2013, and for the years 1981 to 2014, an error correction model and Johansen co-integration were employed. The study concluded that the expansion, GDP growth rate, receptivity, and private local speculation have a considerable beginning to affect unemployment both over the short- and long term.

Qazi et al. (2017) looked into the connection btw higher education growth and the UN in Pakistan time series data for the years 1973 to 2013. The study used the UN as a dependent variable. While GDP, rising prices, terrorism, and the advancement of higher education were employed as independent variables in the study. The study used a unit root test to check the stationarity of data. All the variables, according to the outcomes of ADF and PP, were fixed at the first difference. The outputs of Johansson cointegration demonstrated that while GDP growth and higher education development have negative short-term and long-term consequences on unemployment, inflation, and terrorism have positive substantial effects in both short-term- and long-term effects on unemployment.

Gabrisch et al. (2017) investigated the link between GDP and unemployment in the context of Okun's law in eight Eastern European nations by using panel data from 1992 to 2014. Panel unit root and POLS tests were utilized in this study. The results demonstrated that UN and EG are stationary at level 1 and that EG seems to have a positive influence on unemployment. If economic growth increases by 1%, the rate of unemployment will fall by 0.08%.

Soylu et al. (2017) investigated the association btw EG and the UN in the context of Okun's law in eight Eastern European countries. The study utilized panel data from 1992 to 2014. The study used unemployment and economic growth as variables. To explore the association between variables, the study used the Panel Unit Root, Pooled Panel Ordinary Least Squares method, and Panel Johansen Co-integration tests in this study. The study's conclusions indicated that both GDP and the rate of unemployment were initially stagnant. The findings also demonstrated that the rate of unemployment and GDP growth had a negative long-term cointegration. POLS method and panel Johansen cointegration test outcomes show that the unemployment level declines as GDP increases.

JOURNAL FOR SOCIAL SCIENCE STUDIES
An International Peer-Reviewed Open Access Journal
ISSN (Online): 3006-2071 | ISSN (Print): 3006-2063
Volume 4 • Issue 4 • August 2026

Folawewo and Adeboje (2017) utilized annual data for the years 1991 to 2014 to investigate the connection between the macroeconomic aggregate and the rate of unemployment in the West African economy. As logical factors, the study employed the growth of the gross domestic product, labor productivity, FDI, inflation, external debt, population, and unemployment. The results of the fixed-effect model and panel completely modified Ordinary least squares showed that an inverse association exists among GDP growth, foreign debt, FDI, and the rate of unemployment, whereas there is a positive link btw inflation and UN. While the results of the REM show that labor productivity has a favorable impact on unemployment, the outcomes of the FMOLS model demonstrated that the impact of labor productivity and unemployment is mixed and unstable. Labor productivity has a detrimental effect on unemployment.

Makaringe and Khobai (2018) examined the influence of the UN on EG in South Africa. The study utilized data from the period 1994Q-2016Q. The study collected data from the World Bank database and the economic data repository of the Federal Reserve. To check the stationarity of the study's variables, researchers employed the ADF stationarity test and the Phillips-Perron tests. The results showed that the study's variables did not become stationary at the level but did so at the first difference. To determine the long-run and short-run relationships between variables, the study used the ARDL approach. The test's findings indicated a negative short- and long-term connection between the study's variables. That inverse link exists btw EG and the rate of UN.

In Nigeria, the relationship between unemployment and growth in the economy was examined by Seth et al. (2018). The study utilized annual secondary data sources from 1986 to 2015 to verify the association btw the variables; the study used the ARDL, a Parsimonious error correction model. The results demonstrated that there is no long-term correlation btw the UN and EG. The research also demonstrated that, in the short term, there is a favorable association btw UN and EG. Furthermore, the ECM results demonstrated that, in the near run, a 1% increase in the rate of unemployment results in an increase in economic growth of 20.6%.

Ezzat (2019) used panel data from the years 1991 to 2017 that was compiled from the World Bank and International Labor Organization to examine the impact of foreign direct investment on unemployment in eight Arab nations. The findings of the research indicated the positive effect of FDI on Jordan's declining unemployment rate, Morocco, and Tunisia. The outcomes of the study indicated that FDI increases unemployment in Egypt.

Mazher et al. (2020) utilized time series data from the years 1972–2014 and looked into how FDI and remittances affected the rate of unemployment in Pakistan. The study used unemployment as the dependent variable, and FDI and remittances were used as independent variables in this study. The ARDL model results showed that, while these findings were minor in the short term, remittances and FDI play very critical roles in the decrease of unemployment in Pakistan over the long term. According to the report, the government should take the actions necessary to boost remittances and FDI, both of which will lower unemployment in Pakistan.

Khalid et al. (2021) explored the effects of growth rate, inflation, and exchange rate on unemployment in South Africa by utilizing the time series data for the years 1980 to 2018. The study used unemployment as the dependent variable and EG, inflation, and exchange rate as independent variables for the study. The study used the Johansson co-integration method and discovered a significant inverse link btw the exchange rate and the rate of unemployment; nevertheless, a considerable positive correlation between unemployment and EG over the short term and long term.

3. DATA and Methodology

3.1. Data

JOURNAL FOR SOCIAL SCIENCE STUDIES
An International Peer-Reviewed Open Access Journal
ISSN (Online): 3006-2071 | ISSN (Print): 3006-2063
Volume 4 • Issue 4 • August 2026

The study uses all of the ten data sets (1998/99, 2001/02, 2004/05, 2005/06, 2007/08, 2010/11, 2011/12, 2013/14, 2015/16, 2018/19) of the available Pakistan Social and Living Standard Measurement (henceforth PSLM) surveys from 1998/99 to 2018/19. This study estimates all of the variables- unemployment, gender discrimination, education, and Economic growth- at the provincial level with rural/urban breakup using this data. There are four provinces (Punjab, Sindh, Khyber Pakhtunkhwa (KPK), and Baluchistan) with rural-urban regions. So, there are eight regions (Punjab Urban, Punjab Rural, Sindh Urban, Sindh Rural, KPK Urban, KPK Rural, Baluchistan Urban, and Baluchistan Rural). So, there are 8 observations for 1 year. There are 10 data sets, so this study uses 80 observations, which is sufficient data to get reliable results. So, the study explores the determinants of unemployment using this larger data set by employing panel data techniques.

3.2. METHODOLOGY

The methodology is divided into three parts: 1. Estimation of unemployment, 2. Estimation of gender discrimination, and 3. Estimation of determinants of unemployment.

3.2.1 Measurement of Unemployment

It is estimated as follows:

$$UNEMPLOYMENT = \frac{\text{Number of Unemployed}}{\text{Labour Force}} \times 100 \qquad (1)$$

Some studies have found the determinants of unemployment, but there is little evidence to find the role of gender discrimination. So, this study first estimates it using the Nopo technique (2008).

