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Female Unemployment Duration in Pakistan – A Survival Analysis

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ABSTRACT

Female unemployment in Pakistan is very high in contrast to its neighboring countries. The finding of previously available literature concludes that staying out of the labour market for longer durations causes a lower possibility of getting a job again and for females; the probability is even lower compared to males. This study examines the unemployment situation and its duration, forcing females to drop out of Pakistan's labour force. Numerous factors are accountable for the higher inactivity rate of females in the labour market. Some examples are low education level, higher age, home responsibilities such as taking care of elders and children, spouse job status, marital status, and non-availability of job-specific knowledge. Although in the case of Pakistan, literature shows many causes of higher inactivity of female unemployment, it does not focus on the time estimations and calculate it in days or months to figure out how long a female take to get back on a job once she becomes unemployed. More specifically, the aspects which determine unemployment are unavailable. Kaplan-Meier Survival analysis has been performed to assess the research by employing the data on the labour market and socio-economic variables from the Labour Force Survey (LFS) source of 2014-15. This study can help policymakers to figure out the duration of female unemployment, prevalent in the labour market for females in Pakistan.

Keywords

Female unemployment, Survival Analysis, Kaplan-Meier technique

JEL Classification

J64, J13, J16, P34

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1. Introduction

One of the fascinating topics for academicians and policymakers is unemployment since it is one of the most distressing issues for developing and developed economies. Henceforth It is the favourite topic for labour economists, causing it the most debated matter among them as the strong spur on both micro-level as an influence of impacting the wellbeing of households and on the macro level, as it creates its impact on the aggregate level. The economic term differentiates the self-unemployed and unemployed by identifying that one who quit the job to stay at home to take care of young children or who does it for higher studies is not considered unemployed as they are not actively searching for a job. Numerous problems in society have the root cause of long-term unemployment. Survival for individuals becomes very difficult as many candidates contest for fewer positions. Social pressure and responsibilities make a person get into a severe depression when one fails to find any job, which ultimately pushes them to opt for any way possible to come out of that state.

Unemployment is equally stressful for both males and females as they spend their life's quality time acquiring skills and education for a prosperous future. Unfortunately, they comprehend a vast gap between the opportunities offered and the people willing to get them when they enter the job market. Undoubtedly, it is the state's responsibility to take policy measures that create job opportunities and ultimately stimulate growth in the long run. Nevertheless, if the state fails to make employment in the economy, it provides foundations for many social problems. Pakistan is considered the 6th largest economy globally by its size and its working-age population, and the number count is growing every minute. The statistics taken from the World Bank data on development indicators reported that 65.3% was declared as the population under the working-age category for 2015, highlighting that most of its population consists of youth. The average unemployment rate was 5.46% from 1985 to 2015 and peaked in 2002 when unemployment reached 7.8%.

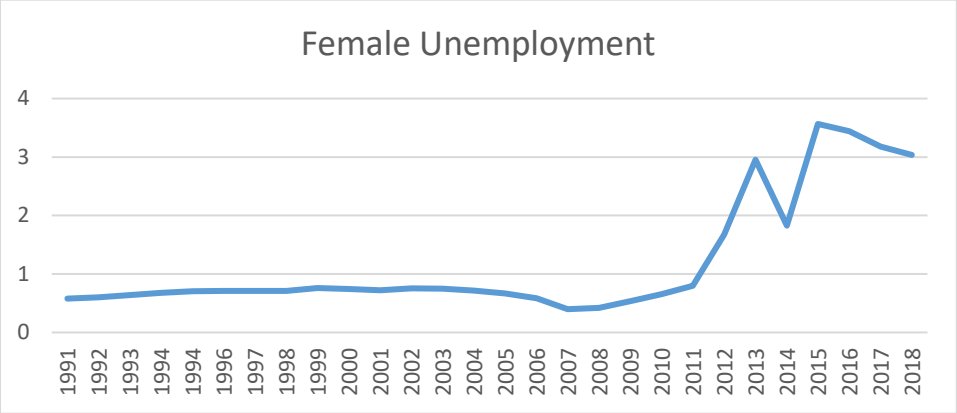

Figure1: Female unemployment

Source: Data taken from World Bank

Unemployment among females in Pakistan is alarming because the female population is more in number than males in Pakistan. Following the role model of developed economies, it is high time to encourage the country's females to become part of the labour force. However, female labour force participation has increased over the years. Still, it is not as desired compared to Pakistan's neighbouring countries. Being a developing country, Pakistan should increase female participation in the labour force; it is being perceived that unemployment affects females differently than males, especially educated females.

Moreover, the persistent increase of females in the labour force is cumulating, causing the gap to grow faster, impacting the current employment opportunities. In terms of new arrivals and limited job opportunities, the constantly extending labour market creates a massive gap between jobs and the available labor force. The continuous increase in unemployment with fresh arrivals in the form of new graduates entering into the labour market creates havoc and will be problematic in the long run.

