

## **HUMAN RESOURCE MANAGEMENT, UNEMPLOYMENT AND UNDEREMPLOYMENT IN PAKISTAN**

ZULFIQAR ALI IMRAN, ARIBAH ASLAM AND MUHAMMAD ASLAM CHAUDHARY\*

**Abstract.** The issue of unemployment is both deep rooted, burning and one of the major economic issues in Pakistan. It is perplexing as the officially reported level of unemployment are understated and underestimated (much owing to the methodology used to calculate it), despite the observed periodic rises in the rate of investment and expansions in economic growth rates. The present study calculates the duration adjusted unemployment rate by applying Boorach, V., K. (2002) formula, which helps to convert under-employment into full open unemployment. Three different scenarios for duration unemployment rates are utilized, as given in the Labor Force Survey 2013-14 & 2017-18. The official unemployment rate has been reported as 5.8% for 2017-18. The results of this study indicated that unemployment under scenario one, is as high as 10.02 percent in Pakistan, while duration of working hours were 15- 24 hours in a week; increased by 4.8% higher than that of official unemployment. The estimated unemployment rate is as high as over 25 percent under scenario two and three ( $\sigma = 0.7$  &  $0.8$ ) respectively. The urban and rural unemployment were 9% and 14%, under scenario one, respectively ( $\sigma = 0.8$ ). The same under scenario two and three were 25% and 31 % in urban ( $\sigma = 0.8$ ) and 25% and 28% ( $\sigma = 0.8$ ) for rural areas under scenario two and three, respectively. The unemployment rate is higher for females, i.e. 15.7% (scenario one,  $\sigma = 0.8$ ), as compared to males' of 9%. The same rate for females was over 28%

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\*The authors are respectively Assistant Professors and Professor of Economics at The University of Lahore, Lahore – Pakistan.  
Corresponding author's e-mail: [aslamchm@hotmail.com](mailto:aslamchm@hotmail.com)

for inequality of 0.8 for scenarios two and three. However, the same rates for males were 24% and 29% for scenario 2 and 3, respectively. Among all provinces, unemployment was highest in KPK and Punjab, as compared to other provinces. All above, indicated that unemployment rates were much higher than that of the official rate, in all respects. It is also clear that unemployment was hidden in the under-employment definition. There is a need to chalk out better economic policies to manage human resources; focused on to generate employment opportunities to manage unemployment and underemployment.

**Keywords:** Unemployment rate; Duration-adjusted unemployment rates; Underemployment; Human Resources

**JEL Classification:** O15, J6, J64

## I. INTRODUCTION

Unemployment is one of the most imperative macroeconomic issues in Pakistan, which is often discussed on economic and political forums, especially due to emerging poor economic performance and recessions of 2008-09 and 2018-20; which became more severe since the emergence of COV-19. Its intensity has affected the major economic indicators; such as reduced living standard, per capita income<sup>1</sup> and loss of output; aggregate production below the potential level. It also adversely affected social indicators like high unemployment causes psychological distress, socio-economic deprivation, increase in crime rate and waste of human resources and increase in poverty, which further intensified the temptation of indulging in illegal activities<sup>2</sup>. Moreover, it raised poverty level and income inequalities, as well as, acted as a bottleneck for acceleration in economic growth<sup>3</sup>. Aggregate output is a function of available inputs - labor and capital etc. Thus, increasing unemployment above its natural rate of unemployment is associated with falling output below the full employment level of output.

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<sup>1</sup> . Recently, it has been reported that Per Capita income has been reduced from \$1600 to around \$1350.

<sup>2</sup> See; *Pakistan Economic Survey of 2017-18*.

<sup>3</sup> Refer to *Economic Management and Emerging Economic Issues in Pakistan*, forthcoming, HEC publication 2020-21.

Despite the fact that many developing countries have mass unemployed labor force which is a burden on the economy, because of the low investment for human development. It leads to not only increase in unemployment but underemployment has also become a severe issue. Paul Krugman (1991) emphasis that unemployment, productivity and income distribution are the most important and significant factors in the economy. If these are managed well and moving in the right direction then nothing else can go wrong, however, if these factors are not efficiently utilized, then nothing can go right, since these factors are interlinked through various means i.e. unemployment breeds poverty and income inequality. Besides, underemployment also results in low productivity. Therefore, it is utmost important that actual unemployment must be known so that it may be managed properly.

Pakistan's population growth rate is 2.4%<sup>4</sup>, which is higher than the average population growth rate of other South Asian countries. As per World Population Data Sheet 2013, it is expected that the population of Pakistan will reach 363 million; by the end of 2050. Unmatched growth of investment with the growing labor force is another source of increasing unemployment in Pakistan. At present, Pakistan holds the sixth most populous position in the world<sup>5</sup>. Pakistan is the 10th largest country in the world, according to the size of the labor force. The labor statistics shows that total labor force has increased from 50 million, in (2005-06), which has crossed 61 million in 2017-18. It means that about 1.2 million people are becoming a part of the labor force every year; it is over and above the backlog of reservoir of unemployed labor force. However, its job creation capacity is not matched with the growth of the labor force.

The employed labor force has increased from 46.95 million, (2005-06), to 56.52 million (2013-14.) and now over 61 million (2017-18). About 3.48 million workers are unable to find a job, therefore, adding up to the reservoir of unemployed persons. The back log of unemployed labor force constitutes over 10 percent of the labor force, whereas, the

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<sup>4</sup> The latest population Census, 2017 indicated that population growth rate is 2.4% for Pakistan. The same for provinces is different than that of overall in Pakistan.