3.2.2 Measurement of Gender Discrimination

Gender discrimination can be measured by using two techniques (i.e., the Blinder-Oaxaca Decomposition procedure and Ñopo's (2008)). The former techniques have been applied in Pakistan by the following studies: L. Ali and Akhtar (2014), L. Ali and Akhtar (2016), Ashraf (1996), Ashraf and Ashraf (1993), Ashraf et al. (1993). Blinder (1973) and Oaxaca (1973) devised this decomposition method. The salary equations for male and female workers must be estimated using linear regression in order to use this strategy. There are two components or parts to the average wage differences between male and female workers: the explained part and the unexplained part. The explained part is caused by differences in the average characteristics of male and female workers, also known as differences in productive characteristics or endowment. The unexplained part is caused by differences in the average reward of similar characteristics between male and female workers. Unobservable differences in endowments and discrimination in the labor market make up the unexplained portion (Blinder, 1973; Oaxaca, 1973).

The B-O approach has significant limits and restrictions (Neumark, 2004). It is a summary measure that only explains behaviour around the mean. Focusing only on the mean may miss some useful information. According to Albrecht, Björklund, and Vroman (2003), there is evidence of a relationship between salary levels and the wage disparity that cannot be discovered by just observing behaviour around the mean. When designing policies, the portion of the distribution with the largest pay disparity can be crucial. The B-O approach's second limitation is that it requires a parametric description of the contingent employment that links income to personal attributes. Due to the disparity in the supports of the empirical distributions of the attributes of males and females, misspecification is a possible problem associated with B-O decomposition. The analysis of the pay disparity has not taken it into account. By calculating pay equations for all employed males and females rather than limiting

JOURNAL FOR SOCIAL SCIENCE STUDIES
An International Peer-Reviewed Open Access Journal
ISSN (Online): 3006-2071 | ISSN (Print): 3006-2063
Volume 4 • Issue 4 • August 2026

the comparison to those with similar features, B-O decomposition fails to detect gender variations in the supports. The B-O decomposition undoubtedly functions in light of an "out-of-support assumption" by ignoring this restriction. It is crucial to presume that the wage equations' linear estimators are suitable given the supports of the individual qualities for which they were assessed. This assumption overvalues the gap's unexplained component, which is caused by variations in labour market rewards, according to practical evidence. The B-O approach only discusses the average unexplained salary disparity; the misspecification issue is linked to gender disparities in support. As a result, it is ineffective in addressing how these unexplained gaps are distributed. This new study investigates the distribution of the unexplained salary disparities and uses matching to draw attention to the problem of the gender wage gap in the workplace. In order to overcome all of these concerns, this work employs Ñopo's (2008) decomposition technique (Agrawal & Vanneman, 2014). Below is a presentation of the Nopo technique:

The Mincerian technique can be used as a basic framework to evaluate gender wage inequalities and returns to human capital (Pastore, Sattar, & Tiongson, 2013). The Mincerian model produces better and more consistent outcomes than one might anticipate (Montenegro & Patrinos, 2014). The basic earning function utilised in this study was changed to look like this.

$$Y_i = \alpha + \beta X_i + e_i \quad (2)$$

Y_i is the male-female monthly earnings and the function of male and female characteristics in the form of different variables. General wages are considered in this analysis. bX_i is set of male-female characteristics, and e is the error term.

This breakdown will examine the variations in how people's qualities are distributed and the resulting salary disparity. Additionally, it describes the portion of the wage gap that results from discriminatory or favorable labor market behavior for comparable male and female traits.

3.2.2.1. Non-Parametric Decomposition Approach.

Ñopo (2008) developed the non-parametric technique, which does not require the estimation of any wage equation and does not rely on the validity of the out-of-support assumption. This study employs a novel breakdown of the gender wage gap that has never been applied in Pakistan.

The goal of non-parametric decomposition is to compare the pay of male and female employees who share the same observable characteristics. There are two gender groups: male (M) and female (F). The following equations provide the expected earnings numbers for men and women, respectively

$$E(Y|M) = \int_{S^M} g^M(x)\, dF^M(x) \quad (3)$$

and

$$E(Y|M) = \int_{S^F} g^F(x)\, dF^F(x) \quad (4)$$

Y stands for their pay, and X is a vector of personal traits or qualities. S^M and S^F are in favour of the distribution of male and female traits, respectively. F^M and F^F Indicate the conditional distribution functions of each person's attributes. dF^M and dF^F Are Corresponding probability measures. g^M and g^F Represent the predicted value of the salaries, which depend on the features of the male and female genders, such as;

$$E(Y|M,X) = g^M(x) \text{ and } E(Y|F,X) = g^F(x) \quad (5)$$

The wage gap Δ is defined as

$$\Delta \equiv E(Y|M) - E(Y|F) \quad (6)$$

JOURNAL FOR SOCIAL SCIENCE STUDIES
An International Peer-Reviewed Open Access Journal

ISSN (Online): 3006-2071 | ISSN (Print): 3006-2063
Volume 4 • Issue 4 • August 2026

The distribution of features is supported differently in males and females. Within the intersection, each integral is divided into two pieces ($S^M \cap S^F$) and outside of the shared support ($S^F \cap \overrightarrow{S^M}$) and ($\overrightarrow{S^F} \cap S^M$).

$$\boldsymbol{\Delta}=\left[\int_{\overrightarrow{S^F}\cap S^M} g^M(x)\mathrm{d}F^M(x) + \int_{S^M\cap S^F} g^M(x)\mathrm{d}F^M(x)\right]-\left[\int_{S^M\cap S^F} g^F(x)\mathrm{d}F^F(x) + \int_{S^F\cap\overrightarrow{S^M}} g^F(x)\mathrm{d}F^F(x)\right] \quad (7)$$

Nopo (2008) demonstrates that the above equation can be expressed as a sum of four elements:

$$\boldsymbol{\Delta}\equiv \Delta_X + \Delta_M + \Delta_F + \Delta_0 \quad (8)$$

Δ is the raw wage gap or the total wage gap, which is the sum of explained and unexplained wage differential.

$$\boldsymbol{\Delta_X}\equiv\int_{S^M\cap S^F} g^M(x)\left[\frac{dF^M}{\mu^M(S^F)} - \frac{dF^F}{\mu^F(S^M)}\right](x) \quad (9)$$

$\boldsymbol{\Delta_X}$ Displays the portion of the wage gap that can be described by a difference in males' and females' distributions of characteristics of 'on the common support'. In a linear B-O decomposition setup, this component corresponds to the part.

$$\left(X'_m - X'_f\right)B_m.$$

$$\boldsymbol{\Delta_M}\equiv\left[\int_{\overrightarrow{S^F}} g^M(x)\frac{dF^{M}(x)}{\mu^M(\overrightarrow{S^F})} - \int_{S^F} g^M(x)\frac{\mathrm{d}F^{M(x)}}{\mu^M(S^F)}\right]\mu^M(\overrightarrow{S^F}) \quad (10)$$

