Dimensions and Spread of Unemployment Spell in Pakistan

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Abstract

This study aims at, to analyze unemployment spell by utilizing Borooah (2002) technique which adjust aggregate unemployment rate for differences in the distribution of unemployment spell. So far, there is not a single study pertaining to Pakistan which may have been focused on this issue. Besides, forecasts for unemployment are estimated by region/province, age and gender. It has been identified that females are more victim of unemployment than males. The NWFP is at the top having high level of unemployment, as compared to other provinces. Moreover, it appears that the official level of unemployment identified by the public sector is much lower than the real level of unemployment in Pakistan. The above cited findings of the study draw attention of economic managers to pay attention not only to unemployment problem but also to its spell at province level, for different age groups and by gender.

I. Introduction

Human capital plays a vital role in accelerating economic growth. It is the very reason that the quality of these resources is very important. There is a wide body of literature which emphasizes on human capital development; Dennison (1982), Kuznets (1971), Haq (1993), Chaudhary and Hamid (1999) and Kemal (1987) argued that the major factor which significantly contributed to economic growth is human capital. As compared to developed countries, the less developed countries hardly assign appropriate priority to develop their human resources. They spend very little amount for human resource development, which hampers their growth potential; For example, Pakistan, Bangladesh, Nepal and Bhutan spend less than 5% of their GNP on education and health services. Besides that, they transfer a very low share of their income to the poor in terms of social security benefits i.e.

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some countries only spend 0.2 percent of GNP for this purpose, as compared to over 8 percent in United States of America and Sweden[2] .

Pakistan has a population of over 160 millions and about 65% of it's population draws its livelihood from agriculture that lives in rural areas. Over 47% of the labor force is engaged in agriculture who suffers from all basic needs like health, education, sanitation and communication facilities. The manufacturing sector hardly employed 15% of the labor force. Thus, this sector is still not a major source of employment. Besides, human resources are underdeveloped; both illiteracy and low quality of education contribute to unemployment, low productivity and underemployment. It is on the face that it sustained a respectable economic growth over decades[3]. This apparent divorce between economic and social development is a point of serious concern. The open unemployment rate was 7.6% (2005-06) which recently increased to over 8%. These are official figures. Actual unemployment is much higher than the official figures. The underemployment is even much higher than the open unemployment (Chaudhary and Hamid, 1999).

The Unemployment spell is an important issue which identifies the population suffering from unemployment. Recently, the spell of unemployment in the context of identifying people as unemployed or employed, have attracted considerable attention. However, once people have been identified as unemployed, the issue of aggregating as unemployed requires appropriate methodology to reach at realistic figure. In arriving at unemployment rate, the neglect of aggregation issue has, in particular, led to inaccurate identification of the burden of unemployment (Borooah; 2002). Now, it is widely accepted that the unemployment rate by itself provides limited information about the extent of unemployment and population suffering from the problem(s). The present study uses Borooah (2002) technique to adjust the aggregate for measured unemployment rate for differences in the distribution of unemployment, in which a distribution where unemployment is more concentrated is considered less desirable than the one in which the burden is spread more equally. It provides an estimate of an unemployment rate for which the community would tolerate to have current unemployment equally distributed. That is, say an unemployment rate of 10% might give its distribution and society's degree of aversion to inequality, duration – sensitive rate of 20% in which unemployment affects one-

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[2]. For reference and more details see: World Development Reports. For Pakistan, see; Pakistan Economic Survey, GOP.

[3]. It has over 6% growth during 1960-80 average annual and since 2002, its economic growth is over 5%. It is on the face that it has poor political stability. For more details see Pakistan Economic Survey (yearly), GOP.

in–five persons at one time would be a significant cause of concern (Sebastian B. and Tunny G. 2003). On the other hand, 10% unemployment spread over 30% of population may have less concern for the community?

As stated above, there are several studies, which focused on various aspects of employment, unemployment and underemployment. However, most of these studies either measured unemployment and underemployment or calculated sectoral employment elasticity and provided forecast for labor force imbalances. None of these studies have focused the analysis of unemployment spells. Present study aims at to fill this gap in the literature and such coverage will provide actual population which suffers from unemployment; since the traditional measures of unemployment provide only limited information about the nature and extent of unemployment spread. In this context, the present study has following objectives:

- To calculate the duration sensitive unemployment rates for Pakistan.
- To make an inter-provincial comparison of these rates.
- To make a comparative analysis of duration-unemployment over time.
- To suggest policy guidelines on the basis of empirical findings.

The rest of the study is organized as follows. Part II, covers literature review, part III consists of methodology, Part IV provides comparative analysis of duration adjusted and official figures. Part V, consists of empirical findings pertaining to unemployment by gender, age and province/region. Part VI provides conclusion and policy implications.

II. Literature Review

Unemployment is not only an economic problem but it also has many serious social effects like deprivation, poverty and not even meeting the basic needs. The link between unemployment and social exclusion is clearly established as unemployment breeds poverty and hunger. Besides, an accurate measurement of unemployment is necessary to solve the problem. The official figures often lack to point out actual level of unemployment. As a result, appropriate policy can not be formulated to tackle the issue. Various studies show that fiscal policy and economic planning were not focused toward needed employment generation in Pakistan. (Haq, 1993), Chaudhary and Hamid (1999). Employment generation was mostly a secondary not a primary objective of economic planning. Some other studies like Ruud (1970), Herman and Irfan (1989) used various techniques to make projections about supply of manpower

and labor force. These projections often based upon different assumptions, which resulted in under or over estimation of sectoral employment and unemployment.

Kemal and Irfan (1983) projected employment potential of various sectors based on employment elasticity. However, the elasticities used were not realistic. These elasticities did not represent ground realities like migration and changing pattern of employment and structural changes. Kemal (1987) evaluated the manpower planning experience in Pakistan and concluded that although the overall growth rate of the economy has been impressive but it has not generated sufficient employment opportunities. As a result, unemployment kept on increasing. Presently, it is one of the top burning economic issues in Pakistan.