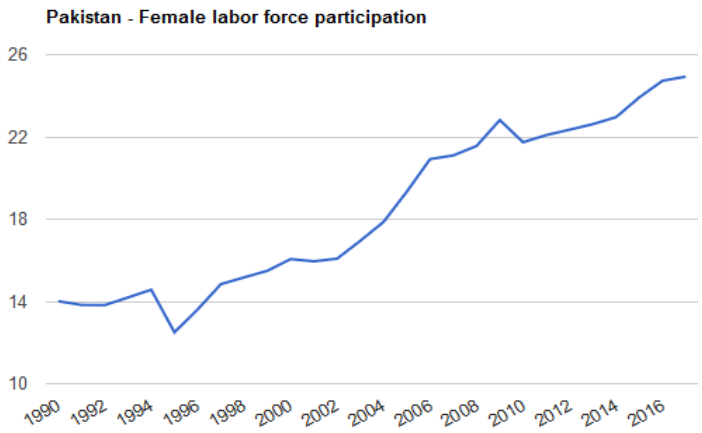

Figure 2: Female labour force participation in Pakistan

Source: World Bank

It is witnessed that in Pakistan, women stay at home, for which many factors are involved. The primary reason for others is that household responsibilities (child care is included in it) did not allow her to go out to work. Other than this, lower-wage compared to males are also the reason for lower labour force participation. Spouse job status is also among those causes which do not permit her as it is suggested not to work if husbands earnings are reasonable; these all only a few among all those issues which are responsible for limited participation of females in the labour market(Tasnim Khan et al. 2009 Ahmed et al. 2013, Shabir et al. 2015).

However, according to the World Bank statistics, the women residing in rural areas of Pakistan have more share in the labour force than urban areas due to the higher rate of poverty. Another cause can be less educated, or people with no education are more adaptable and ready to work than highly qualified or have any education as they prefer to work according to their education. Different studies concluded that those with higher education chose to stay unemployed if they failed to acquire a job that matched their qualifications (Kahn et al., 2009). The pioneering work of Mincer (1962) and Cain (1966) on the economic analysis of the labour force participation of females received significant interest. Extensive female labour force participation improvement is observed in developing countries. A developing economy like Pakistan needs more of its females to join the labour force for the country's rapid growth. If the issue is not appropriately addressed, it will discourage females from pursuing higher education in the future. It is essential to understand the importance of examining the duration of unemployment at the individual level especially long-term unemployment, because it is the

most significant factor which decides the life choices of individuals. Females living in a developing country like Pakistan let themselves deprives of many necessities due to the non-availability of disposable income at their end. The meaningful life activities and better livelihood require better income resources Tansel, A., & Taşçı, H. M. (2010).

1.1. Objective of the Study

In order to estimate the unemployment duration among females Kaplan-Meier technique has been used. It is a nonparametric (actuarial) method for approximating time-related events (the survivorship function). Typically, A plot of the Kaplan-Meier estimate of the survival function is a sequence of horizontal steps of diminishing magnitude which, when a huge enough sample is taken, approaches the true survival function for that population. A significant advantage of the Kaplan-Meier curve is that the method can consider the "censored" data losses from the data before the final results are observed.

Here, we are concerned to evaluate the duration of female unemployment, which is an enormous share of the dejected labour force. We can witness from the example of developed economies that they grew faster when they created equal opportunities for their female to play their part in society's wellbeing. The previously available literature has shed light on the fact that if good health amenities and equal chances of education are provided, it will increase its long-term growth. Specifically, the study will examine the role of age, education, gender, family size, children and other characteristics as determinants of unemployment duration.

The paper is prearranged in the following manner: Section II shows the existing literature and highlights the critical factors related to the study—a review of the literature. The methodology part elaborates on the technique this study used for analysis purposes, the part after that debates the data sources; lastly, the study debated the study's findings by shedding light on the results and conclusion

2. Literature Review

Numerous social, economic, and psychological factors are involved in female unemployment. It is high time for females of our society to get encouraged and participate in the labour force to improve their economic stability and the country. It is being observed that females are the neglected part of our culture being stayed at home; however, if given a chance to them, an enormous change in society can be bought, as they can perform on both home and workplace if given few facilities. Females quit their job after having children. It is one of the primary reasons that they stay at home because of the non-availability of help at home who can take care of their children in their absence. It was concluded in many studies that children under the age of 5 increase females' unemployment probability. This is the reason that they stay out of the labour market. Moreover, it was recommended that to resolve this issue, more

childcare facilities will help counter this problem (Michele A. et al. (2011), N Lázaroet et al, (2000), Shabbir et al, 2015). In another study performed by Samer Kharif (2015) concludes that higher wage reservations and discriminatory labour market conditions are one of the causes of female's longer duration of unemployment.