$\boldsymbol{\Delta_M}$ The part of the wage gap that takes into consideration the variations in characteristics between the matched and unpaired male groups is known as the component. Males are considered matched if they have characteristics that are both similar to and complementary to those of women. This component can be found by calculating the weighted difference between the expected wages of two groups of people, those who are in the common support and those who are not. This segment might disappear if all males share the same characteristics as all women, or if all men have the same characteristics as all women (there is no man out of common support). Furthermore, this component disappears if males with unmatched features who are not in common support are compensated equally to matched males in common support.

$$\boldsymbol{\Delta_F}\equiv\left[\int_{S^M} g^F(x)\frac{dF^{F}(x)}{\mu^F(\overrightarrow{S^M})} - \int_{\overrightarrow{S^M}} g^F(x)\frac{\mathrm{d}F^{F(x)}}{\mu^F(\overrightarrow{S^M})}\right]\mu^M(\overrightarrow{S^M}) \quad (11)$$

$\boldsymbol{\Delta_F}$ The part of the pay gap that takes into consideration the variations in characteristics between the matched and unmatched female groups is known as the component. The term "matched" refers to females whose characteristics are similar to and matched to those of men. This section may disappear if all the females share the same characteristics as the matched males and no female is out of common support. It may also disappear if mismatched females earn the same average pay as matched females.

$$\boldsymbol{\Delta_0}\equiv \int_{S^M\cap S^F}[g^M(x)-g^F(x)]\frac{dF^F(x)}{\mu^F(S^M)} \quad (12)$$

The Δ_0 component shows a portion of the "unexplained" wage gap, which is brought about by inequalities in unobservable causes and discrimination against any gender in the labour market. This section is comparable to the Blinder-Oaxaca decomposition phrase.

JOURNAL FOR SOCIAL SCIENCE STUDIES
An International Peer-Reviewed Open Access Journal
ISSN (Online): 3006-2071 | ISSN (Print): 3006-2063
Volume 4 • Issue 4 • August 2026

$$. X'_f(B_m - B_f). \quad (13)$$

Consequently, the raw wage gap can be decomposed into four additive parts.

$$\Delta \equiv (\Delta_X + \Delta_M + \Delta_F) + \Delta_0 \quad (14)$$

The sum of the first three components is the explained portion of the pay gap that arises from the variations in qualities. Given this, the current study will emphasize the matching decomposition approach for computing the four components indicated above. Each lady will be partnered with a single artificial male who shares the same identifying traits after being resampled without replacement. The average of all males with the same attributes (x) will be used to calculate the wage. The aforementioned procedure has two primary drawbacks: first, the matching variable is essentially discrete; second, there might be a dimensionality problem, which means that employing a large number of matching attributes reduces the likelihood of obtaining an acceptable figure of matched characteristics as well as the extent of the common supports

The non-parametric method employs the following strategy. Step 1: Select one woman from the sample; do not replace it. Step 2: Choose every male who possesses the characteristics of the first-stage selected girl. Step 3: Using each male chosen in the second step, create a synthetic male whose pay is the average of all the males. Next, pair that male with the first-selected female. Step 4: For every fresh sample of matched individuals, include the data of the synthetic man and woman. Step 5: Repeat these four stages until all of the female samples have been used (Ñopo, 2008). However, it should be stated that the aforementioned approach has two fundamental prerequisites or limitations. The first prerequisite is that matching variables ought to be discrete. The second is a perfect matching, which uses many matching features to lower the probability of finding a sufficient number of matched observations.

3.2.2.2. Matching Algorithm of Nopo (2008), Approach.

3.2.3 Finding the Determinants of Unemployment

$$U_{it} = \alpha + \beta_1 GD_{it} + \beta_2 HHS_{it} + \beta_3 EDU_{it} + \beta_4 PI_{it} + e_{it} \quad (15)$$

U =unemployment rate, which is the ratio of the number of unemployed to the labor force.GD =Gender Discrimination HHS= Household size, EDU=education=number of classes passed, PI=Per capita income

$$H_0 : \beta_1 = 0 \text{ (There is no relationship between U and GD)}$$

$$H_1 : \beta_1 < 0 \text{ (There is negative relationship between U and GD)}$$

The negative relation is expected because gender discrimination leads to reduced Labor Force Participation and Economic Constraint.

$$H_0 : \beta_2 = 0 \text{ (There is no relationship between U and HHS)}$$

$$H_1 : \beta_2 < 0 \text{ (There is negative relationship between U and HHS)}$$

A negative relationship is expected because household size is identified as a major constraint on female employment Gazdar (2005). 2. Similar effects were found in other high-fertility countries Bloom et al., 2010). 3) Large households increase labor supply while constraining female participation through domestic responsibilities. Larger households decrease per capita income, resulting in less investment in education and lower chances of getting a job.

JOURNAL FOR SOCIAL SCIENCE STUDIES
An International Peer-Reviewed Open Access Journal

ISSN (Online): 3006-2071 | ISSN (Print): 3006-2063
Volume 4 • Issue 4 • August 2026

$$H_0 : \beta_3 = 0 \text{ (There is no relationship between U and EDU)}$$

$$H_1 : \beta_3 < 0 \text{ (There is negative relationship between U and EDU)}$$

A negative relationship is expected because an inverse relationship has been found between unemployment and education (Horner et al, 2018; Turay et al., 2021).

$$H_0 : \beta_4 = 0 \text{ (There is no relationship between U and PI)}$$

$$H_1 : \beta_4 < 0 \text{ (There is negative relationship between U and PI)}$$

A negative relationship is expected because Gabrisch et al. (2017) and Oken's law showed that there was an inverse relationship between unemployment and economic growth.

4. Results and discussions

The results are presented in three parts. The first part is concerned with unemployment estimates. The second part deals with gender discrimination. Third one is about the role of gender discrimination in unemployment.