<sup>5</sup> See; Pakistan Economic Survey of 2017-18.

official figures show that unemployment is only 5.8% in Pakistan. The official figures hardly represent the real picture of unemployment. Moreover, every year more than half a million people are added to the unemployed pool. It is on the face that the labor force is increasing at a rapid rate, as compared to that of jobs created every year. If this gap persists over a number of years to come, an unemployed labor force will become a serious threat for Pakistan. Above all, economic growth is as poor as 3.5 percent (2014-15) and negative economic growth in 2019-20 and expected more poor economic growth as low as less than one percent per annum. Thus it does not absorb even one percent of the growing labor force. In (2005-06), 3.1 million people were unemployed but this figure has increased to four millions in 2013-14.<sup>6</sup> The same has increased to over eight million in 2019. It is one of the emerging challenges in Pakistan. If underemployed persons are converted into full unemployed, the unemployment figures will be even much higher than that of the figures reported officially<sup>7</sup>.

The official open unemployment figures are much lower than the actual unemployment in Pakistan. For a few posts of unskilled workers, thousands apply for jobs, with degree level qualification. The real unemployment rates have also been reported much higher in research studies<sup>8</sup>. Over and above this, the definition of unemployment applied by the officials also requires serious revision; as it considers a person employed even if he/she worked for one hour during the reference week. All above affect labor force in the country in a different way<sup>9</sup>; that is the reason to understand the problem of unemployment and underemployment more accurately; needs reliable indicator of duration adjusted unemployment spell, which is hardly addressed in the official estimates of unemployment. Thus, if underemployment is converted into fully unemployed then actual unemployment is much higher than the officially estimated unemployment in Pakistan. Open unemployment as currently reported is 6.0; as stated by the labor force survey 2014. It

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6. Labor force survey 2017-18

7. The underemployment can be converted to full time unemployed by using Time Criterion, Productivity Criterion and Modern Criteria. See for details; *Economic Management and Emerging Economic Issues in Pakistan* by Chaudhary M. Aslam. (2020-21), HEC, forthcoming. Also see Denison 1982, Krugman 1991 & Lanzadte A. 2013 for other countries.

8. Kalsoom, Zulfiqar and Chaudhary M. Aslam. (2007).

9 It crests social unrest, increases poverty and political unrest etc.

continued to be the same up till now i.e. 2017-18. It appears to be understated and underestimated.

There is a limited body of literature pertaining to duration adjusted unemployment rate in Pakistan. Only Chaudhary M. Aslam and Hamid A. (1998) have estimated Unemployment by converting underemployment to full unemployed persons; i.e. by utilizing different realistic definitions of unemployment, which also utilized duration adjusted unemployment spells. No other study is conducted to estimate the duration adjusted unemployment rate for Pakistan after 2007. In this context, it is very important to understand and explore unemployment phenomena on a full scale to find out its effects on the economy as well as formulating economic policies for its remedy. It is also important to plan for better management of human resources, as well as, to combat the unemployment problem in Pakistan. It is the very reason that this study is undertaken to fill this gap in research and provide policy guidelines to manage human resources in an efficient manner.

Given the above background, the present study is focused to compute duration adjusted unemployment rates for Pakistan including rural and urban areas, for males & females and province wise for the country<sup>10</sup>. Thus, the study will provide detailed up to date real estimates for unemployment in Pakistan. Moreover, guidelines for policy measures to combat the unemployment problem will be proposed.

Hereafter, the research paper is organized as follows. Section two provides literature review pertaining to the issue to be investigated. Section three provides methodology to calculate the values for unemployment (value of inequality) and duration adjusted unemployment rates; on the basis of underemployed labor force. Section four consists upon empirical analysis and new findings of duration-adjusted unemployment rates. Section five, provides conclusions and policy implications, based upon new empirical evidence.

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<sup>10</sup> . The latest labor Force Survey available so far is 2017-18.

## II. REVIEW OF LITERATURE

Unemployment and underemployment reflects underutilization and waste of human resources. It has adverse effects on output, as well as on economic growth. If all the available resources are efficiently utilized, then the problem of unemployment can be resolved. There are a number of studies focusing on causes, effects and determinants of unemployment (Maqbool, M. S., Sattar, T. M. A., & Bhalli, M. N. (2013)). The reasons for high unemployment rates have also been the subject matter of these studies. However, less attention has been paid on how unemployment spells can identify the actual level of unemployment. A proper policy can be formulated only after having known the true unemployment rate and its effects on output. Generally, official unemployment rates are based upon faulty definition, as mostly under estimated, is reported in the official documents

Pertaining to Pakistan, comprehensive studies were conducted by Chaudhary M. Aslam. & Abdul H. (1998 and Chaudhary M. Aslam & Zulifqar Kalsoom (2007)). The studies were based on the technique developed by Borooah; (2002) for converting unemployment spells into full employment. Atkinsons (1973) also included inequality in the distribution of unemployment. Chaudhary Aslam and Zulifqar *et.al* (2007) compiled intra-Provincial comparison of duration adjusted unemployment rates. The unemployment rate calculated by the government officials of Pakistan was at 7.9 percent in 2004-05 but actually it was underestimated. By incorporating underemployment, the unemployment spell was as high as 14.54 percent. If inequality in distribution of unemployment was 0.8, then actual unemployment would have been double than that of the official unemployment rate. It was found that the official unemployment rate did not reveal the actual level of unemployment.