In Spain, the analysis was performed on the Household Expenditure Survey Data (1990-91). The study utilizes the socio-economic variables and personal characteristics such as age, education, and family background and concludes that there is a need to create a resolution for a better family and professional life. Enormous individual-level data of Romania and Hungary was examined by Daniela et al.(2012) and highlighted the impact of socio-economic variables such as marital status, education, health status, age, region and unemployment allowance on employment status and unemployment duration for women and indicated that for women unemployment duration and age is a significant variable. Khan et al. (2009) determined that married women become an active part of the informal sector's labour force due to poverty. Doing so increases productivity and working mothers' income, reducing poverty at the household level in the long run. Anderson (1993) took a sample of about sixty working women and forty jobless women to examine Glasgow women's unemployment experience and summarized the importance of paid employment for women's social identity. The study also concluded that unemployment is a crucial factor in the loss of women's economic and social identity and at the domestic level, there is no reward for doing household chores by losing paid work.

It was examined by Ahmed et al., (2013) on the data of rural and urban areas of Bahawalpur, Pakistan that the socio-economic variable like education, age, number of family members employed, education of father, mother, and husband, job status of the mother and technical education are the reason for lower employment rate in females. The study also summarizes that large family size, number of children, and joint family positively impact female unemployment. The study performed on India's labour force by Stephan (2013) evaluated that India's economy is not utilizing its large working-age population. If the same scenario persists, the propensity to incorporate female labour force participation in coming years will reduce further, which will cause India to fall in the growth rate if they do not include their educated females in the labour force. Pieters (2015) identified by incorporating the five extensive cross-sectional microdata for the period of 1989-2009 that higher education level, high growth rates and decline in fertility rate. The labour force participation of females is unchanged which is caused by market forces. The supply side's situation causes the main reason for such an immobile participation rate: household income, low-level selection of highly educated females, and the cultural feeling of dishonour for working females. Nonyana,

Jeanette Zandile (2015) with the help of the survival technique, examine the semi-parametric and nonparametric estimates to understand the duration dependence and probabilities of exiting unemployment and the socio-demographic factors associated with it.

Brigitte (2018) worked on Botosani County's labour market data. The information was taken from the Employment Agency of Botosani County between the time duration of 2012- to 2015 on the data set of 200 unemployment spells by applying Kaplan- Meier estimator to predict the probability of remaining unemployed with characteristics like age, cohort and gender. The findings revealed that variable cohort influences the probability of staying unemployed if gender and age were considered as controlled.

By working on the data of the United States for the period of 2008 to 2015 Sansale (2019) evaluated the importance of an individual's personality and its role in determining the unemployment duration among young adults. The methodology that was used for that purpose was Competing Risk Model. It was estimated in the paper that individuals with more concern to their job status got a job as soon as they lost the previous one compared to those who have neuroticism.

The data for the time 2000-01 was utilized by Taşçi et al. (2010) to evaluate the duration of unemployment for both men and women on Turkey's data. The study examines household and personal characteristics and their effect on the labour market state and concluded similarities in both developed and developing countries. It was stipulated that with higher education, such as having a university degree for females has no impact on unemployment, while for males, it positively impacts it. Msigwa. (2013) employ Multinomial logistic regression model (MLM) on the data of Tanzania to evaluate youth unemployment. The study results suggest that skills, education, geographical location, gender, and marital status significantly explain the difference in youth employment status in Tanzania. A Semi-parametric Cox regression approach was employed by Kavkler et al. (2009) to examine the duration of unemployment for five Central and Eastern European countries. The study utilizes the Cox proportional hazard model and Cox regression model with the inclusion of time-dependent.

3. Methodology

This study focuses on unemployment duration using survival function; a nonparametric and parametric approaches. The nonparametric (actuarial) technique can handle the problem of censoring (both right and left). This is why, for duration analysis, the Kaplan-Meier approach, also known as product limit estimator, has been used. A breakthrough in medical science was witnessed, when Edward Kaplan and Paul Meier published their work in the Journal of American Statistical Association in June 1958. They evaluated that while

performing a research trial, some patients may die while others survive at some stage. This motivates them to estimate the patient survival rate. They estimated the proportion of patients who survived at any point during the trial. Kaplan-Meier estimation is extensively used in recent years in other social science subjects as well. In economics, the technique is specifically used to research price and unemployment duration assessment by survival analysis.

Numerous studies have estimated the duration analysis of unemployment by using a nonparametric technique such as Kaplan-Meier. Few of them are Flek al (2015), Vasilica, et al. (2011), Danacicaet al (2010), Gabriel et al. (2017), Ciucaet al (2010). The nonparametric method of estimating time-related events generally evaluates the survivorship function. It is commonly used to investigate the death as an outcome in biostatistics, but lately, this has become popular in industrial sciences and other social sciences. An economist might get interested in estimating the duration of people who remained unemployed. The sequence of horizontal steps of reducing magnitude in the Kaplan-Meier estimation of survival function presents the population's survival function in a huge sample. It approaches its real survival function for that specific population. It is assumed that the value of the survival function in the distant sample is constant. Due to its significant advantage of taking into account the "censored" data, Kaplan-Meier curve considers the lost data before the final results observed.

The survival function "S(t)" starts with preliminary steps that captivate the probability of survival past time "t". It initiates with the steps before approximating the survival function "S(t)", which can evaluate the probability of survival time. For this study, "survival" means the period when an individual remains unemployed – i.e. before he/she gets re-employed. The time "t" is measured in days;

$$S\hat{}(t)=\prod\_(j/j\leq t)\ (u\_j-a\_j)/u\_j \qquad (1)$$

Here, we have taken u_j as the spells of unemployment ongoing in numbers for j days, while a_j are those spells (in numbers), change into the employment promptly after j days.