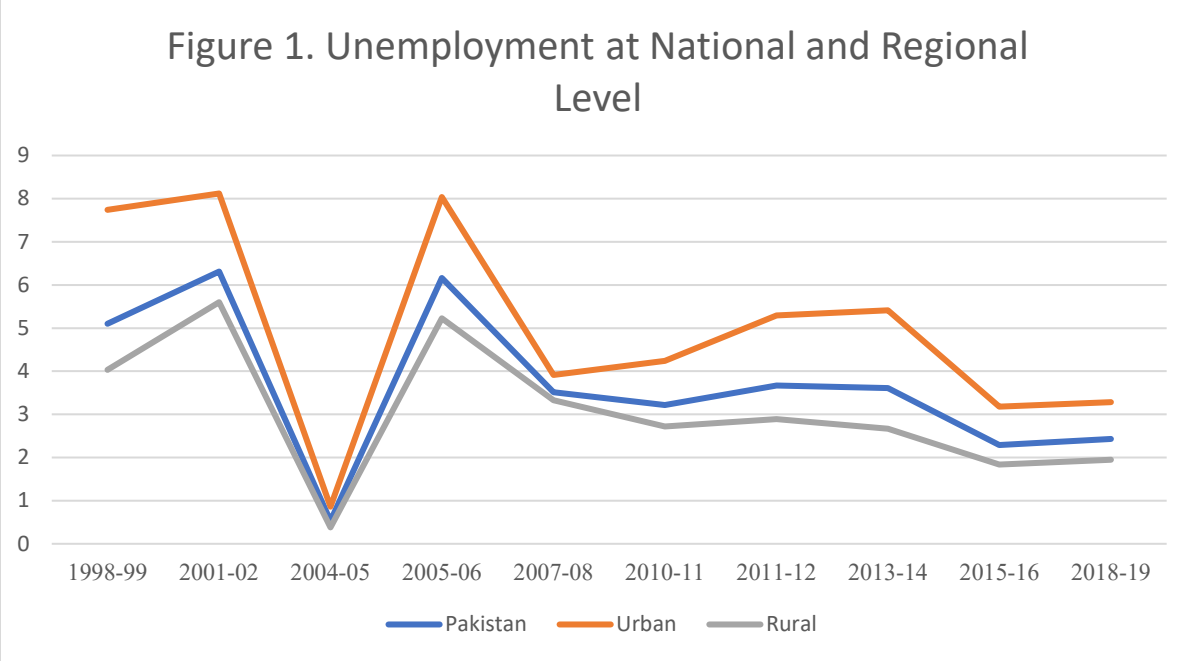
4.1. Unemployment Estimates

First of all, the results are presented at the national level and regional level in Table 4.1. and Figure-1

Table 4.1. Unemployment Rate at National and Regional Level

Year	Pakistan	Urban	Rural	**Urban–rural gap**
1998-99	5.10	7.74	4.03	3.71
2001-02	6.31	8.12	5.60	2.52
2004-05	0.53	0.86	0.38	0.48
2005-06	6.16	8.04	5.23	2.81
2007-08	3.51	3.91	3.33	0.58
2010-11	3.22	4.24	2.72	1.52
2011-12	3.67	5.29	2.89	2.40
2013-14	3.61	5.41	2.67	2.74
2015-16	2.29	3.18	1.84	1.34
2018-19	2.43	3.28	1.95	1.33

JOURNAL FOR SOCIAL SCIENCE STUDIES
An International Peer-Reviewed Open Access Journal
ISSN (Online): 3006-2071 | ISSN (Print): 3006-2063
Volume 4 • Issue 4 • August 2026



4.1.1 National trend: declining unemployment, but with instability

The unemployment rate in Pakistan shows a declining long-run trend, falling from 5.10% in 1998–99 to 2.43% in 2018–19. However, this decline is not smooth. The rate rises sharply to 6.31% in 2001–02, falls unusually to 0.53% in 2004–05, rises again to 6.16% in 2005–06, and then gradually declines after 2007–08. This suggests that unemployment in Pakistan is not driven only by economic growth, but also by survey definitions, labor-force participation behavior, informality, underemployment, migration, and sectoral absorption capacity. Pakistan's labor market is characterized by a large informal sector, low female labor-force participation, disguised unemployment in agriculture, and weak formal job creation. The World Bank (2019) has long noted that Pakistan's official unemployment often understates labor-market stress because many workers are absorbed into low-productivity informal employment rather than appearing openly unemployed. Thus, the unemployment trend is not linear in Pakistan. The average unemployment rate over the whole period is:

This suggests that Pakistan's labor market absorbs many workers, but often into low-productivity, informal, self-employed, unpaid family, or casual work rather than secure formal employment. Therefore, low unemployment should not automatically be interpreted as a sign of strong labor-market performance. The World Bank's (2019) Pakistan Jobs Diagnostic notes that informality is widespread in Pakistan and is often associated with low-quality jobs; it also emphasizes that agriculture and informal employment absorb large numbers of workers. The very low unemployment figure in 2004–05 should be interpreted cautiously. It may reflect survey measurement, labor-force participation behavior, reclassification of workers, temporary absorption into informal/agricultural employment, or methodological differences rather than a genuine disappearance of unemployment. Labor Force Surveys (2024-25) and household surveys measure unemployment only among those who are actively seeking work; discouraged workers, unpaid family workers, underemployed workers, and those outside the labor force may not appear as unemployed. PBS states that labor-force surveys are designed to measure employment,

JOURNAL FOR SOCIAL SCIENCE STUDIES
An International Peer-Reviewed Open Access Journal

ISSN (Online): 3006-2071 | ISSN (Print): 3006-2063
Volume 4 • Issue 4 • August 2026

unemployment, labor-force characteristics, informal-sector dimensions, and related labor-market indicators at the household level.

4.1.2. Unemployment at regional level

Urban unemployment is consistently higher than rural unemployment. The average urban unemployment rate is 5.01%, compared with 3.06% in rural areas. This is a major finding for our thesis because it shows that unemployment in Pakistan is primarily an urban open-unemployment problem, while rural labor-market distress is often hidden in underemployment and disguised employment. A strong theoretical explanation comes from the Todaro and Harris (1969) –Todaro migration framework. Todaro's model explains rural–urban migration in developing countries based on expected urban income rather than guaranteed employment; therefore, migrants may continue to move to cities even when urban unemployment is high. Harris and Todaro later formalized this as a two-sector model of migration, unemployment, and development. In Pakistan, this theory is highly relevant. Urban areas offer higher expected wages, public-sector jobs, private services, industrial employment, education, and better social mobility. Therefore, people continue to migrate from rural areas to cities such as Lahore, Karachi, Faisalabad, Rawalpindi, Peshawar, Quetta, Multan, and Hyderabad. But formal job creation is slower than labor-force growth, creating urban unemployment and job queues.

Rural unemployment appears lower because rural workers are more likely to be absorbed into family farming, livestock, seasonal agricultural work, informal labor, unpaid family work, small-scale self-employment, construction, local transport, and casual wage work. Therefore, rural unemployment is often statistically low but economically misleading. A rural worker may be "employed" for a few hours or days in agriculture, livestock, or family work, even if productivity and income are very low. This is why rural Pakistan may show low unemployment but still experience poverty, vulnerability, and underemployment. This distinction is important for our thesis: urban areas show open unemployment, while rural areas show hidden unemployment and underemployment. The World Bank (2020) has similarly emphasized that Pakistan's labor-market challenge is not only job quantity but also job quality, informality, and productivity.

4.1.3. Unemployment at provincial level

The study estimates unemployment at the provincial level too. Results are given in the table.