Chaudhary, M.A. and Hamid, (1999) divided the economy into nine sectors, seven occupations and four education levels. The study reported highest employment elasticity for construction sector and lowest employment elasticity for manufacturing sector. It was suggested that to promote employment opportunities there is a need to focus on sectors with relatively higher employment elasticities and sound employment policy is needed to combat the problem. It is the only study which also focused to measure unemployment and underemployment; by using different methods. The contribution of the study is that it pointed out that actual level of unemployment is much higher than the official figures. We did seek guidance from this study and improved upon it to point out realistic estimates of employment generation and unemployment level. They criticized that the elasticities already reported in the literature which did not hold over time. This study also did not propose any new technique to estimates the same except that the study had better sample size than the earlier studies.

Mueen (2001) discussed the deteriorating conditions of labor market in Pakistan. He stated that the rising trend in both unemployment and underemployment was attributed to a high growth of population; besides other factors. The study finds a strong linkage between the labor market activity and poverty. It suggested that policy intervention is necessary to alleviate poverty by focusing on labor market. The study was not focused to improve upon the estimates of unemployment figures.

Guisinger and Irfan (1980) and Chaudhary & Hamid (1999) explored the role of informal sector in employment generation in Pakistan. The conclusion was that informal sector has been an important source of employment and income generation for the less-educated and semi-skilled labor force. It may be noted that productivity in this sector is very low and poverty mainly exists among those who are related to this sector. Thus, it did not provide useful information to combat unemployment and to improve the unemployment estimates. None of these studies provided an aggregate estimate of unemployment –spell.

The above review of various studies suggests that these studies provide inadequate information about the problem of unemployment spell in Pakistan. One of the most neglected areas is that none of these studies took into account the duration rate of unemployment spells. Only the duration of unemployment spells can actually highlight the gravity of the situation. For example, if a person is unemployed for one month or for six months; both are entirely different scenarios. Such duration is not counted in the general techniques used to estimate unemployment level. There is not a single study which may provide unemployment estimates by using such techniques. The present study aims at highlighting this neglected dimension of the problem of unemployment in Pakistan and to fill in the gap in the literature.

III. Methodology

Traditionally unemployment in a country is measured by simply using person rate of unemployment (PRU) or time rate of unemployment (TRU). However, latest research shows that these measures do not provide adequate information about the actual extent of unemployment. Borooah (2001) and Paul (1992) have recommended various measures to overcome this problem. The literature on the inequality of unemployment can be divided into two categories. The first one is focused on developing a summary scalar measure, which can capture the incidence and distribution of unemployment. This strand of literature relies upon economic theory and a supposition as to society's degree of aversion to inequality in the burden of unemployment. Obviously, for such a measure to be sound, appropriate technique is important which may be used to make such estimates. In the second strand of literature, tests are formulated for differences in the empirical distributions of unemployment.

Paul (1992) proposed ill fare, disutility/negative welfare function which was taken as an increasing function of the duration of unemployment experienced by a person. The ill fare function captures the negative effects of unemployment spells, associated with a loss of income, depreciation of human capital, effects on health, including mental health and well being, and stigmatization. These effects are likely to be low for short spells of unemployment but these will increase significantly as spells become longer, implying a convex ill fare function that grows at an increasing rate. Paul (2001) adjusted his earlier measure and developed an aggregate welfare loss measure of unemployment based upon the Runciman (1966) theory of relative deprivation. Riese (1999) found that Paul's ill fare measure could be improved by using the average duration of interrupted unemployment spells instead of using the average duration of completed spells. Using Salant (1977) methodology, Riese showed

that Paul measure would show inequality even if every unemployed person were out of work for the same time. This problem is avoided in Borooah's (2002) methodology. He based his inequality measure on the fraction of a year a person is unemployed. Borooah (2002) used Atkinsons (1973) inequality framework to examine inequality in the distribution of unemployment. Borooah's methodology as compared to Paul (1992) is better in two respects. Firstly, it is based on a well-established, defensible methodology, and second that it estimates an adjusted unemployment rate, which is easier to interpret.

Borooah (2002) adapted Atkinson's (1973) technique to estimate inequality in the distribution of unemployment. This approach adjusts the measured unemployment rate under various assumptions regarding community's aversion to this inequality, which is a parameter in this model. Borooah's (2002) measure of duration adjusted unemployment rate is given as:

$$\mu^* = (1+A\varepsilon)\mu$$

Where $\mu^*$is the duration-adjusted unemployment rate μ is the actual unemployment rate and $A\varepsilon$ is the adjustment parameter which is given below:

$$A\varepsilon = [\Sigma N\text{-}1\ (di - \alpha)\ 1 + \varepsilon\ ]\ 1/1\ + \varepsilon\ \ -\ 1$$

Where N is the size of the labor force, ε is the community's aversion to inequality in the burden of unemployment ranging from zero to one, α is the average duration of unemployment, d is the number of months individual is unemployed in the year and the summation is carried out over all the individuals in the labor force.

IV. Duration of Adjusted Unemployment Rates: Different Scenarios

The duration-adjusted rates are calculated for Pakistan based on the unemployment rates reported in Labor Force Survey of Pakistan 2004-05 and Economic Survey of Pakistan. These rates are calculated under the following different scenarios[4].

i) Equality Scenario: Every person in the labor force experienced unemployment in the year. And the duration of unemployment was same for every individual.

ii) Second Scenario assumes that the entire burden of unemployment falls on those who are observed to be unemployed in a particular month. And all the remaining people are in continuous employment.

[4]. *These scenarios are based on different assumptions about the duration of unemployment. And any other assumption can be made depending upon the situation.*

iii) Third scenario assumes that one- quarter of the labor force experienced unemployment in the year.

Following Table-4.1 shows duration-adjusted unemployment rates under the above cited different scenarios.