We have considered the concept of hazard rate λ(t). For this study, hazard rate λ(t) represents the short probability of leaving unemployment and moving into employment at time t, and it is entirely dependable on the condition of remaining unemployed till the time of unemployed until immediately before t.

The universal classification of a continuous hazard rate is;

$$\lambda\hat{}(t)=\lim\_{\top}(\Delta t\rightarrow 0)\ [(\Pr(t\leq T<t+\Delta t\backslash T\geq t))/\Delta t] \qquad (2)$$

In the equation above, T represents the spell duration of unemployment (in our analysis, we have taken the days till any random individual stays unemployed). The proportional hazard model assumes the continuous hazard rate for the ith spell abides the following form

$$\lambda\_i\,(t)= \lambda\_o\,(t).e^{(X\_i^{'}\,(t).\pi)} \qquad (3)$$

Equation (3) represents the λ(t) as the assumed baseline hazard, and X_i(t) is the vector of covariates (descriptive variables). For example, the age of a person, gender, education level, marital status etc., and π presents the projected parameter vector. Finally, the term e^(X_i^' (t).π) represents a proportional shift – the observed explanatory variables change the complete hazard rate up or down.

Semi-parametric analysis (cox regression)

To estimate the relationship between survival rate and covariates selected. For the semiparametric analysis Cox regression is employed. Cox regression determines covariates' effect on the hazard model -its direction (increasing or decreasing) and importance. The common form of the Cox regression is

$$\lambda\_(i\,)(t) =e^{(X\_i^{'}\,(\beta)\,)}.\lambda\_(o\,)(t) = c\_i\ .\lambda\_(o\,)(t) \qquad (4) \qquad i = 1,2\ \ldots n$$

In the equation given above, x_(i) (x_(i 1) x_(i 2)….x_(i k)) is the vector of k covariates. The analysis includes age, marital status, spouse job status, education, head of household's education, head of the household's gender, head of household's income, region, province and training taken if any. β (β_1 β_(2) ⟦… β⟧_k) is the vector of regression coefficients and λ_(i)(t) is the hazard function of individual i and λ_(o)(t) is the baseline hazard. The baseline hazard starts with 0. The impact of the covariates on the hazard function in the Cox regression model does not depend on time due to the ratio (λ_i (t))/(λ_o (t))is equal to the constant ci. Therefore, the baseline hazard determines the shape of the hazard function. The ratio of the hazard functions of individual si and j, namely (λ_i (t))/(λ_j (t))is called the hazard ratio.

$$(\lambda\_i\ (t))/(\lambda\_j\ (t))= \quad (⟦e^{(X\_i^{'}\,(\beta)\,)}\ .\ \lambda⟧\_0\,(t))/(⟦e^{(X\_i^{'}\,(\beta)\,)}\ .\ \lambda⟧\_0\ (t))=e^{(⟦(X⟧\_i^{} - ⟦x\_j)⟧\_^{(\ ')}\,(\beta)\,)} \qquad (5)$$

The hazard ratio is the covariate ratio and is independent of time. This property is proportional, and its explanation is parallel to the odds ratio for logistic regression. A ratio higher than 1 shows increased risk while a ratio lower than 1 specifies decreased risk.

$$(\lambda\_i\ (t))/(\lambda\_j\ (t))= e\ ⟦\beta\_p⟧^{} \qquad (6)$$

The hazard ratio is said to be statistically significant at the given level when its confidence interval excludes 1. The null hypothesis that the variable is not correlated to survival can be rejected. This is the base for the explanation of the Cox regression results. By using Cox's partial likelihood estimator, it is possible to estimate the parameter vector - without postulating and estimating the baseline hazard (see Greene (2003) for details).

The final model estimated is:

H(t) = β_(1age)+ β_(⟦age⟧^2)+ β_3edu+ β_(⟦4edu⟧^2) + β_5MS + β_(6spouse job

status) +β_7traning + β_8region + β_9province + β_(10 head edu) + β_(11 house size) +β_(12 head house)

Where h(t) represents hazard rate, while the independent variable includes age, age square, education square, marital status, spouse job status, training, region, province, head education, house size and head of the house.

As far as the effect of independent variables on hazard rate is concerned, the variable age as a determinant of hazard rate – unemployment survival function is taken in this study as age has a greater impact on employment decision and choice. Education too plays a significant role in finding a job. In order to evaluate the above statement, a non-linear term of education is also included in the model to see if after a certain education the job market condenses. It has been observed from the data that highly educated females, if once got unemployed their hazard of getting reemployed usually declines given that the offers did not match their qualifications, this is the reason, that the curve of education is decreasing after post-graduation. Marital status is also assumed to have a negative impact on getting reemployed once a female got unemployed. The study has taken the spouse's job status for female employment as well indicating if a spouse has better job status, it will create a negative impact on a hazard of female employment. Head education is taken to see if the head of the house education influences female employment reemployment rate or not. The covariate of training is hypothesized as having a significant impact in the case of getting a job for females. Here training related to the job has a positive impact on job status.