Unemployment was a widespread phenomenon in all the provinces of Pakistan<sup>11</sup>. As stated above, the unemployment rate was much higher than the officially reported unemployment rate for Pakistan. Moreover, the female population was the main victim of unemployment; as compared to males. If age wise unemployment is considered, duration

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<sup>11</sup> See Chaudhary Aslam and Zulfiqar K. (2007).

unemployment rate was higher in females from the age 20 to 24 and 25 to 39; which was 15% and 12.5%, respectively. For males, for the age group 20 – 24 years and 25 – 29 years, the unemployment rate was 9.3% and 6.2%, respectively. Urban unemployment is higher than rural unemployment; it is justified by the theory of migration, as more and more people migrate to urban cities and they wait longer to find a job<sup>12</sup>. On the other hand, higher underemployment in rural areas are characterized by the dependence on the agriculture sector that has seasonal full time employment opportunities. Workers who are associated with the agriculture sector remain unemployed during off seasons of the year. There is a need to update the existing literature and evaluate the current unemployment situation in Pakistan; since these studies are outdated.

Chaudhary, M. Aslam and Abdul Hamid. (1998) & (1999) carried out a study to explore employment patterns in Pakistan; by dividing the economy into nine sectors, seven professions and for education levels. The results showed that employment elasticity for the construction sector was highest and lowest employment elasticity was observed for the manufacturing sector. It was proposed that employment opportunities should be promoted in those sectors that have higher employment elasticities. Besides, a comprehensive employment generation policy is required to eradicate the problem of unemployment. The main contribution of this study was to establish that the actual level of unemployment was higher than the official figures. This study also measured underemployment and unemployment through different methods. The study did not focus on duration adjusted unemployment rates rather elasticities of employment were identified for this purpose; which does not remain constant over time, therefore, may not be applied for the policy formulation for longer time.

Qayyum, W. *et al* (2007) estimated the causes for youth unemployment in Pakistan. It may be noted that there are more than 50% of the labour force who consist of the youth population; peak time for high productivity. The above study suggested that lack of education, poor skills, and divergence between demographics of rural and urban areas,

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12. Labor force survey 2017-18 rural to urban migration rate.

structural mismatch, inappropriate experience and gender discrimination are major sources of unemployment in Pakistan. The aim of the study was to find out the reasons for unemployment especially in youth. The data utilized was from a labor force survey from 2003-04. The dependent variable of youth unemployment was a dichotomous variable, as it was qualitative and quantitative in nature. The independent variables included demographic profile, personal profile and level of education. Province variables were also included in order to find out how much each province was responsible for youth unemployment. The level of education variable showed the level of unemployment corresponding to every level of education. Similarly, age group signified the burden of unemployment associated with a particular age group and region which elucidates the level of unemployment in rural and urban areas. The results showed that age was negatively associated with youth unemployment. The NWFP (now Khayber Pakhtunkhwa (KPK)) was highly affected by youth unemployment. Moreover, lack of training was also inversely correlated with youth unemployment.

Chaudhary M. Aslam and Abdul Hamid. (1998) and (1999)<sup>13</sup> were the first to estimate unemployment while considering time criterion, productivity criterion and modern criteria. The above cited approaches indicated that actual unemployment was almost double than that reported in the official documents like Pakistan Economic Survey and Labor Force Survey. Thereafter hardly any comprehensive study was conducted which may have further explored actual unemployment in Pakistan. Therefore, it is the utmost need that the actual rate of unemployment must be pointed out, not only to know about the severity of the issue but also to find out the solution of the problem, as well as, for better management of the issue and human resources.

All above indicates that either research on the subject matter is very limited or it is outdated. Therefore, it is important to carry out an up to date fresh study to analyze the unemployment issue in Pakistan. This study will contribute to literature by filling this gap. For this purpose the methodology adopted to investigate the issue is provided in the following section.

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<sup>13</sup> Also see Kemal 1987, Camron J. and Irfan 1991.



### III. METHODOLOGY

Following Booroah, V. K. (2002), duration adjusted unemployment rates are estimated, which consists upon three scenarios. Scenario one, is based upon the assumption that if there is no underemployment, as a result, the outcome will be the same as reported official unemployment rate. Scenario two, is based upon the assumption that one-third of the labor force is underemployed<sup>14</sup>. Scenario three, undertakes 40 percent of the labor force employed only for three months in a year or remained underemployed equivalent to three months full time unemployed in a year. The value of sigma ( $\Sigma$ ) is used to represent the value of inequality in the distribution of under-employment. It is calculated on the basis of underemployed labor force in a year, given in the labor force survey. Three categories of working hours, as stated above, is based upon survey data, in a reference week; selected as 5 – 9 hours, 10 – 14 hours and 15 – 24 hours; in a week. It may be noted that full time employment requires at least thirty five hours work in a week. The value of sigma indicates as if labor force is fully unemployed then what would be the duration, as percentage of these unemployed labor i.e. say, if partially employed labor is working for 5 – 9 hours in a week then average working in a week is 7 hours. If “x” is the average number of hours in one week then, in a month, “x' ” is the average working hour, while “n” is the number of weeks in a month. The total employed hours for a month should be 140,  $(35 * 4) = 140$  hours, which are denoted by the variable “y”. Each person should work for 140 hours in a month, being fully employed. The variable “H” shows the unemployed working hours out of total employed working hours in one month and  $\frac{H}{y}$  is the ratio of unemployed working hours out of total employed hours; i.e. ' $\frac{H}{y}$ ' will represent the value of sigma. The values of sigma for those who work for 10-14 hours and 15 – 24 hours in a week are  $\Sigma = 0.7$  and  $\Sigma = 0.4$ , respectively. The following formula is developed, based upon above cited rationale; to calculate the value of sigma.