Table: 4.1. Duration adjusted unemployment (2004-05)*

(Percentage)

ε- value	Scenario I	Scenario II	Scenario III
ε = 0	7.69	7.69	7.69
ε = 0.1	7.69	8.90	8.73
ε = 0.4	7.69	14.72	11.43
ε = 0.8	7.69	22.34	14.54

**Corresponding official unemployment rate for the year was 7.69%.*

The unemployment rates corresponding to different distribution of the average duration under different distributive scenarios and for different degrees of inequality aversion are presented in the above table 4.1. The higher value of ε represents a greater degree of inequality aversion. In scenario 1, it is assumed that every person in the labor force experienced unemployment in the year and the duration of unemployment was the same for every individual. In other words, it turns out to be the official rate of unemployment. However, scenario II, assumes that the entire burden of unemployment falls on those who are observed being unemployed in a particular month. And all the other people are in continuous employment. The total number of unemployed months is same under both scenarios and the only difference is the different distribution of these numbers. When ε=0 (no inequality aversion), distribution is irrelevant and the unemployment rate is same under both scenarios. The scenario II shows that how the unemployment rate is scaled up under different inequality scenarios. For the year 2004-05 it is 7.7, 8.9, 14.7 and 22.3 for different values of ε. The unemployment rates corresponding to ε > 0 are the duration adjusted unemployment rates. Scenario III is a moderate version of the extreme inequality of scenario II.

4.1 Comparative Analysis

Another dimension, which can be of particular interest, is as to whether there has occurred any change in the distribution of unemployment in the last 20 years in Pakistan. Is unemployment more equally distributed now as compared to

past years? The table 4.2 below presents the duration-adjusted unemployment rates along with average duration for the sample years (1985-2005); for different degrees of inequality aversion. The analysis shows a great degree of variation in the distribution of unemployment over a period of 20 years. These variations show a range of 10.53%; the unemployment rate was 15.84% (1985) which increased to 24.51% (2003). Besides, there is an increase in the duration – adjusted unemployment rates during this period. There was a small improvement in it during 2005. Average duration of unemployment also increases during these years. It increases from 0.43 months in 1985 to 0.99 months in 2003. The unemployment rate is scaled up by almost 0.93% during 2005. the unemployment rate although highest in 2003 but is relatively more equally distributed. So it can be concluded that although average duration of unemployment has increased over the years but in 2005, unemployment is more evenly distributed. In the 1980's, the unemployment was more unevenly distributed as compared to later years.

4.2. Duration Adjusted Unemployment: By Age and Sex

Table- 4.3 shows the age specific and sex related unemployment rates in Pakistan; reported in the Labor Force Survey (2003-04). The unemployment rates by age show that unemployment rates are lower for mature aged persons as compared to other age groups. Unemployment rates of nine different age groups are presented in the table and the last column shows the average duration (in months) of unemployment by age and group.

Table: 4.2. Duration Adjusted Unemployment (%)

(1985-2005)

Year	**Average Duration of Unemployment. (Months)**	**Duration –Adjusted Unemployment Rates for Different Degrees of Inequality Aversion**		
		$\varepsilon = 0$	$\varepsilon = 0.4$	$\varepsilon = 0.8$
1985	0.4356	3.63	9.37	15.84
1988	0.3768	3.14	8.44	12.71
1991	0.3708	3.09	13.85	21.49
1995	0.6422	5.35	12.51	19.86
2000	0.9384	7.82	16.35	24.44
2003	0.9991	8.27	16.40	24.51
2005	0.9228	7.69	15.80	23.87

Table: 4.2. (a); Scaling Factors

Year	Scaling Factors		
	$\varepsilon = 0$	$\varepsilon = 0.4$	$\varepsilon = 0.8$
1985	1.00	2.58	4.36
1988	1.00	2.68	4.04
1991	1.00	4.48	6.95
1995	1.00	2.33	3.71
2000	1.00	2.09	3.12
2003	1.00	1.98	2.96
2005	1.00	2.05	3.10

** Higher is the value for ε, more is inequality in the distribution of unemployment.*

Table 4.3 shows that there are strong variations among the age groups, both in their unemployment rates and in their respective duration of unemployment. In general, the unemployment rate decreases as the age of an individual increases; for both sexes. Here, the highest rates are recorded by the first two age groups (15-19 and 20-24). It also shows that duration of unemployment has a clear relationship with age. For males' average duration of unemployment for age group (15-19) decreases from 1.536 months to 0.24 months for the age group (30-39). After that the trend reverses, unemployment rates start increasing and the average duration of unemployment also increases for males.

For females, the average duration of unemployment of the age group (15-19) is 1.79 months, which declines as age increases. It is as low as 0.57 months for the Age group (40-44). This trend is reversed afterwards and duration of unemployment increases with age. For the age group (53-59), it is 2.5 months.

When comparing males with females, females experienced higher unemployment rates and longer durations of unemployment than males for all age groups. The larger differences between the unemployment rates of the two sexes occur for the age groups (45-49), (50-54) and (55-59). However, a turning point of trend in both cases occurs for the age group (35-39). Another, noticeable difference is the greater concentration of unemployed females within the (55-59) age group, while in case of males' highest unemployment rate is recorded for age group (15-19).

Table: 4.3. Unemployment by Age and Sex (%)

Age Groups/Sex	Unemployment Rate (%)	Average Duration (months)
Males		**Duration**
15-19	12.8	1.53
20-24	9.30	1.11
25-29	6.10	0.73
30-34	3.80	0.45
35-39	2.00	0.24
40-44	2.50	0.30
45-49	2.30	0.27
50-54	3.50	0.42
55-59	4.50	0.54
Females		
15-19	14.9	1.79
20-24	15.0	1.81
25-29	12.5	1.52
30-34	7.43	0.89
35-39	7.23	0.86
40-44	4.82	0.57
45-49	9.56	1.14
50-54	12.2	1.46
55-59	20.7	2.48

Source: Labor Force Survey of Pakistan 2003-04

Table 4.4 shows duration-adjusted unemployment rates for each group for different degrees of inequality aversion, which as mentioned earlier is a parameter in this model. The unadjusted rates, (when $\varepsilon = 0$) correspond to the original unemployment rates reported in Labor Force Survey of Pakistan (2003-04). The value $\varepsilon = 0.4$ shows a low degree of inequality aversion, an unemployment rate of 12.8% for males of age group (15-19) translates into a duration-adjusted unemployment rate of 22.0%. For a high degree of inequality aversion (when $\varepsilon = 0.8$) this rate scales up to 30.79% (for males) and 41.68% for females. The unemployment rate of various age groups for the both sexes experienced different rates of increase under various degrees of inequality aversion; due to the different distribution of average duration of unemployment within each group.