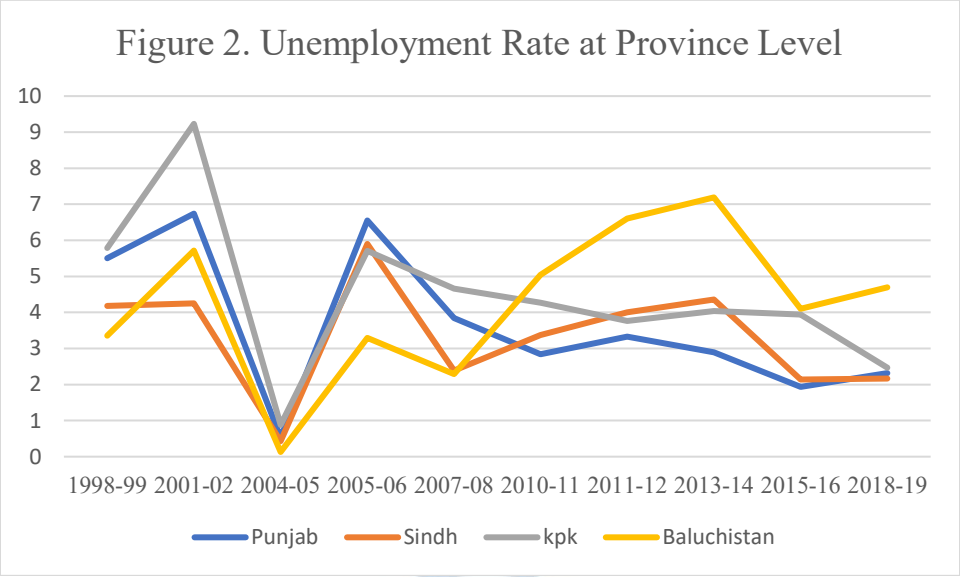
Table 4.2. Unemployment Rate Across Provinces and Provincial Regional Level Over Time

Year	Punjab			Sindh			KPK			Baluchistan		
	Overall	Urban	Rural	Overall	Urban	Rural	Overall	Urban	Rural	Overall	Urban	Rural
1998-99	5.50	8.37	4.43	4.18	6.69	2.43	5.79	8.16	5.36	3.36	7.77	2.71
2001-02	6.74	7.91	6.30	4.25	7.64	2.29	9.23	13.61	8.42	5.72	5.82	5.70
2004-05	0.53	0.89	0.38	0.43	0.73	0.19	0.88	1.69	0.71	0.13	0.04	0.16
2005-06	6.55	7.91	5.96	5.90	8.31	3.72	5.71	9.04	5.07	3.29	4.86	2.86
2007-08	3.84	3.78	3.87	2.39	3.76	1.28	4.66	7.18	4.17	2.29	1.88	2.44

JOURNAL FOR SOCIAL SCIENCE STUDIES
An International Peer-Reviewed Open Access Journal

ISSN (Online): 3006-2071 | ISSN (Print): 3006-2063
Volume 4 • Issue 4 • August 2026

2010-11	2.84	3.40	2.60	3.37	5.23	1.54	4.27	3.82	4.37	5.04	8.15	4.11
2011-12	3.33	4.39	2.88	4.00	6.46	1.88	3.76	4.57	3.59	6.60	9.49	5.69
2013-14	2.89	3.83	2.46	4.36	7.13	1.84	4.04	4.20	4.01	7.19	12.17	5.37
2015-16	1.94	2.26	1.80	2.14	3.91	0.67	3.94	4.31	3.85	4.10	7.33	2.95
2018-19	2.32	2.95	1.98	2.17	3.30	1.08	2.47	3.96	2.14	4.70	6.57	4.03



This ranking is analytically meaningful. KPK has the highest average unemployment, followed by Baluchistan. Punjab and Sindh have relatively lower averages because they possess larger labor-absorbing sectors: agriculture, manufacturing, trade, transport, services, construction, and urban informal employment. KPK's higher unemployment may be explained by a relatively narrow industrial base, high population pressure, migration, limited formal-sector employment, conflict and security shocks during parts of the study period, and heavy dependence on public employment, remittances, small trade, transport, and services. Baluchistan's unemployment reflects even deeper structural constraints: sparse population, weak industrialization, lower connectivity, security issues, limited private investment, and dependence on public-sector employment. Sindh's relatively low unemployment should not be interpreted simply as better labor-market health. Sindh contains Karachi, Pakistan's largest commercial and industrial city, which absorbs labor into trade, transport, construction, services, domestic work, and informal employment. Rural Sindh also shows very low open unemployment because agricultural and informal rural work absorbs workers, even when income is low.

4.1.4. Punjab: relatively moderate unemployment due to diversified economy

JOURNAL FOR SOCIAL SCIENCE STUDIES
An International Peer-Reviewed Open Access Journal
ISSN (Online): 3006-2071 | ISSN (Print): 3006-2063
Volume 4 • Issue 4 • August 2026

Punjab's unemployment declined from 5.50% in 1998–99 to 2.32% in 2018–19. It had high unemployment in 2001–02 and 2005–06, but after 2007–08 the rate remained comparatively moderate. Punjab benefits from several labor-absorbing features: large irrigated agriculture, agro-processing, textiles, manufacturing clusters, construction, transport, wholesale and retail trade, education services, and a relatively dense urban network. Cities such as Lahore, Faisalabad, Gujranwala, Sialkot, Rawalpindi, Multan, and Sheikhupura create diverse employment opportunities. However, Punjab still shows an urban–rural gap. Punjab urban unemployment averaged 4.57%, while Punjab rural unemployment averaged 3.27%. This means that Punjab's urban centers attract job seekers faster than formal jobs are created. Educated youth unemployment, degree–job mismatch, and preference for government or formal-sector jobs are likely reasons.

4.1.5. Sindh: low rural unemployment but high urban unemployment

Sindh's average provincial unemployment is 3.32%, the lowest among the four provinces. But the urban–rural split shows a very different picture. This is the largest urban–rural contrast in the provincial data. Sindh urban unemployment is high because Karachi, Hyderabad, Sukkur, and other urban centers attract migrants, educated youth, and job seekers from within Sindh and from other provinces. Karachi creates many jobs, but many are informal, insecure, or low-paid. Formal jobs remain limited relative to labor supply. Rural Sindh's very low unemployment does not necessarily mean prosperity. It may reflect absorption into agriculture, sharecropping, informal rural labor, unpaid family work, and seasonal employment. Therefore, Sindh rural unemployment is low, but poverty, land inequality, low productivity, and underemployment may remain serious.

4.1.6. KPK: highest average unemployment

KPK has the highest average unemployment, 4.48%, and particularly high unemployment in 2001–02, when it reached 9.23%. Urban KPK shows especially high unemployment: KPK urban unemployment reached 13.61% in 2002, the highest urban unemployment figure in our entire regional dataset. This may reflect limited industrialization, rapid labor-force growth, urban migration toward Peshawar and other towns, inflow of displaced persons and migrants, security disruptions, and weak private-sector employment. KPK's rural unemployment is also relatively high compared with Punjab and Sindh rural areas. This may reflect smaller landholdings, mountainous geography, limited agricultural productivity, seasonal migration, dependence on remittances, and fewer rural non-farm employment opportunities.