4. Data and Variables

The study has taken into account the Labor Force Survey (LFS) data for the year 2014-15. The analysis was made after extracting the required information from the data.

Table 1: Duration and unemployment variables

Variable	Expressions	Observations
The span of the unemployment spell (duration of unemployment):	The number of unemployment days. (the difference between the date of entry and the date of leaving unemployment).	The minimum value is two days, and the maximum value is 3650 days (121.67 months and ten years). The mean value is 596.59 days, while the median duration is 730 days (months).

The status of the person (or the censored index)	For analysis, all the diverse causes of the exiting are grouped into 2 major outgoing destinations: 1 -economically active or employed (first employment or re-employment); 0 - economically inactive	Out of 1279 females in the labour force, there were 13 different reasons for leaving unemployment. The status variable allows for a distinction between the individuals who registered for the event (employment) and the individuals who did not register for the event.

Table 2: Explanatory Variables

Age	We grouped the ages into 5 categories Age_1 → 14-18 years Age_2 → 19-28 years Age_3 → 29-60 years Age_4 → 61-80 years Age_5 → 80 plus years Age_6 → 85 plus years	The average age of a female registered in the database on LFS is 13 years and the maximum is 78 years with the mean of 27.88.
Age square		Age square is taken to see the impact of education for an individual
Education	The level of education is grouped into 5 categories: Educ_1 → Primary and secondary or vocational education Educ_2 → High school and post-secondary education till graduation Educ_3 → post-graduation till Masters level Educ_4 → MPHIL Educ_5 → PhD	The minimum education of the group is 1 and the maximum is 18 years of education with the mean value of 12.73.
Education square		We have taken the square of education to assess the impact of higher education on employment.
Marital status	(0) Unmarried ;(1) Married	515 (40.27%) women were married in the data while 764(59.73%) were unmarried.
Spouse job status	(1)Employed;(2) Unemployed; (3)Not in labour force	The total number of employed husbands is 139 with 10.87%, unemployed is 98 with 7.66% and not in labour force is 1,042

		with 81.47%.
Training	(0) No; (1) yes	Females with no training are 1, 011 79.05% and with training are 268 20.95%.
Region	(0) Rural; (1) urban	People in rural areas are 742 with 58.01% and in urban are 537 and 41.99%
Province	(1) KPK (2) PUNJAB (3) SINDH (4) BALOCHISTAN (5) ISLAMABAD	The percentage of population according to the province in KPK is 22.67%, Punjab with 53.79% Sindh with 16.73% Balochistan with 6.49% Islamababad0.33%
House hold size		House hold size is taken as how many members of a family living in any houes
Head house	(1) unemployed (2)employed	
Head education	(0) NO; (1) YES	About 89% of the head house is

Results

Specifically, in this study's analysis, we have studied and analyzed the time duration when any random individual leaves employment until he gets reemployed. The survival function generates a step for representing the time when an individual is exiting the state of unemployment in a graphical representation. In our sample data of the Labour Force Survey of 2014-15, the information of 1279 females was available, among those 135 were employed, 289 were not employed, and 855 were out of the labour force (currently were not looking for job opportunities). The graph below shows the survival estimate.

Table 3: Kaplan-Meier survival function

Time	Beg. Total	Fail	Net Lost	Survivor Function	Std. Error	[95% Conf.	Int.]
2	1279	3	0	0.9977	0.0014	0.9927	0.9992
3	1276	1	0	0.9969	0.0016	0.9917	0.9988
5	1275	0	2	0.9969	0.0016	0.9917	0.9988
6	1273	3	0	0.9945	0.0021	0.9885	0.9974
8	1270	1	0	0.9937	0.0022	0.9875	0.9969
10	1269	1	5	0.9930	0.0023	0.9865	0.9963
15	1263	2	24	0.9914	0.0026	0.9845	0.9952
20	1237	1	7	0.9906	0.0027	0.9835	0.9946
22	1229	0	1	0.9906	0.0027	0.9835	0.9946
30	1228	10	28	0.9825	0.0037	0.9736	0.9885
32	1190	1	0	0.9817	0.0038	0.9726	0.9878
40	1189	0	1	0.9817	0.0038	0.9726	0.9878
60	1188	12	20	0.9718	0.0047	0.9609	0.9797
90	1156	12	46	0.9617	0.0055	0.9493	0.9711
97	1098	0	1	0.9617	0.0055	0.9493	0.9711
120	1097	10	1	0.9529	0.0061	0.9394	0.9635
150	1086	8	0	0.9459	0.0065	0.9315	0.9573
180	1078	35	1	0.9152	0.0081	0.8978	0.9298
210	1042	2	0	0.9134	0.0082	0.8959	0.9282
240	1040	10	0	0.9047	0.0086	0.8864	0.9201
270	1030	2	0	0.9029	0.0087	0.8845	0.9185
300	1028	1	0	0.9020	0.0087	0.8835	0.9177
365	1027	209	0	0.7185	0.0133	0.6915	0.7435
366	818	0	1	0.7185	0.0133	0.6915	0.7435
368	817	1	0	0.7176	0.0133	0.6906	0.7427
545	816	1	0	0.7167	0.0133	0.6897	0.7418
575	815	1	0	0.7158	0.0133	0.6888	0.7410
730	814	721	0	0.0818	0.0081	0.0668	0.0986
910	93	1	0	0.0809	0.0081	0.0660	0.0977
1030	92	1	0	0.0800	0.0080	0.0652	0.0967
1095	91	43	0	0.0422	0.0060	0.0316	0.0550
1265	48	1	0	0.0413	0.0059	0.0308	0.0540
1460	47	24	0	0.0202	0.0042	0.0132	0.0297
1825	23	12	0	0.0097	0.0029	0.0052	0.0168
2190	11	5	0	0.0053	0.0021	0.0022	0.0111
2555	6	1	0	0.0044	0.0020	0.0017	0.0099
2920	5	3	0	0.0018	0.0012	0.0004	0.0061
3650	2	2	0	0.0000	.	.	.