Table- 4.4 (a) shows various factors for each age group by which the unemployment rate of each group is scaled up. These scaling factors have an inverse relationship with the duration-adjusted unemployment rates. That is for any given degree of ε, age groups with high unemployment rates record small scaling factors than age groups with lower unemployment rates. Another observation is that males experienced a greater scaling up in their duration-adjusted unemployment rates, which implies that males experienced greater lengths of unemployment spells.

Table: 4.4. Duration adjusted Unemployment: By Age and Sex (%)

Age /Sex	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40-44**	**45-49**	**50-54**	**55-59**
Male									
ε = 0	12.8	9.3	6.1	3.8	2.0	2.5	2.3	3.5	4.5
ε = 0.4	22.0	18.26	13.56	9.67	6.11	7.17	7.0	9.11	10.91
ε = 0.8	30.79	26.72	21.14	16.25	11.37	12.88	12.29	15.52	17.85
Female									
ε = 0	14.90	15.00	12.5	7.4	7.2	4.8	9.5	12.2	20.7
ε = 0.4	25.62	25.80	22.63	15.53	15.25	11.42	18.59	22.24	34.45
ε = 0.8	34.66	34.87	31.49	23.48	23.16	18.50	27.02	31.07	41.68

Table: 4.4. (a); Scaling Factor by Age and Sex

Age /Sex	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40-44**	**45-49**	**50-54**	**55-59**
Male									
ε = 0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
ε = 0.4	1.7	1.9	2.2	2.5	3.0	2.8	3.0	2.6	2.4
ε = 0.8	2.4	2.8	3.4	4.2	5.6	5.1	5.3	4.4	4.0
Female									
ε = 0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
ε = 0.4	1.7	1.7	1.8	2.1	2.1	2.4	1.9	1.8	1.5
ε = 0.8	2.3	2.3	2.5	3.2	3.2	3.8	2.8	2.5	2.1

The scaling factors for the first two age groups of males are relatively low and are particularly very high for the age groups (30-34), (35-39), (40-44), (45-49) and age groups (30-34), (35-39) and (40-44). But these scaling factors are relatively lower as compared to males. The age groups which experienced the highest factors, had the largest disparities of unemployment spells; males aged between (35-39). Another important finding is that duration-adjusted rates are higher for males than females even though the male unadjusted unemployment rates are lower as compared to female unadjusted unemployment rates.

V. Unemployment Rates by Age and Sex

Table 5.1 shows unemployment rates for various areas of Pakistan; as reported in the Labor Force Survey of Pakistan (2003-04). First column shows the overall unemployment rate for Pakistan and for its four Provinces as well as for rural-urban areas. The unemployment rate is lowest for rural areas of Sindh and highest for urban areas of NWFP. These rates have a range of 10.45%, which shows highly unequal unemployment distribution among various provinces of Pakistan. Urban Balochistan, all areas of NWFP and urban Punjab have relatively higher unemployment rates.

The second column of the table 5.1 indicates that average duration of unemployment, which is highest for urban NWFP and the lowest for rural areas of Sindh. The range of average duration of unemployment is 1.26 months. Column (3) shows that the unemployment rate for males for various areas of Pakistan. In this case, the unemployment rate is highest for the males of NWFP (10.13%) and lowest for males of rural Sindh. Column (4) indicates that average duration of unemployment for males for all areas of Pakistan. This average duration is the highest for urban areas of NWFP and the lowest for rural Sindh.

Column (5) shows unemployment rates for females of all areas of Pakistan. This rate is the highest (41.62%) for urban areas of Balochistan and the lowest for rural areas of Punjab (7.76%). It may be noted the females in Baluchistan are relatively less educated; as compared to other provinces of Pakistan. Here data is not only showing widespread unemployment among females but also shows greater disparities among various areas of Pakistan. The range is 33.86%, which is very high. Column (6) provides figures for the average duration of unemployment for females of various areas of Pakistan. This average duration is the highest for urban areas of Balochistan. On average, females in urban areas of Balochistan have unemployment duration of 5 months. It indicates that urban females in Baluchistan not only suffer from the highest rate of unemployment but they are also victim of highest duration of unemployment.

Table: 5.1. Province Wise Unemployment by Province (%)

Area/Sex	Unemp. Rate (Total) (1)	Average Duration (months) (2)	Unemp. Rate (M) (3)	Average Duration (months) (4)	Unemp. Rate (F) (5)	Average Duration (months)* (6)
Pakistan	7.69	0.93	6.59	0.79	12.75	1.53
Pakistan R)	6.74	0.80	5.65	0.68	10.88	1.30
Pakistan (u)	9.70	1.16	8.37	1.00	19.82	2.38
Balochistan	8.19	0.98	6.29	0.75	27.66	3.32
Balochistan (R)	7.00	0.84	5.26	0.63	24.32	2.92
Balochistan (u)	12.53	1.50	10.01	1.20	41.62	5.00
NWFP	12.85	1.54	10.13	1.21	29.44	3.53
NWFP	12.47	1.49	9.59	1.15	28.91	3.47
NWFP (u)	14.83	1.78	12.77	1.53	33.45	4.01
Punjab	7.36	0.88	6.68	0.80	9.64	1.15
Punjab (R)	6.71	0.80	5.52	0.66	7.76	0.93
Punjab (u)	10.40	1.24	9.11	1.09	17.89	2.14
Sindh	5.97	0.71	4.83	0.58	19.58	2.34
Sindh (R)	4.38	0.52	3.16	0.38	18.25	2.20
Sindh (u)	7.56	0.91	6.50	0.78	21.04	2.52

*R= Rural U= Urban *- months per year.*
Source: Labor Force Survey of Pakistan 2003-04

A comparison of male and female unemployment rates shows that firstly, unemployment rates for males are relatively lower and secondly, the duration of females is almost three times higher; as compared to that of males. So females on average, have longer spells of unemployment. The urban-rural comparison shows that for males and females' unemployment rates as well as average duration is lower for rural areas; as compared to urban areas.