4.1.7. Baluchistan: rising unemployment after 2010

Baluchistan shows a very important trend. Its unemployment was relatively low in the early years, but rose strongly after 2010–11. Baluchistan's average unemployment is 4.24%, but its urban unemployment is the highest among all provincial regions: Urban Baluchistan reached 12.17% unemployment in 2014, which is extremely high. This reflects limited formal-sector employment, weak industrial base, low urban economic diversification, security conditions, low private investment, lower educational and skills infrastructure, distance from major markets, and dependence on government employment. Rural Baluchistan's unemployment is lower than urban Baluchistan but still higher than rural Sindh and Punjab. This may reflect fragile agriculture, water scarcity, livestock dependence, limited non-farm employment, poor road connectivity in remote districts, and exposure to drought and climate shocks.

Our PSLM-based unemployment estimates show that unemployment in Pakistan is not merely a national labor-market issue; it is a spatial, structural, demographic, and institutional

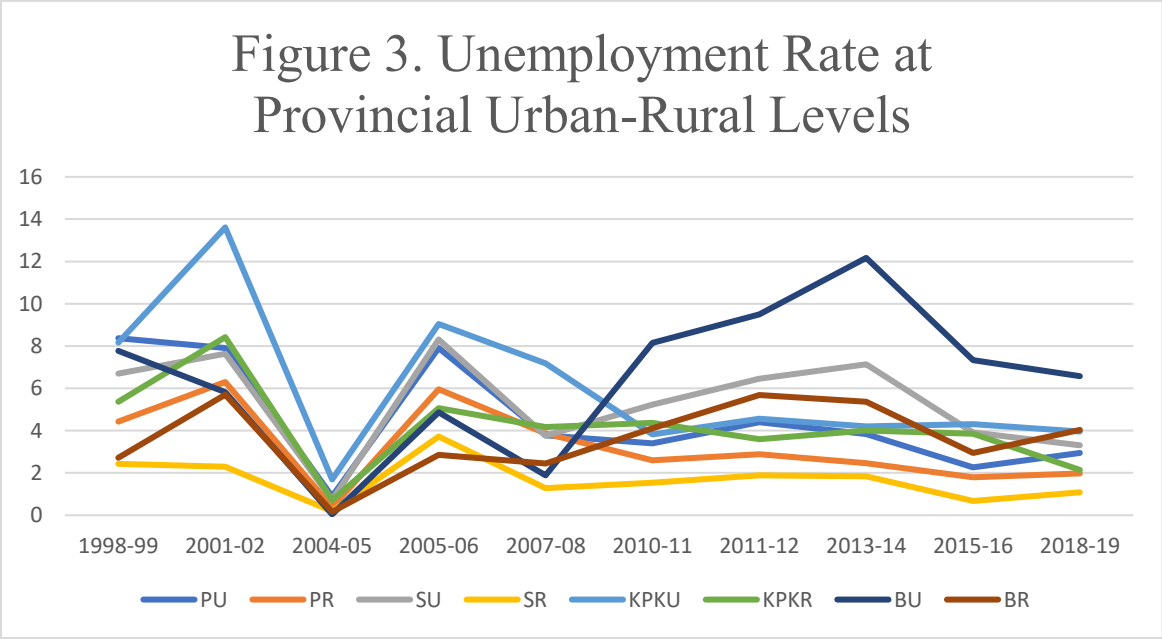
JOURNAL FOR SOCIAL SCIENCE STUDIES
An International Peer-Reviewed Open Access Journal

ISSN (Online): 3006-2071 | ISSN (Print): 3006-2063
Volume 4 • Issue 4 • August 2026

phenomenon. The most important finding is that urban unemployment remained persistently higher than rural unemployment, while KPK and Baluchistan generally experienced higher unemployment pressure than Punjab and Sindh. This indicates that Pakistan's unemployment behavior is shaped by urban job queues, migration, informal employment, education–job mismatch, weak industrial diversification, security shocks, and provincial differences in economic structure.

4.1.8. Unemployment at Provincial urban–rural level

The unemployment rate by province urban-rural wise are given in Table 2 and Figure 3.



4.2. Gender Discrimination

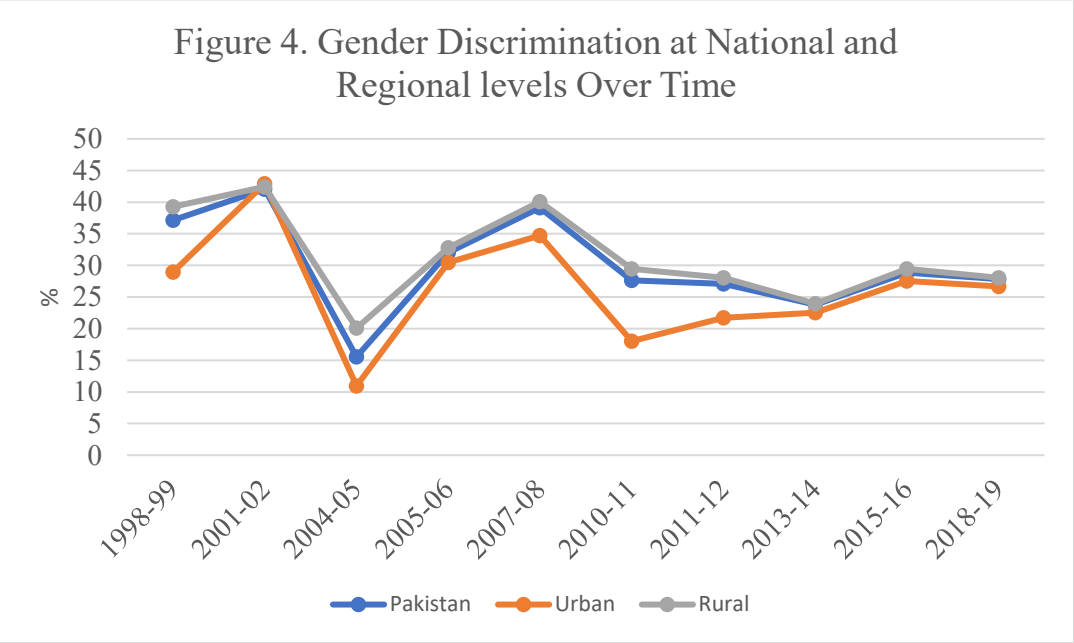
The study estimates gender discrimination at the national and regional level. The results are given in Table 4.3 and Figure 4.