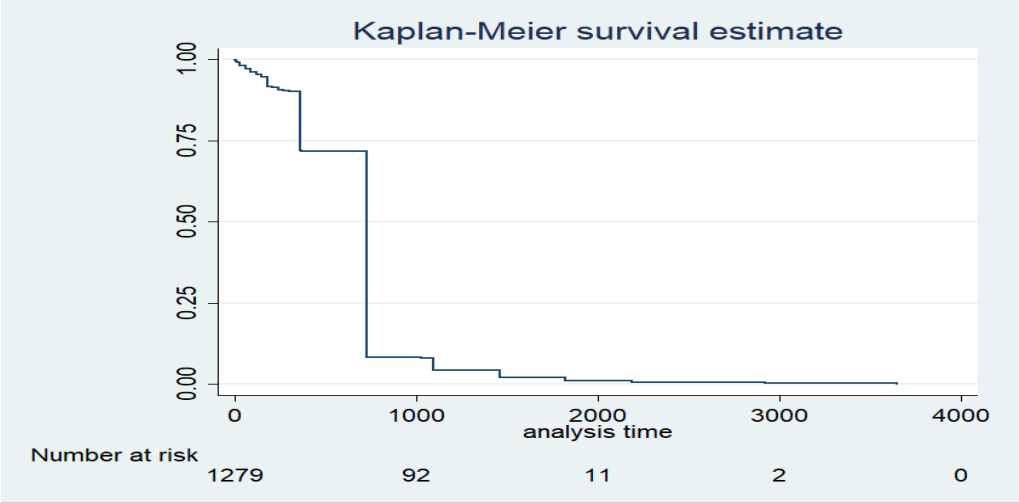

Figure 3: Kaplan-Meier survival Estimate

Author's estimation using LFS (2014-15)

As per the outcomes of our study, a female's chance to get reemployed significantly reduces if she stays jobless for longer durations. The time projected in our analysis is ten years, i.e. 3650 days and in terms of months, it is 121.67 months. In graph 1 above, we can see that the starting steps are very close and comparatively small, predicting a higher probability of re-employment. In 2 days, the possibility of finding a job is 99.77%, and it continuously reduces, as the survival function increases. They are depicting a negative relation between re-employment and survival function. According to our findings, females' probability of finding a job reduces if they stay out of the labour market for more extended time durations, causing it as one of the main factors for females to quit job search voluntarily and come out of the labour force due to unavailability of the job permanently.

The findings in figure 4 indicate that females with higher education such as a Master's and higher than that have even fewer chances of entering the job market after becoming unemployed. This situation will make females feel overqualified and make them demoralized in persuading higher education. It is being witnessed already in Pakistan's case that females face numerous issues with respect to gender discrimination in the labour market. Fewer wages for the same work than male is already a problem; females have to face while working. Many studies show that females with children below five years of age and elders at home are the reason to generate impediments for them to proceed.