5.1 Duration adjusted Unemployment by Area and Sex

Table- 5.2 provides duration-adjusted unemployment rates along with corresponding scaling factors (table 5.2.a) for different degrees of inequality aversion by state -for rural and urban areas of Pakistan. The table 5.2 shows that there is a clear difference between rural and urban areas with regard to unemployment rates. For both males and females, unemployment rates are higher

for urban areas and lower for rural areas. The range for rural unemployment rates is 14.47% as compared to 18.80% for urban areas.

Table: 5.2. Duration Adjusted Unemployment by Sex (%)

Area/sex Pakistan	Duration-Adjusted Unemployment Rate (Total)	Duration-Adjusted Unemployment Rate (Males)	Duration-Adjusted Unemployment Rate (Females)
ε = 0	7.69	6.59	12.75
ε = 0.4	15.80	14.11	22.90
ε = 0.8	23.87	21.75	31.74
Pakistan (R)			
ε = 0	6.74	5.65	10.88
ε = 0.4	14.47	12.80	20.42
ε = 0.8	22.24	20.20	29.07
Pakistan (u)			
ε = 0	9.70	8.37	19.82
ε = 0.4	18.80	17.05	31.36
ε = 0.8	27.26	25.31	40.58

*R= Rural U= Urban *- months per year*

However, there is a very little disparity with regard to the length of unemployment spells. Similarly, in spite of high unemployment rates faced by urban males, there is a little disparity regarding the duration of unemployment; as compared to rural males. The range is 17.05% and 12.80% for urban and rural males, respectively. In the case of females, the range is 20.42% and 31.36% for rural and urban females, respectively. It shows that urban females' face not only higher unemployment rates but they also suffer from longer spells of unemployment.

The scaling factors (table 5.2.a) above show that there is a smaller disparity with regard to unemployment spells in urban areas; as compared to rural areas. Similarly, rural males have greater disparity with regard to unemployment spells. For females, whether rural or urban, the scaling factors exhibit smaller disparities in the duration of unemployment spells; as compared to males. Urban

females have the smallest range (1.58%) and it is 1.87% for rural females, showing relatively longer unemployment spells for rural women.

Table: 5.2.a. Scaling Factors

Area / Sex	(Total)	(Males)	(Females)
Pakistan			
ε = 0	1	1	1
ε = 0.4	2.05	2.14	1.79
ε = 0.8	3.10	3.30	2.48
Pakistan (R)			
ε = 0	1	1	1
ε = 0.4	2.14	2.26	1.87
ε = 0.8	3.29	3.57	2.67
Pakistan (u)			
ε = 0	1	1	1
ε = 0.4	1.93	2.03	1.58
ε = 0.8	2.81	3.02	2.04

*R= Rural U= Urban *- months per year*

5.2 Duration Adjusted Unemployment by Province

Following is a comparative analysis of the provinces of Pakistan regarding duration of unemployment period for males and females in rural and urban areas of all the four provinces of Pakistan. The tables below give duration-adjusted unemployment for various areas along with scaling factors.

As it is clear from the table 5.3, those females experienced relatively higher unemployment rates, as compared to males. Moreover, in rural areas of Balochistan, the incidence of unemployment is lower as compared to urban areas. Rural areas have shorter unemployment spells as compared to urban areas. The unemployment rate for rural males is 5.26%; in comparison with 10.01% for urban males. So urban males have not only higher unemployment rates but they also have longer unemployment spells. As far as females are concerned, urban female unemployment rate rises to 53.20% from 41.62% for ε = 0.4. If the value of ε is taken higher than four, the same figure jumps to much higher level. In the case of males, the range of unemployment is 19.24%; as compared to 53.20% for females. The scaling factors scores show that there is greater disparity in the

Table: 5.3. Duration Adjusted Unemployment: Baluchistan (%)

Area / Sex Overall	Duration-Adjusted Unemployment rate (Total)	Duration-Adjusted Unemployment rate (Males)	Duration-Adjusted Unemployment rate (Females)
ε = 0	8.19	6.29	27.66
ε = 0.4	16.67	13.90	39.72
ε = 0.8	24.82	21.58	48.76
Balochistan (R)			
ε = 0	7.00	5.26	24.32
ε = 0.4	14.88	12.15	48.10
ε = 0.8	22.12	19.41	55.48
Balochistan (U)			
ε = 0	12.53	10.01	41.62
ε = 0.4	22.63	19.24	53.20
ε = 0.8	31.50	27.76	61.20

R =Rural U=Urban- months per year.*

Table: 5.3. (a); Scaling Factors

Area / Sex	(Total)	(Males)	(Females)
Balochistan			
ε = 0	1	1	1
ε = 0.4	2.03	2.20	1.43
ε = 0.8	3.03	3.43	1.76
ε = 1.0	3.52	4.05	1.90
Balochistan (R)			
ε = 0	1	1	1
ε = 0.4	2.12	2.30	1.97
ε = 0.8	3.24	3.69	2.28
Balochistan (U)			
ε = 0	1	1	1
ε = 0.4	1.80	1.92	1.27
ε = 0.8	2.51	2.77	1.47

R =Rural U=Urban- months per year.*

duration of unemployment of males. Females have smaller scaling factors for both rural and urban areas. Following points summarizes the facts presented below.