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14 . This segment of labor force will be unemployed for two months in a year. In other words, partially underemployed for the year, which accounts for two months' full time unemployed. These underemployed percentages of people are taken from the labor force survey table “percentage of employed person as per working hours.

$$\frac{5+9}{2} = 7 = x \text{ i.e average working hours for 5-9 hours of work.}$$

$$(x * n) = x'$$

$$(y - x') = H$$

$$\frac{H}{Y} = h' \dots\dots\dots (1)$$

Once the value of sigma is calculated then underemployment can be converted to full time unemployment in a year. Thus, the result will be official open unemployment plus underemployment converted figure in to full unemployment, will represent the aggregate unemployed labor force; under different scenarios, as explained above. The duration adjusted unemployment rate will be calculated by taking the ratio of adjusted unemployment months to total unemployment months. Thus, duration adjusted unemployment rate for the scenarios is calculated, as given below.

$$\begin{aligned} (N \cdot 12) &= L_{months} \\ (N \cdot SR) \cdot 12 &= LU_{months} \\ (LU_{months} \cdot \hat{\alpha}_{inequality}) &= I_{months} \\ \left( \frac{I_{months}}{L_{months}} \cdot 100 \right) + U &----- (2) \end{aligned}$$

In the above equation; where N is for total number of labor force,  $L_{months}$  are total employed months, SR is scenario based unemployment rate,  $LU_{months}$  is the unemployed months based on the scenario,  $\hat{\alpha}_{inequality}$  is the value of inequality in the distribution of unemployment,  $I_{months}$  is unemployed month based on the value of epsilon ( $\Sigma$ ) and  $U$  is the open unemployment rate.

The above formula can be applied to indicate real full time unemployment in Pakistan.

#### IV. EMPIRICAL ANALYSIS: REAL UNEMPLOYMENT RATE

High rate of underemployment reflects that a significant portion of labor force is unemployed; resulting in a full time unemployment rate to rise and waste of the human resources. To explore the actual unemployment situation in Pakistan, the duration rate of unemployment has been calculated based on official data given in the labor force survey 2017-18. The scenarios are based upon the data given for underemployment and open unemployment for the Labor force survey, which states the number of employed labor who worked less than 35 hours in a reference week are; such as 5 - 9 hours, 10 – 14 hours and 15 - 24 hours, showing that they were partially employed i.e. underemployed, which were counted as employed in the labor Force survey. For a fully employed person, one should have worked for a minimum of 35 hours in a week; in the reference period<sup>15</sup>. Based upon partially employed people for the above stated hours, the value of sigma is calculated. The difference between fully employed and partially unemployed labor force is represented by the value of sigma ( $\Sigma$ ); inequality in the distribution of unemployment. Those who worked 5 – 9 hours in a reference week, the value of  $\Sigma = 0.8$ , those who worked for 10 – 14 hours the value of  $\Sigma = 0.7$  and those who worked for 15 – 24 the value of  $\Sigma = 0.4$ . Official open unemployment rate was 5.8 percent in the year 2017-18, as reported in the official documents. Duration unemployment rates are calculated under the different scenarios of unemployment in a country, as reported above. The estimates are based upon the following scenarios.

**Scenario 1.** Partially unemployed labor force (out of total labor force given in the labor force survey) is considered zero.

**Scenario 2.** In scenario 2, underemployed labor is 30% of the total labor force; they were employed for two months in a year, except those who are fully unemployed.

**Scenario 3.** In scenario 3, 40% of the labor force only worked for three months in year, except those who are fully unemployed.

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<sup>15</sup> For more details see table “percentage of employed people who worked less than 35 hours in a reference week” in labor force survey 2017-18

### OVERALL REAL UNEMPLOYMENT: ADJUSTMENT OF DURATION UNEMPLOYMENT RATE

The following Table 1 shows duration adjusted unemployment rates for three scenarios; based upon different values of sigma ( $\Sigma$ ), reported above. Under scenario one, which takes exactly the same unemployed labor force as given in the labor force survey. Based on scenario one, ( $\Sigma = 0$ ); then duration adjusted unemployment rate is same as official unemployment rate. If labor force worked 5 – 9 hours in a reference week, partially unemployed labor force, then the value of inequality sigma is  $\Sigma = 0.8$ . Similarly,  $\Sigma = 0.7$  denotes the people who worked for 9-14 hours in a reference week. Under scenario one, the unemployment will be same as reported in the official documents i.e. 5.8%. However, actual unemployment increased to 8.4 percent in 2014 and further increased to 8.6% in 2018; for duration adjusted unemployment rate, while  $\Sigma = 0.4$ . It is based upon 15 – 24 hours employment in a reference week. Scenario two states that if 30 percent of the labor force only worked for two months, except those who were fully unemployed then  $\Sigma = 0.4$  and duration adjusted unemployment rate was 10.02 percent; increase to 10.6 percent, when the value of sigma increases from  $\Sigma = 0.7$  to  $\Sigma = 0.8$ . Lastly; under scenario two and three, while 40 percent of the labor force worked only for three months, and  $\Sigma = 0.7$  & 0.8, the unemployment increases from 27.2% to 33.76%, respectively. It is also generally believed that about one-third of the new entrance (labor) does not find a job and they have to suffer from unemployment and underemployment for longer period or depend upon others.