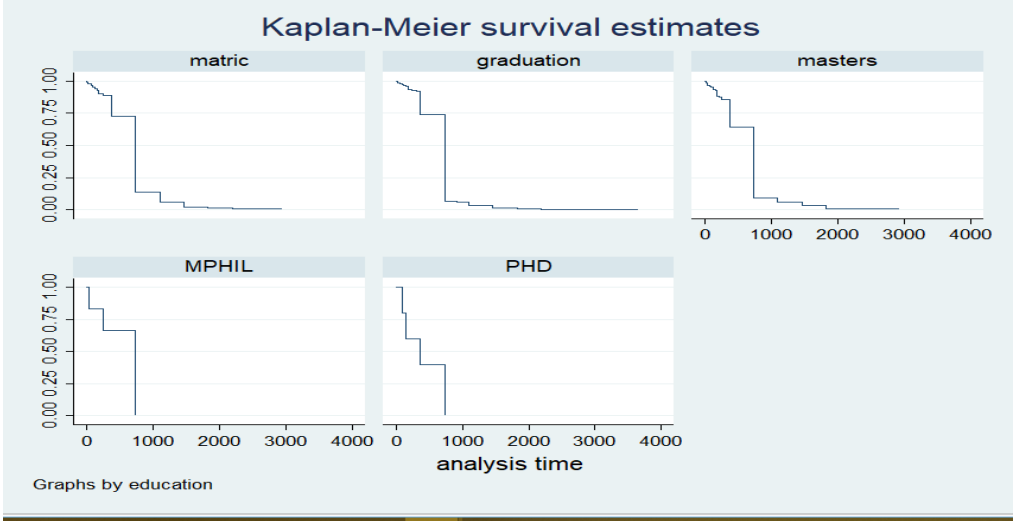

Figure 4: Kaplan-Meier survival estimate by education

Author's estimation using LFS (2014-15

Pakistan, being a developing country, belong to those societies, where females are associated with homemaking. It becomes unenviable to continue a career after marriage as uncountable household obligations do not allow them to do so. Employers are least concerned with hiring females with children as the unavailability of childcare pushes them to bequeath their profession. It will be beneficial to get back this discouraged labour force into the job market if females are provided with daycare facilities and similar to them in economical fees.

Figure 5 is presenting the distribution of females according to their age groups. According to this graph, females in the age group of 29 to 60 have scarcer likelihoods to get employed compared to the age group of 19 to 28. In figure 6, females are represented by marital status. The graph shows that married females face more problems than unmarried females in employment. It is high time for females to anticipate into the labour force, as almost half of Pakistan's population consists of females. At the macro level, this increase in the number of labour forces will spike up the opportunities of the higher growth rate in productivity and economic growth. Similarly, it will boost the affluence and additional income into the house on a micro level, which helps them invest more in their offspring's education and health.

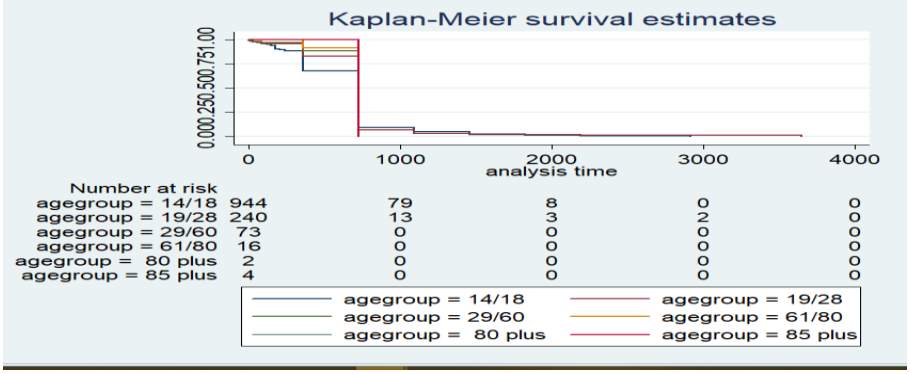

Figure 5: Kaplan-Meier survival estimate by age groups

Author's estimation using LFS (2014-15)

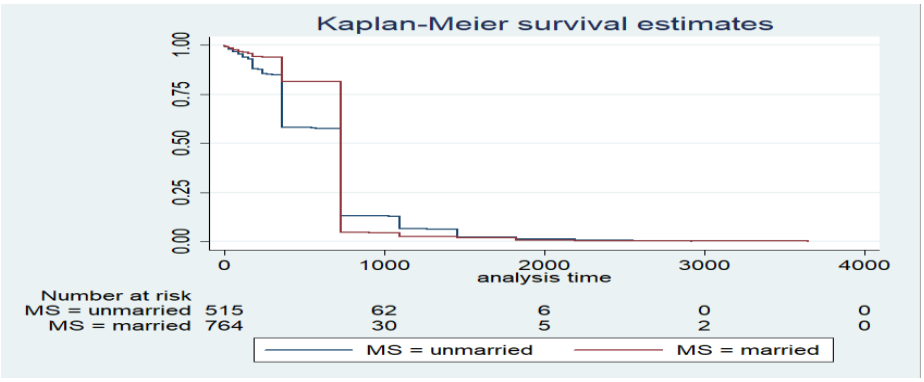

Figure 6: Kaplan-Meier survival estimate by Marital Status

Author's estimation using LFS (2014-15)

Spouse job status is another cause of intentional unemployment in females. The social and cultural norms of society force females to stay at home as husbands are financial providers of their wives. Is causes females due to family pressure or by their own free will leave their job after marriage and stay at home. The relationship of spouse's job status and female employment is presented. In figure 7, the graph 1 indicates that spouse is employed, 2 as the spouse unemployed, and 3 as a spouse not in the labour force. Our findings depict females with spouse's unemployed are putting more effort to get employed once being unemployed.