- *In rural-urban comparison, it is found that urban areas have higher unemployment rates and longer unemployment spells.*
- *There is greater disparity among the rural and urban unemployment rates. Both for males and females urban unemployment rate is double of rural unemployment rate.*
- *Unemployment rates, as well as unemployment spells are longer for females.*

Table 5.4 shows duration rates of unemployment for NWFP. For NWFP, unemployment rates are lower for males and higher for females. The unadjusted

Table: 5.4. Duration Adjusted Unemployment Rates for NWFP (%)

Area / Sex	Duration-Adjusted Unemployment Rate (Total)	Duration-Adjusted Unemployment Rate (Males)	Duration-Adjusted Unemployment Rate (Females)
NWFP			
$\varepsilon = 0$	12.85	10.13	29.44
$\varepsilon = 0.4$	23.08	19.47	41.89
$\varepsilon = 0.8$	31.97	28.01	50.87
NWFP (R)			
$\varepsilon = 0$	12.47	9.59	28.91
$\varepsilon = 0.4$	22.60	18.71	41.19
$\varepsilon = 0.8$	31.45	27.15	50.15
NWFP (U)			
$\varepsilon = 0$	14.83	12.77	33.45
$\varepsilon = 0.4$	25.29	22.97	45.96
$\varepsilon = 0.8$	34.24	31.85	54.67

R =Rural U=Urban- months per year.*

unemployment rates when $\varepsilon = 0$, females have an unemployment rate of 29.44% as compared to 10.13% for males. Here again urban unemployment rates are

relatively higher than rural's. But in comparison to Baluchistan, in NWFP, there is not much disparity between rural and urban areas. The scaling factors (Table-5.4 (a), also show that unemployment rates are more evenly distributed in NWFP. The range for rural areas is 1.81; as compared to 1.70 for urban areas. Both rural and urban population face unemployment spells of almost same duration. It is true for males and females also, as the range of unemployment for males is 19.47% as compared to 41.89% for females. It shows an uneven distribution of unemployment among males and females.

Table: 5.4. (a); Scaling Factors

Area / Sex	**(Total)**	**(Males)**	**(Females)**
NWFP			
$\varepsilon = 0$	1	1	1
$\varepsilon = 0.4$	1.79	1.92	1.42
$\varepsilon = 0.8$	2.48	2.76	1.72
NWFP (R)			
$\varepsilon = 0$	1	1	1
$\varepsilon = 0.4$	1.81	1.95	1.42
$\varepsilon = 0.8$	2.52	2.83	1.73
NWFP (U)			
$\varepsilon = 0$	1	1	1
$\varepsilon = 0.4$	1.70	1.80	1.37
$\varepsilon = 0.8$	2.30	2.49	1.63

R= rural U= Urban

Following are the various conclusions, which can be drawn with reference to unemployment in NWFP:

- *Rural and urban unemployment rates are almost same. There is not much disparity with regard to the spells of unemployment.*
- *Overall female unemployment rates are higher for both rural and urban areas; as compared to males. But the length of unemployment spells is almost same in both cases.*
- *As indicated by the results of scaling factors, female unemployment rates are more evenly distributed. In case of males 2.26 and1.82 for rural and urban areas scales these rates up respectively. This shows*

smaller disparity with regard to the length of unemployment spells in case of females. Or in other words the distribution of unemployment in more unequal in case of males.

The table 5.5, below presents the duration adjusted unemployment rates for various degrees of unemployment aversion "ε" for the province of Punjab and its rural and urban areas. The unemployment rates for rural areas are lower as compared to urban areas for all levels of "ε". Females experience higher unemployment rates in comparison to males. The rural females have an unemployment rate of 7.76%, which is 2.24% higher as compared to rural males.

Table: 5.5. Duration Adjusted Unemployment for Punjab (%)

Area / Sex	Duration-Adjusted Unemployment Rate (Total)	Duration-Adjusted Unemployment Rate (Males)	Duration-Adjusted Unemployment Rate (Females)
Punjab			
ε = 0	7.36	6.68	9.64
ε = 0.4	15.53	14.49	18.81
ε = 0.8	23.49	22.26	27.26
Punjab (R)			
ε = 0	6.71	5.52	7.76
ε = 0.4	14.53	12.56	16.08
ε = 0.8	22.31	19.90	24.18
Punjab (U)			
ε = 0	10.40	9.11	17.89
ε = 0.4	25.66	18.04	29.24
ε = 0.8	28.40	26.32	38.41

R= rural U= Urban

In case of urban areas, however the female unemployment rate is almost double of male unemployment rate. Table-5.5. (a); shows the scaling factors (the factors by which the unemployment rates are scaled up for different levels of unemployment aversion 'ε'). These factors are highest for rural males and lowest for urban females. It implies an uneven distribution of the unemployment spells for rural males. And in Punjab, urban females have smallest disparity with regard

to the distribution of unemployment spells. The duration of unemployment spells is lowest for rural males having a range of 19.9% and longest for urban females with a range of 24.18%. Now with regard to the unemployment measurement in the province of Punjab following conclusions can be drawn.

Table 5.5.a. Scaling Factors

Area / Sex	(Total)	(Males)	(Females)
Punjab			
$\varepsilon = 0$	1	1	1
$\varepsilon = 0.4$	2.11	2.16	1.95
$\varepsilon = 0.8$	3.19	3.33	2.82
Punjab (R)			
$\varepsilon = 0$	1	1	1
$\varepsilon = 0.4$	2.16	2.27	2.07
$\varepsilon = 0.8$	3.32	3.60	3.11
Punjab (u)			
$\varepsilon = 0$	1	1	1
$\varepsilon = 0.4$	2.46	1.98	1.63
$\varepsilon = 0.8$	2.73	2.88	2.14

R= rural U= Urban

- *Rural unemployment rates are lower as compared to urban unemployment rates.*
- *The duration of unemployment spells is also shorter for rural areas.*
- *Overall, female unemployment rates are higher for both rural and urban areas; as compared to males. The rural females have an unemployment rate of 7.76%, which is 2.24% higher as compared to rural males. In case of urban areas, however, the female unemployment rate is almost double of male unemployment rates.*

The scaling factors show an uneven distribution of the unemployment spells for rural males. And in Punjab urban females have smallest disparity with regard to the distribution of unemployment spells. The duration of unemployment spells is lowest for rural males having a range of 19.9% and longest for rural females with a range of 24.18%.