TABLE 1

Pakistan: Duration Unemployment Rates 2017-18

	Scenario 1	Scenario 2	Scenario 3
$\Sigma = 0$	5.8%	5.8%	5.8%
$\Sigma = 0.4$	8.62%	10.6%	21.8%
$\Sigma = 0.7$	10.02%	26.8%	27.20%
$\Sigma = 0.8$	10.62%	29.8%	33.76%

Source: Calculated by the authors; based on unemployment and underemployment rate, given in the labor force survey 2017-18.

## RURAL UNEMPLOYMENT IN PAKISTAN

Official unemployment rate for the rural labor force is reported as 5 percent in Pakistan for the year 2017-18. Table 2 provides duration adjusted unemployment rates for rural areas for 2018. Under scenario one, with zero the value of inequality, the duration unemployment rate is the same as the official unemployment rate.

TABLE 2

Pakistan Rural: Duration Unemployment Rates 2017-18

	Scenario 1	Scenario 2	Scenario 3
$\Sigma = 0$	5.00%	5.00%	5.00%
$\Sigma = 0.4$	7.29%	14.00%	16.99%
$\Sigma = 0.7$	9.0%	22.50%	25.99%
$\Sigma = 0.8$	9.58%	24.9%	28.09%

Source: Calculated by the authors; based on unemployment data given in the labor force survey 2017-18

If underemployed labor worked for 5 – 9 hours in a reference week, then duration adjusted unemployment rate is increased to 9.6% percent; (sigma =0.8), scenario three. Similarly, duration adjusted unemployment rate is 24.9 percent and 28.09 percent, while the value of  $\Sigma = 0.8$ , under scenario 2 and 3, respectively. Duration adjusted unemployment rates are 22.5 percent and 25.99 percent when the value of inequality is  $\Sigma = 0.7$  under scenario two and three, respectively. The higher duration adjusted unemployment rate under scenario three is justified because inequality value is higher along with higher portion of labor force is Underemployed, which is common in the rural areas. Highest duration adjusted unemployment rate in rural area can be as high as 28.09 percent, with the inequality of  $\Sigma = 0.8$ . Moreover, in rural areas work is seasonal, therefore, labor force hardly worked full time or full time work is not available to everyone for the whole of the year. Furthermore, this duration adjusted unemployment rates are not only hidden but the definition used for unemployment, at the time of survey, is misleading,<sup>16</sup>

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<sup>16</sup> As per the labor force survey 2017-18, definition “Employment comprises all persons ten years of age and above who worked at least one hour during the reference period and were either “paid employed” or “self-employed”.

which also leads to underestimate open unemployment. The above cited figures are alarming, which calls for appropriate planning to solve unemployment, as well as, underemployment issue.

### URBAN DURATION OF UNEMPLOYMENT IN PAKISTAN

In Pakistan, urban labor force comprises 22.5 million (2017-18), with an official unemployment rate of 7.2 percent, during 2017-18. The open unemployment rate is higher in urban areas, as compared to overall unemployment in rural areas and in Pakistan. The very reason could be that rural populations migrate to urban areas and become a part of unemployed reservoirs in urban areas.

TABLE 3

Pakistan Urban: Duration Unemployment Rates 2017-18

	Scenario 1	Scenario 2	Scenario 3
$\Sigma = 0$	7.2%	7.2%	7.2%
$\Sigma = 0.4$	11.1%	17.2%	19.2%
$\Sigma = 0.7$	12.8%	23.7%	28.2%
$\Sigma = 0.8$	13.6%	27.0%	31.2%

Source: Calculated by the authors; based on unemployment rate given in the labor force survey 2017-18

Table 3 shows duration adjusted unemployment rates for urban areas of Pakistan. Scenario one indicates that unemployment increases from 7.2 percent to 13.6 percent when the value of inequality rises from  $\Sigma = 0$  to  $\Sigma = 0.8$ . Similarly, under scenario two, those who worked for 5 – 9 hours the duration adjusted unemployment rate is 27.0 percent, for sigma equal to 0.8 (scenario 2). Those who worked for 15 – 24 hours, the duration adjusted unemployment rate is 19.20 percent, ( $\Sigma = 0.4$ ); scenario 3. The duration adjusted unemployment rate of 28.2% signifies those who worked for 10 -14 hours in a reference week when sigma is equal to 0.7. It can clearly be observed that the duration adjusted unemployment rates are increasing if partially unemployed labor worked for fewer hours; scenario 3. The unemployment rate increases to highest level for sigma equal to 0.8; under scenario 3, which reflects unemployment rate equal to 31.2%. It appears that unemployment is very high in urban areas, as compared to rural areas.

### DURATION UNEMPLOYMENT FOR FEMALE

The females are almost 14.8 million; of the total labor force<sup>17</sup>. Official unemployment rate for female in Pakistan is higher than the overall official unemployment rate for the same in Pakistan. It shows that females are more victim of unemployment.