Table 4.3: Gender Discrimination at national and regional level

year	Pakistan	Urban	Rural
1998-99	37.13	28.93	39.29
2001-02	42.07	42.92	42.43
2004-05	15.55	10.96	20.09
2005-06	32.03	30.49	32.81
2007-08	39.13	34.73	40.09
2010-11	27.65	18.00	29.44
2011-12	27.07	21.71	28.05
2013-14	23.81	22.54	23.93
2015-16	28.87	27.54	29.48
2018-19	27.86	26.68	28.05

JOURNAL FOR SOCIAL SCIENCE STUDIES
An International Peer-Reviewed Open Access Journal

ISSN (Online): 3006-2071 | ISSN (Print): 3006-2063
Volume 4 • Issue 4 • August 2026



The table shows that gender discrimination remained fluctuating over time. It was lowest in 2004-05 and highest in 2001-02 and 207-08. Further, the regional level analysis depicts that it was higher in rural areas s compared to urban counterparts.

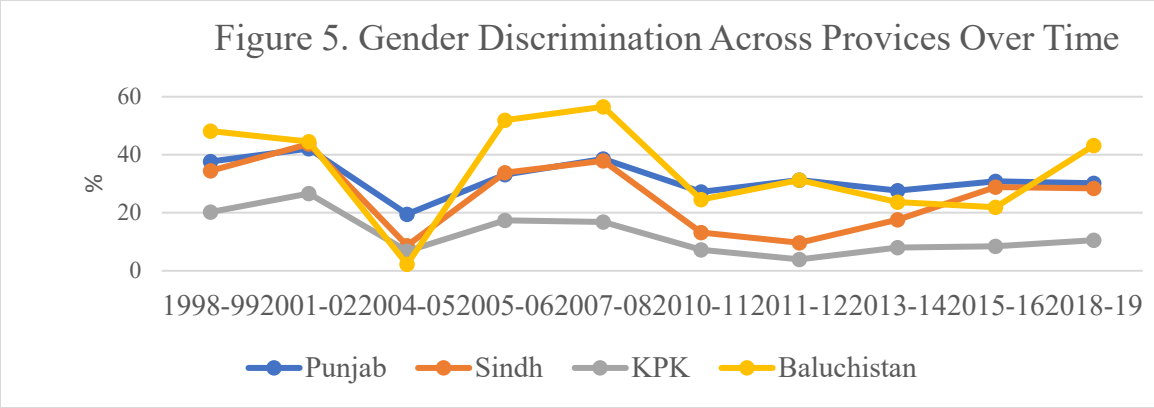
The study also estimates gender discrimination at the provincial level, too. The results are given in Table 4.4.

Table 4.4. Gender Discrimination across Provinces and Provincial Regional Level Over Time

Year	Punjab			Sindh			KPK			Baluchistan		
	Overall	Urban	Rural	Overall	Urban	Rural	Overall	Urban	Rural	Overall	Urban	Rural
1998-99	37.70	31.17	39.55	34.44	31.07	34.76	20.31	27.06	18.30	48.12	27.09	55.12
2001-02	42.13	51.53	41.12	43.71	29.35	54.12	26.64	30.87	25.20	44.52	33.11	48.34
2004-05	19.53	14.31	23.27	8.71	7.92	14.20	6.85	4.51	8.81	2.25	3.32	1.61
2005-06	33.11	32.49	33.61	33.87	22.28	39.60	17.41	27.41	16.40	51.89	30.21	56.20
2007-08	38.57	37.33	38.90	37.91	22.95	41.79	16.88	16.81	17.65	56.54	24.36	65.34
2010-11	27.20	15.53	29.13	13.17	14.20	10.70	7.20	11.01	6.66	24.51	32.99	24.25
2011-12	31.31	26.45	32.23	9.72	15.13	9.32	3.94	9.72	2.82	31.26	38.62	10.54

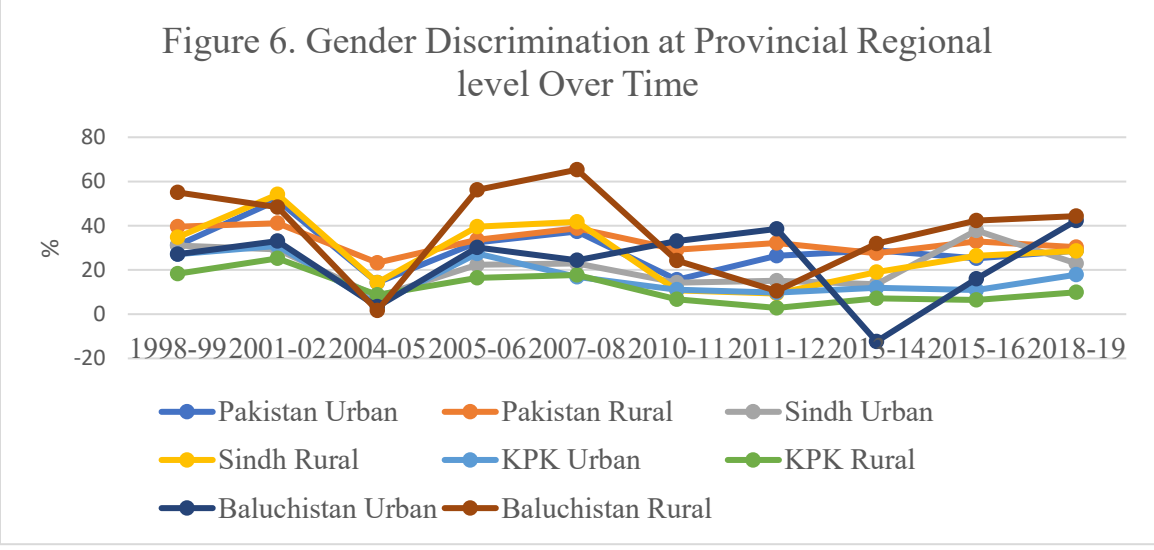
JOURNAL FOR SOCIAL SCIENCE STUDIES
An International Peer-Reviewed Open Access Journal
ISSN (Online): 3006-2071 | ISSN (Print): 3006-2063
Volume 4 • Issue 4 • August 2026

2013-14	27.64	28.81	27.50	17.65	13.49	18.99	8.03	12.00	7.18	23.63	-12.35	31.94
2015-16	30.83	25.20	32.97	28.88	37.87	26.36	8.51	10.92	6.40	21.93	16.04	42.34
2018-19	30.17	28.66	30.25	28.42	22.88	28.62	10.59	17.79	9.89	43.20	42.36	44.32



The table and figure reveal that GD remained fluctuating in Punjab between 1998-99 and 2007-08. After this, there was a declining trend in it. Almost the same trend was shown in Sindh between 1998-99 and 2007-08. After this, there was an increasing trend. In KPK, again there was a fluctuating trend between 1998-99 and 2005-06. After this, there was an almost decreasing trend. As far as Baluchistan is concerned, there was a fluctuating trend between 1998-99 and 2007-08. After this, there was a decreasing trend up to 2015-1. After this, it increased. GD was highest in Baluchistan between 2004-05 and 2010-11.