Table 5.6 shows duration-adjusted unemployment rates for the province of Sindh; for various degrees of unemployment aversion "ε". The lowest unemployment rate is 3.16% (for ε = 0) for rural males and the highest one (21.04%) are for urban females. All these rates are converted into duration-adjusted unemployment rates for various degrees of unemployment aversion "ε". Like other provinces, Sindh also has high unemployment rates for urban areas; as compared to rural areas. But there is a great disparity among male and female unemployment rates; as female unemployment rate (19.58%) is almost five times higher than that of male unemployment rate (4.83%). As the duration- adjusted unemployment rates show, females face not only high unemployment rates but also longer spells of unemployment; both in rural and urban areas.

Table-5.6. (a); presents scaling factors belonging to the duration- adjusted rates for Sindh. It shows a greater disparity among males with regard to the distribution of unemployment spells. Females, although experience higher unemployment rates and longer unemployment spells, but their unemployment spells are more evenly distributed as compared to male labor force. It is evident from the range of scaling factors for males and females. This range for different degrees of "ε" is 3.61 for males as compared to 1.27 for females.

Table: 5.6. Duration Adjusted Unemployment for Sindh (%)

Area / Sex	**Duration-Adjusted Unemployment Rate (Total)**	**Duration-Adjusted Unemployment Rate (Males)**	**Duration-Adjusted Unemployment Rate (Females)**
Sindh, Overall			
ε = 0	5.97	4.83	19.58
ε = 0.4	13.33	11.46	31.11
ε = 0.8	20.87	18.54	40.32
Sindh (R)			
ε = 0	4.38	3.16	18.25
ε = 0.4	10.68	8.46	29.58
ε = 0.8	17.56	14.65	38.76
Sindh (U)			
ε = 0	7.56	6.50	21.04
ε = 0.4	15.78	14.17	36.71
ε = 0.8	23.78	21.87	47.04

R= rural U= Urban

Table: 5.6.a. Scaling Factor for Unemployment by Sex

Area / Sex	Total	Males	Females
Sindh			
ε = 0	1	1	1
ε = 0.4	2.23	2.37	1.58
ε = 0.8	3.50	3.83	2.06
Sindh (R)			
ε = 0	1	1	1
ε = 0.4	2.49	2.67	1.62
ε = 0.8	4.09	4.63	2.12
Sindh (U)			
ε = 0	1	1	1
ε = 0.4	2.68	2.18	1.74
ε = 0.8	3.14	3.36	2.23

R= rural U= Urban

The comparison of rural and urban areas unemployment spells indicated that there are longer spell of unemployment in urban areas both for males and females. But as shown by the scaling factors, there is greater disparity with regard to the distribution of unemployment spells in rural areas; as compared to urban areas. This disparity is highest for urban males. So following conclusions can be drawn about unemployment situation in the province of Sindh:

- *Urban areas have higher unemployment rates as compared to rural areas. The duration of unemployment is also longer for urban areas but there is greater disparity among rural labor force as far as the distribution of unemployment spells is concerned. Unemployment spells are more evenly distributed in urban areas and particularly among females.*
- *Females have higher unemployment rates both in rural and urban areas. As compared to males, females face longer unemployment spells but unemployment is more evenly distributed among female labor force.*
- *The province of Sindh has more disparities with regard to the distribution of unemployment as compared to other provinces between rural and urban areas.*

Following is a brief comparison regarding unemployment rates among the provinces of Pakistan. The analysis is divided into three categories as:

i) Comparison on the basis of published unemployment rates.
ii) Comparison on the basis of duration-adjusted rates; and
iii) Comparison on the basis of distribution of unemployment among various segments of labor force.

5.3 Regional Comparison of Published Unemployment Rates

On the basis of published unemployment rates, following main conclusions may be drawn.

- *NWFP has the highest overall unemployment rate (12.85%) in Pakistan.*
- *Male, as well as female unemployment rate is also the highest in NWFP, which is 10.13% for males and 29.44% for females.*
- *The province of Sindh is reported to have the lowest unemployment rate (5.97%); among the provinces.*
- *The male unemployment rate is also lowest in the province of Sindh (4.63%); as compared to other provinces.*
- *Females have the lowest unemployment rate in the province of Punjab (9.64%) and which is even further low in the rural areas of Punjab (7.76%).*

5.4 Male and Female unemployment Gap

The following table 5.7 provides the gap between unemployment rates of males and females in various provinces. As it is clear from the table 5.7, the disparity among male and female unemployment rates is lowest in the province of Punjab; as shown by the gap in the last column of the table. This gap is only 9.64% in case of Punjab and 21.37% for Balochistan. So Baluchistan has the largest disparities with regard to male and female unemployment rates.

Table: 5.7. Unemployment Disparity: Male and Female

Area	Unemployment Rate (Males) %	Unemployment Rate (Females) %	Gap (%)
Balochistan	6.29	27.66	21.37
NWFP	10.13	29.44	29.44
Punjab	6.68	9.64	9.64
Sindh	4.83	19.58	19.56

The following table 5.7.a presents the gap between unemployment rates of rural and urban areas of various provinces of Pakistan.

Table: 5.7. (a); Unemployment Disparity: Rural and Urban

Area	Unemployment Rate (Rural) %	Unemployment Rate (Urban) %	Gap (%)
Balochistan	7.00	12.53	5.53
NWFP	12.47	14.83	2.36
Punjab	6.71	10.40	3.69
Sindh	4.38	7.56	3.18

As shown in the above table the unemployment gap is highest for Balochistan (5.53%) and lowest for NWFP (2.36%). The NWFP is not only experiencing highest unemployment rates; as compared to other provinces but it also suffers from wide spread of unemployment; among rural and urban areas. In the case of Balochistan, rural unemployment rate is almost half that of urban unemployment rate.

5.5. Provincial Comparison of Duration-Adjusted Unemployment Rates

The table 5.7.b, bellow shows the duration – adjusted unemployment rates along with the corresponding scaling factors for different degrees of inequality aversion of unemployment by the province. There is a wider disparity among Provinces with regard to duration- adjusted unemployment rates. The last column of the table 5.7.b shows this range. At $\varepsilon = 0.4$, this range is 9.75% and at $\varepsilon = 0.8$ is 11.10%.