TABLE 4

Pakistan Female: Duration Unemployment Rates 2017-18

	Scenario 1	Scenario 2	Scenario 3
$\Sigma = 0$	8.3%	8.3%	8.3%
$\Sigma = 0.4$	11.8%	18.30%	20.30%
$\Sigma = 0.7$	14.30%	25.8%	29.30%
$\Sigma = 0.8$	15.30%	28.30%	32.30%

Source: Calculated by the authors, based on unemployment rate given in the labor force survey 2017-18.

Table 4 provides estimates for duration adjusted unemployment rates for females in 2017-18. The females who worked for 15 – 24 hours in a week, having the value of inequality  $\Sigma = 0.4$ , converted into full time unemployed leads to duration adjusted unemployment rate to increase to 11.8 percent, scenario one i.e. higher than that of official open unemployment. It indicates that females are more victim of underemployment. Moreover, those who worked for 10 – 14 hours a week, with a value of inequality  $\Sigma = 0.7$ , duration adjusted unemployment rate is 14.3 percent (scenario one). The extreme case under scenario one indicates 15.3 percent duration adjusted unemployment rate if labor worked for 5 – 9 hours in a week ( $\Sigma = 0.8$ ). Other scenarios, two and three show the similar pictures but with more degree of intensity, having 30 percent and 40 percent of the labor force underemployed; which was partially unemployed for 10 months and 9 months, respectively. Under scenario two, duration adjusted unemployment rate is 28.30 percent ( $\Sigma = 0.8$ ), almost 10 percent more unemployment added to official unemployment rate, when inequality is just  $\Sigma = 0.8$ , scenario 2. The

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<sup>17</sup> Labor force survey 2017-18; females are less active as a part of labor force. It is increasing rapidly, since their participation rate is increasing.

highest unemployment rate in scenario three is 32.3%, having inequality of  $\Sigma = 0.8$ . All above indicates worse position of unemployment of female labor force, which calls for proper attention of the policy makers.

### DURATION UNEMPLOYMENT FOR MALE

Duration adjusted unemployment rates for male present analogous pictures to female duration adjusted unemployment rates. Total labor force for male is 50.7 million in (2017-18), with official unemployment rate of 5.1 percent in 2017-18. Over 2.5 million male are unemployed. As it is earlier explained that these unemployed males are those who are fully unemployed. Situation gets worse when partially unemployed male labor is converted into fully unemployed labor, which is indicated by the different scenarios, as reported in table 4.5 below. Under scenario one, with sigma equal to 0.8, the duration adjusted unemployment increases to over 9.1%. The same is as high as around 24.9%, under scenario 2, having sigma equal to 0.8. The same rate with the same sigma value, the duration adjusted unemployment increases to 29%, which represents a worse condition of open and underemployment. The above analysis indicates that not only open unemployment is very high, as compared to official unemployment rates but also the problem of underemployment is even more severe for males. Other values for duration adjustment may also be seen as given in the following Table 5 below.

TABLE 5

Pakistan Female: Duration Unemployment Rates 2017-18

	Scenario 1	Scenario 2	Scenario 3
$\Sigma = 0$	5.10%	5.10%	5.10%
$\Sigma = 0.4$	7.14%	15.10%	17.10%
$\Sigma = 0.7$	8.70%	22.60%	26.10%
$\Sigma = 0.8$	9.10%	24.90%	29.10%

Source: Calculated by the authors based on unemployment rate given in the labor force survey 2017-18.

The provinces of Pakistan differ in economic growth, per capita income and resources. The province of Baluchistan is the largest province in Pakistan; in terms of area. However, its economic conditions are very poor. Female literacy is low; the rural female literacy is not even 5%.



Therefore, unemployment rates are expected to be different in all provinces. The identification of unemployment in each province could further help to bring the neglected provinces into the main frame of the economy. For provinces, real unemployment, including duration adjusted unemployment is calculated, which is reported below. It was equally important to estimate the duration adjusted unemployment spells by province wise, as it reflects the real picture of the issue under discussion *i.e.* identification of the province which is extremely affected the most from high rate of unemployment.

**PROVINCE WISE DURATION ADJUSTED UNEMPLOYMENT**

**Duration Unemployment for Punjab**

Table 6 indicates the unemployment situation in Punjab. It is the largest province of Pakistan, having over 60% of the labour force of Pakistan (36.9 million). Following Table 6. Provides estimates of duration adjusted unemployment in Punjab. It has over 37 million population (2014), unemployment of 5.97 percent. In 2017-18, the official unemployment rate is 6.4% in Punjab. Under scenario one, unemployment is as high 11.5%; when sigma equal to 0.8, *i.e.* when under-employed labor force work for 5-9 hours are considered.

TABLE 6

Punjab: Duration Unemployment Rates 2017-18

	Scenario 1	Scenario 2	Scenario 3
$\Sigma = 0$	6.4%	6.4%	6.4%
$\Sigma = 0.4$	8.9%	16.4%	18.4%
$\Sigma = 0.7$	10.9%	27.9%	27.4%
$\Sigma = 0.8$	11.5%	28.4%	30.4%

Source: Calculated by the authors; based on unemployment rate given in the Labor force Survey 2017-18.