The provincial regional level results are given in Figure 6.



JOURNAL FOR SOCIAL SCIENCE STUDIES
An International Peer-Reviewed Open Access Journal

ISSN (Online): 3006-2071 | ISSN (Print): 3006-2063
Volume 4 • Issue 4 • August 2026

Table 4.4 and Figure 6 reveal that there was a fluctuating trend in GD. It was highest in rural areas of Baluchistan between 2004-05 and 2007-08. It was negative in urban areas of Baluchistan in 2013-14. In KPK, it was higher in urban areas as compared to rural areas. In other provinces, GD was higher in rural areas as compared to urban ones.

4.3. Estimating the Determinants of Unemployment

The descriptive statistics are presented in Table 4.5.

Table 4.5. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
U	80	4.386	2.762	0.16	13.61
GD	80	0.255	0.14	0.016	0.653
EDU	80	4.617	1.728	1.849	7.689
HHS	80	7.011	0.752	5.68	8.71
PI	80	1591	1424	695	7622

Before estimating the role of gender discrimination, the study applies different diagnostics. Diagnostic tests are in Table 4.6.

Table 4.6. Diagnostics

Hetero	
LM test	1622.96
	(0.000)
LR TEST	11.43
	(0.1209)
Wald test	1.02e
	(0.000)
Autocreation	
Wooldridge test	2.438
	(0.1680)
Cross-sectional dependence	9.533
	(0.000)

Standard errors in parentheses
p<0.01, p<0.05, p<0.1

Diagnostics indicate heteroskedasticity and cross-sectional dependence. So, fixed-effect models and random-effect models can not be applied. In the presence of cross-sectional dependence, the GLS regression and Drisc/Kraay regression are better. The results are given in Table 5.

Table 4.7. Estimating the Determinants of Unemployment

VARIABLES	GLS	Drisc/Kraay
lGD	0.681***	0.690*
	(0.0888)	(0.320)
lEdu	1.341***	1.263***
	(0.185)	(0.153)
lHHS	3.641***	3.037**

JOURNAL FOR SOCIAL SCIENCE STUDIES
An International Peer-Reviewed Open Access Journal

ISSN (Online): 3006-2071 | ISSN (Print): 3006-2063
Volume 4 • Issue 4 • August 2026

	(0.694)	(0.963)
lPI	-0.240*	-0.218**
	(0.128)	(0.0751)
Constant	-4.986***	-3.885
	(1.746)	(2.160)
Observations	80	80
Number of IDs	8	8

Standard Errors in Parentheses
***** p<0.01, ** p<0.05, * p<0.1**

Table 20 shows that the coefficient of gender discrimination is positive and significant across models. A 1% increase in gender discrimination (GD) increases the unemployment rate by % 0.68. All models confirm positive and significant effects of gender discrimination on unemployment; The consistency in positive signs across estimators reinforces the robustness of the core finding. This finding aligns with theoretical expectations: 1) Market Inefficiency: Discrimination distorts the efficient allocation of talent. Qualified individuals (primarily women) are excluded from jobs for which they are suited, leading to a misallocation of labor and higher unemployment among the discriminated group. 2) Reduced Labor Force Participation: Pervasive discrimination can discourage job search among women, which, depending on measurement, can either lower participation rates or lead to them being classified as "discouraged workers" (a form of hidden unemployment). 3)Economic Constraint: By restricting the effective labor pool, discrimination reduces overall economic productivity and growth, potentially stifling job creation economy-wide.

This study also uses some control variables. There is a statistically significant positive relationship between unemployment and education, reflecting an “educated unemployment” phenomenon where higher education increases job expectations or skills mismatch. The positive education-unemployment relationship contradicts human capital theory but finds support in developing economies: 1) India: Mehrotra et al. (2014) found educated unemployment rates up to 20% among graduates. 2) Bangladesh: Ahmed (2018) documented higher unemployment among university graduates. 3) South Africa: Ranchhod and Dinkelman (2016) showed education increased unemployment duration. 4) Greece: during crisis periods (Matsaganis, 2013). The following are the theoretical explanations: 1. Credentialism/Queuing Theory (Thurow, 1975): Educated workers wait for formal sector jobs. 2. Skills Mismatch Hypothesis (McGuinness et al., 2018): Education-labor market disconnects and 3. Aspiration Effect (Jensen, 2010): Higher reservation wages prolong search

The table also shows that there is a household size (lhhsize): 3.64. Larger households correlate with higher unemployment, possibly due to labor supply pressures or dependency burdens. The positive effect aligns with demographic literature: 1) Pakistan-Specific: Gazdar (2005) identified household size as a major constraint on female employment. 2) Comparative: Bloom et al. (2010) found similar effects in other high-fertility countries. 3) Mechanism: Large households increase labor supply while constraining female participation through domestic responsibilities.

The table also shows that there is an inverse relationship between unemployment and economic growth, and this relationship is statistically significant at the 10% level, but according to drisc and Kraay regression, it is statistically significant at the 5% level. So, this result supports the Okun Law. Low level of significance may be due to the following: 1) Okun's Law: The classic negative relationship assumes labor-intensive growth. 2) Pakistan has

ISSN (Online): 3006-2071 | ISSN (Print): 3006-2063
Volume 4 • Issue 4 • August 2026

experienced capital-intensive and services-led growth (finance, telecom, real estate), which have low employment elasticities. A rise in average income driven by these sectors may not reduce unemployment proportionately, a phenomenon called "jobless growth". 3)The Kuznets Curve vs. Social Tension: High inequality (implied by the income range) can itself *cause* unemployment through socio-political channels.4) Inequality can lead to: Weak Aggregate Demand: Concentrated income among the rich, who have a lower marginal propensity to consume, reduces demand for locally produced labor-intensive goods and services. Political Instability and Reduced Investment: High inequality breeds social unrest, deterring long-term productive investment that creates jobs.

5. CONCLUSION AND POLICY IMPLICATIONS

The study estimates the trend of unemployment and gender discrimination at the national and provincial level with rural/urban breakup. Unemployment remained fluctuating over time. It was the highest in 2001-02 and 2005-06 and the lowest in 2004-05. Regional level analysis reveals that it was higher in urban areas as compared to rural areas over time. The results depict that gender discrimination also fluctuated over time. It was lowest in 2004-05 and highest in 2001-02 and 207-08. Further, the regional level analysis depicts that it was higher in rural areas as compared to urban counterparts. The results of econometric models reveal that unemployment is positively related to gender discrimination, education, and household size, whereas it is inversely related to economic growth. The policy implications are that policies focusing on reducing gender discrimination and household size, as well as policies maximizing economic growth, should be chalked out.

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