Table: 5.7. (b). Duration Adjusted Unemployment by Province (%)

ε	Balochistan	NWFP	Punjab	Sindh	Range (%)
ε = 0	8.19	12.85	7.36	5.97	6.88
ε = 0.4	16.67	23.08	13.53	13.33	9.75
ε = 0.8	24.82	31.97	23.69	20.87	11.10

Unemployment spells are longest in NWFP. As shown in the above table. The duration adjusted unemployment rate for ε = 0.8 for this province is 31.97% as compared to 24.82%, 23.69% and 20.87% for Balochistan, Punjab and Sindh, respectively. While province of Sindh has relatively shorter unemployment spells as compared to other provinces.

5.6. Comparison on the Basis of Distribution of Unemployment

Following table 5.8 shows the scaling factors corresponding to above 5.7.b table showing duration-adjusted unemployment rates for various provinces. Although, NWFP has the highest unemployment rates at all levels of ε . The labor force of NWFP experienced the smallest disparity with regard to the length of unemployment spells; as it has the smallest scaling factor scores, as compared to other provinces at all levels of ε. In contrary to that, as compared to other provinces, Sindh has the lowest unemployment rates but largest disparity with regard to the length of unemployment spells being having the highest scaling factors at all levels of ε. It means, in case of Sindh, unemployment is more unequally distributed; as compared to other provinces.

Table: 5.8. Scaling Factors

ε / Area	Balochistan	NWFP	Punjab	Sindh
ε = 0	1	1	1	1
ε = 0.4	2.03	1.80	2.11	2.23
ε = 0.8	3.03	2.48	3.19	3.50

For Punjab and Balochistan, the unemployment disparity with regard to the length of unemployment spells is almost the same.

VI. Conclusion

The present study was focused to measure unemployment rate by utilizing Borooah (2002) method which aggregate unemployment spells. The published unemployment rates are converted into duration-adjusted unemployment rates. Unemployment rates have been estimated by sex and area (provinces). So far such identification has not been made by any study pertaining to Pakistan. The analysis shows that open unemployment rate does not reflect the actual level of unemployment. There is a widespread unemployment in the provinces of Pakistan. As per our findings, the unemployment rate is much higher than the official rates published over time. Besides, urban unemployment is higher than the rural's; it is consistent with the theory that people move to urban areas and wait while looking for a job. Besides, there is consistent migration from rural to urban areas in Pakistan, which puts pressure on job market in the urban areas. People move to urban areas for different objectives like jobs, and business etc. These higher underemployment rates in the rural areas can be due to greater reliance of rural families on agriculture. As agriculture sector usually has seasonal working period and majority of agricultural workers remain unemployed during the remaining period.

Another important finding is that females are suffering from much higher underemployment rates, as compared to males. These differentials differ among provinces. The phenomenon of underemployment was also measured by Robinson and Abbasi (1979), and Chaudhary and Hamid (1999). Robinson and Abbasi found underemployment to be largely concentrated in family-organized production units in agricultural trade and services. Chaudhary and Hamid (1999) also found widespread (double-digit) underemployment in traditional rural sector. Our findings are consistent with the earlier findings that actual unemployment is much higher than the official figures. In brief, the present study finds that firstly, there is a widespread underemployment in rural areas of Pakistan, and secondly the prevalence of very high underemployment rates among females. Previous studies ignore this aspect of unemployment; as females make up almost half of the labor force.

Another important contribution of the present study is an estimation of duration–sensitive unemployment rates. In this process, the issue of the identification of unemployed has received considerable attention. In case of males, the unemployment rate for ages above 29 years is not magnified as much as for youth (15-29) years. Male unemployment rates are scaled up more than females. Unemployment is distributed more equally among females than among males. It can be so, because of the reason that there are greater proportions of males who never experience an unemployment spell at all. So from an equity

perspective, male unemployment is worse than female unemployment because it is less equally shared. This is true for almost all the age groups, where although the male unadjusted unemployment rate is lower than females; the duration sensitive rates are higher for males.

The present study also contributed by providing the comparison of the distribution of unemployment over a period of last 20 years. The analysis shows a great degree of variation in the distribution of unemployment over the years. These variations are as high as up to 10.53%. One important aspect to be noticed is duration – adjusted unemployment rates which shows an increase from 1985 to 2003. However, during 2005 a mild improvement occurred. Average duration of unemployment also increased during these years. It increases from 0.43 months in 1985 to 0.99 months in 2003.

The study also provides a regional comparison (province –wise) regarding duration-adjusted unemployment rates. It was found that NWFP province has the highest unemployment rates at all levels of inequality aversion but the labor force of NWFP experienced the smallest disparity with regard to the length of unemployment spells. In contrary to that, as compared to other provinces, the Sindh province has the lowest unemployment rates but largest disparity with regard to the length of unemployment spells. It means in the case of Sindh province, unemployment is unequally distributed. While for Punjab and Balochistan the disparity with regard to the length of unemployment spells is almost the same. These findings can be helpful to the policy makers as they provide a deeper insight into the actual situation of the labor market. It is particularly important for a developing country like Pakistan having the twin problems of unemployment and poverty, as unemployment is one of the major sources of poverty. And longer spells of unemployment obviously worsen the situation. So while making policies not only the unemployment rate but also the actual length of unemployment spell should be taken into account. Besides, special attention needs to be paid to unemployed females; since they are more victim of unemployment, as compared to males. Moreover, official unemployment is underestimated; therefore policies are needed to combat with higher level of unemployment than that of targeted in the past.

Appendix

Appendix Table: 1. Scaling Factors

ε-value	Scenario 1	Scenario 2	Scenario 3
$\varepsilon = 0$	1.0	1.0	1.0
$\varepsilon = 0.1$	1.0	1.15	1.13
$\varepsilon = 0.4$	1.0	1.90	1.48
$\varepsilon = 0.8$	1.0	2.89	1.89
$\varepsilon = 1.0$	1.0	3.32	1.99
$\varepsilon = 1.5$	1.0	4.29	2.29

The above table presents scale factors corresponding to duration-adjusted rates. The unemployment rates under various scenarios experience different rates of increase for different degrees of inequality aversion. The scaling factors show that under scenario 2 the unemployment rate increases rapidly as compared to scenario 3.

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