Scenario two and three are also analogous to scenario one. The unemployment rates are increasing with the higher value of inequality (sigma value). If 40 percent of the labor force is underemployed for 9 months and works only for 15 – 24 hours in a week, then unemployment rate is around 28.4%, for sigma being 0.8 (scenario 2). Under scenario 3,

the same value exceeded to 30%; while labor force is underemployed and is working for 5 – 9 hours in a week. These figures indicate deep rooted issue of underemployment and unemployment in this province. Other values for the value of sigma (0.4 & 0.7) are also provided in the table (4.6). As the value of sigma increases, the figures for unemployment are also increasing. Under scenario3, the unemployment is estimated as high as 30.4% for sigma =0.8, which reflects very high level of unemployment. It may be noted that it is highly populated province having 60% of the total labor force of Pakistan

### Duration Unemployment in Sindh

TABLE 7

Sindh: Duration Unemployment Rates 2017-18

	Scenario 1	Scenario 2	Scenario 3
$\Sigma = 0$	4.92%	4.92%	4.92%
$\Sigma = 0.4$	6.62%	14.93%	16.93%
$\Sigma = 0.7$	8.03%	22.43%	25.93%
$\Sigma = 0.8$	8.33%	24.93%	28.93%

Source: Calculated by the authors; based on unemployment rate given in the labor force survey 2017-18

Table 7 indicates the duration adjusted unemployment rates for the province of Sindh. The official unemployment rate is 4.92 percent in Sindh, which is less than the overall unemployment rate in Pakistan. It is the second largest province having a labor force of around 14.3 Million. Under scenario one, with sigma equal to 0.8, unemployment increased to 8.33 percent i.e. 3.4% higher than the officially reported open unemployment for Sindh. It is based on the underemployed labor workers which worked for 5 – 9 hours in a week. Under scenario 2, the same unemployment rate is 24.2 percent. Under scenario three, the same figures increased to 28.20 percent, when the value of inequality is  $\Sigma=0.8$ . It may note that these unemployment rates are six to seven times higher than that of official unemployment reported in the official documents. It reflects high levels of unemployment and significant under-reporting of actual unemployment conditions in Sindh. Although official and actual

unemployment rates are lower in Sindh as compared to Punjab, but these are still very high, which calls for immediate action to address the issue.

**Duration Unemployment in Khyber Pakhtunkhwa (KPK)**

The official unemployment rate for KPK is reported as 8.3 percent, which is higher than the national unemployment rate. The total labor force of KPK is 6.6 million and it is the third largest province of Pakistan. Under scenario one, with sigma equal to 0.8, indicated duration rate of unemployment as high as 14.9 percent, which reflects the highest duration adjusted unemployment rate, among all provinces. Under scenario two, if 30 percent of the labor force is underemployed for the 10 months then, the unemployment rate increases to over 28 percent; having the value of sigma equal to 0.8. The values for the same increased to 32.4%, under scenario three 3 (sigma=0.8). It may be noted that the duration adjusted unemployment is four times higher than that of official unemployment.

TABLE 8

Khyber Pakhtunkhwa: Duration Unemployment Rates 2017-18

	Scenario 1	Scenario 2	Scenario 3
$\Sigma = 0$	8.3%	8.3%	8.3
$\Sigma = 0.4$	11.6%	18.3%	20.3%
$\Sigma = 0.7$	14.1%	25.4%	29.3%
$\Sigma = 0.8$	14.9%	28.3	32.4%

Source: Calculated by the authors; based on unemployment rate given in the labor force survey 2017-18

All above reflects poor management of the labor force and its employment. First, there is hardly any proper planning to address the issue. Secondly, even if there is any policy directed towards this issue, still then the problem remains unresolved. As a result, there is hardly any impact on the reduction of the unemployment issue in Pakistan.

**Duration Unemployment in Baluchistan**

Baluchistan is the largest province of Pakistan, in term of area, however, total labor force of Baluchistan is 3.2 million, having official

unemployment rate of 4.1 percent, the lowest in Pakistan. The reported official unemployment in Baluchistan is 4.1% in 2017-18. Under scenario one, if underemployed labor force works for 5 – 9 hours in a week; then the unemployment rate increases to 7.1%, for  $\sigma = 0.8$ . (Table 9). Under scenario two, the same rate increases to 24 percent (for  $\sigma = 0.8$ ). The last scenario three, assumes that 40 percent of the labor force is not fully employed. The highest unemployment rate can reach up to 28 percent of the labor force, if value of inequality is  $\Sigma = 0.8$ . It still remains low, as compared to all other provinces. It is important to note that under the worst conditions and scenario, the duration of unemployment remains around 28% of the labor force, which is still very high.

TABLE 9

## Baluchistan: Duration Unemployment Rates 2017-18

	Scenario 1	Scenario 2	Scenario 3
$\Sigma = 0$	4.1%	4.1%	4.1%
$\Sigma = 0.4$	5.6%	14.1%	16%
$\Sigma = 0.7$	6.8%	21.6%	25.1%
$\Sigma = 0.8$	7.1	24%	28%

Source: Calculated by the authors based on unemployment rate given in the labor force survey 2017-18

**Province Wise Unemployment Rate: A Comparison**

Table 10 presents comparative figures of different unemployment rates in all four provinces in Pakistan; for different values of inequalities. The value for sigma equal to zero represents the official rate of unemployment in all provinces. Scenario one is chosen for more detailed comparison. Overall unemployment rate is higher in Khyber Pakhtunkhwa, official is unemployment rate is 8.3 percent in 2017-18. However, duration adjusted unemployment rate is 14.7%., for sigma equal to 0.8. The reason could be that, this area is affected by the war on terrorism and development process is slow as well. Second higher unemployment rate is 11.5 percent in the Punjab, for sigma equal to 0.8. Punjab accommodates the largest part of the labor force and, moreover, people migrate to Punjab seeking jobs because it is a relatively developed province and has better employment and business opportunities. Under the same value for sigma, the unemployment rate is 7.6 percent in the

province of Sindh. If this rate is compared with the other provinces, Sindh is having less unemployment. Official unemployment rate in Baluchistan is 4.1 percent and it increases to 7.1 percent when the value of inequality (sigma) is  $\Sigma = 0.8$ . Duration adjusted unemployment rate for all provinces is increasing with the change in sigma value. The unemployment rate increases around 3 percent, for the change (increase) in sigma value of inequality from  $\Sigma = 0.0$  to  $\Sigma = 0.8$ .

TABLE 10

Province wise Unemployment Rates Comparison Scenario One 2017-18

	Scenario 1	Scenario 2	Scenario 3
$\Sigma = 0$	6.2%	4.9%	8.3%
$\Sigma = 0.4$	8.5%	6.6%	11.3%
$\Sigma = 0.7$	10.5%	7.3%	13.8%
$\Sigma = 0.8$	11.5%	7.6%	14.7%

Source: Calculated by the author based on unemployment rate given in the labor force survey 2017-18

In short, the above analysis indicates that there is a very high unemployment in Pakistan. It appears to be one of the major economic issues in Pakistan, which requires immediate attention of the policy makers and managers of the economy. The unemployment figures are alarming in all respects; i.e. in rural & urban areas, among males, females and in all provinces of Pakistan. The official figures do not portray a real picture of the issue; due to ignoring underemployment. Applying the value of inequality of 0.8, almost one-third of the labor force is suffering from unemployment. Once under-unemployment is converted to full time unemployment, by applying the duration rate of unemployment; the unemployment figures are as high as more than 25% and for the inequality level of 0.8, it exceeds 30%. It means that one-third of the labor force is affected by unemployment or by under-employment. The problem calls for immediate attention and calls for serious efforts to address the issue. As the real magnitude of the issue has been identified, therefore, it must be addressed on priority; since it is not only loss of output but also waste of human resources. The comparative picture of unemployment, under other values of sigma are provided in appendix (Table 1).

## V. CONCLUSION AND POLICY IMPLICATION

Pakistan's unemployment issue today is still at least as relevant and deep rooted, as it was in the late decades, particularly because much of the unemployment rates are hidden in the veil of under-employment, which we have revealed by employing Booroah's method. On the same hand, duration adjusted unemployment rates are also calculated for different dimensions of labor force; such as rural & urban labor force, males & females and for each province. The latest Labor Force survey (2017-18), available so far, was utilized to calculate unemployment. The analysis shows that the official unemployment rate does not portray the real picture of unemployment of the labor force. Widespread unemployment prevails in the provinces of Pakistan, which is much higher than the official figures.

The urban unemployment is higher than the unemployment in the rural areas. It may be so due to the rural-urban migration as portrayed i.e. people migrate, from rural to urban, for better job opportunities and increases the reservoir of unemployed in the urban areas. Mostly people in rural areas are engaged in the agriculture sector and due to seasonal working period, majority of agriculture workers become underemployed during the year. Therefore, underemployment is higher in rural areas. People also migrate to urban areas in search of jobs and businesses.

In addition to above, another significant outcome of the study is that actual unemployment is much higher for females as compared to males'. Females have hardly 10 percent of the labor force participation rate and still they face high unemployment. They also suffer from high under-employment too. The finding of the current study is consistent with the study already conducted by Zulfiqar, K. and Chaudhary, M. Aslam (2007). The contribution of this study is the identification of spell of unemployment for each province of Pakistan. Comparatively unemployment is higher in Khyber Pakhtunkhwa and then in Punjab, Sindh and Baluchistan, respectively. Although, Punjab is a highly populated province of Pakistan, but more job opportunities are also available in Punjab. Khyber Pakhtunkhwa is not populated province but it is relatively less developed, therefore, less job opportunities are available, therefor it has the highest level of unemployment in Pakistan.

Given the above empirical evidences, open unemployment (adjusted for duration rate of unemployment), the policy makers need not only emphasis on more employment generation but there is also a need to convert underemployment into full time employment. Moreover, the creation of jobs should not be concentrated in any particular region or area but economic policies need to be directed towards deprived regions and provinces too; where unemployment is very high. The Province of KPK has an alarming level of unemployment which needs to be addressed. The government should promote those sectors which can create more jobs; i.e. the sectors having high elasticity of employment like construction, housing and services, as well as industrialization.

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## APPENDIX

TABLE 1

Comparative Unemployment Rate (Scenario One) 2017-18  
Rural-Urban and Male-Female

Value of Inequality	Pakistan Unemployment Rate	Rural Area	Urban Area	Male	Female
$\Sigma = 0$	5.8	5.00%	7.2%	5.10%	8.3%
$\Sigma = 0.4$	8.62	7.29%	11.1%	7.14%	11.8%
$\Sigma = 0.7$	10.02	9.0%	12.8%	8.70%	14.30%
$\Sigma = 0.8$	10.62	9.58%	13.6%	9.10%	15.30%

Compiled by the authors, from Labor Force Survey 2017-18, FBS