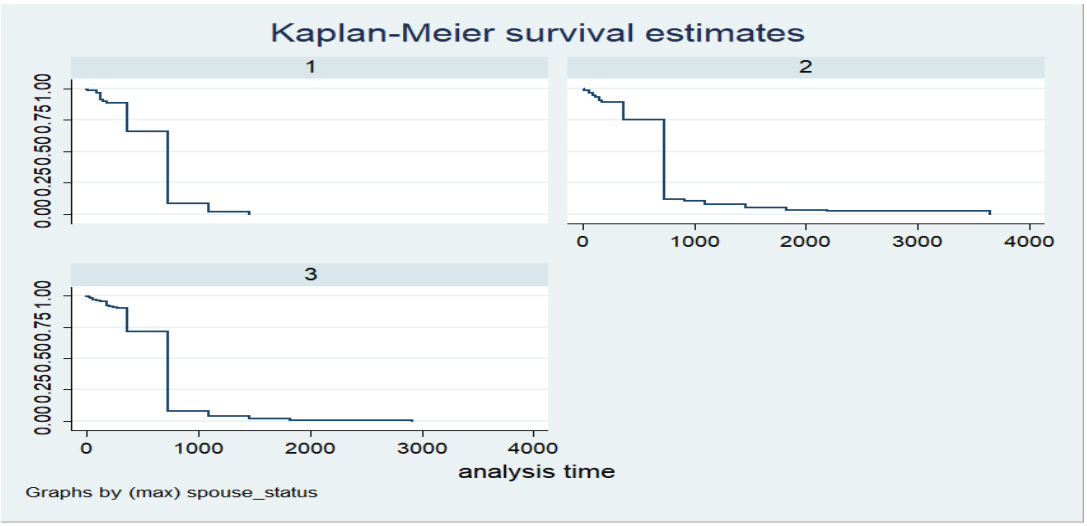

Figure 7: Kaplan-Meier survival estimate by spouse's employment status

Author's estimation using LFS (2014-15)

Cox Regression

The results presented in the table using the cox regression show hthe azard rate of being unemployed. Marital status (being married) and age with the negatsignssign are the indicators showing that the hazard increases as age increases or if the female is married. On the other hand, years of education show a positive impact on females' unemployment duration. Province-wise break up shows that other than Sindh and Balochistan, the sign for Punjab and KPK are positive. Job-related training is also showing a significant impact on unemployment duration. Head education and migration status also have a negative sign othe n hazard rate of being unemployed for females.

Table 4:

_t	Coef.	Z	P>z
Marital Status	-.0809233	-1.11	0.266
Age	-.0387243	-2.12	0.034
Square of age	.0004067	1.71	0.086
Years of education	.0193234	1.84	0.065
Percapita income	5.92e-07	1.13	0.259
Province			
Punjab	.0194688	0.26	0.798
Sindh	-.1493358	-1.54	0.123
Balochistan	-.1414082	-1.07	0.285
Region	.0483527	0.75	0.455
Head education	-.0119239	-1.32	0.186

Traning	.1253401	1.66	0.097
Migration	-.0632756	-0.41	0.681

Table 5:

Covariates	**Coefficients**	**Exp(coefficients)**	**P value**
Age	(-3.87E-02)	0.962	0.034
Square of age	(4.07E-04)	0.9999	0.086
Years of education	(1.93E-02)	0.019	0.065
Training	(1.25E-01)	1.133	0.097
Marital status	(-8.09E-02)	0.922	0.0777

5. Conclusion and Policy Recommendations

The study related to the unemployment duration of females in Pakistan was evaluated by employing Kaplan Maier and Cox regression to examine survival analysis for the extended unemployment of females in Pakistan, which results in the discouraging labour force in the long run due to the unavailability of job opportunities. For that purpose, the data is taken from the Labor Force Survey (LFS) 2014-15. The research concluded that a longer duration of female unemployment causes them hard to find a job again. The longer the duration, the fewer will be the chances to get employed again.

The study concluded that the total time duration of re-entering into employment once being unemployed is 3650 days which is equal to 10 years, and this time is 121.67 months. It is concluded that the chances of remain unemployment duration increase, as the survival function decrease. The study determines that providing childcare will positively impact female labour force participation, as it is one reason females quit their jobs. This increased female labour force participation will help them to contribute to society by utilizing their talent.

Therefore, it is highly recommended that for the better economic development of any country, it is imperative to engage females' participation in the labour force. For doing so, the following are some of the policy recommendations.

The most important measure that the government should take on an immediate basis is increasing female child education investment. By doing so, labour force participation will increase as it has a positive impact on employment. In this regard, both print and electronic media should play their part. More incentives should be offered to bring out children into school, especially female children, as studies suggest that an educated mother always puts more effort to send her child to school. This research also suggests that females with a Master's

degree or higher education faces a longer unemployment rate. To address this issue, the government should encourage private-sector employers to employ females in decision-making posts, and for the government-sector job, they should increase the female quota in jobs. It is also observed that females are the least priority for employers due to their respective household responsibilities and childcare. The government should provide economic childcare centres and rules to provide this facility to increase the number of females to work after having children. In our society, the socio-economic culture has created an environment that discourages females from working after marriage. We, as a society, work on this norm to be changed. The government's responsibility is to generate such incentives and a safe and secure environment that facilitates females to pursue their careers and dreams without fear. We have the example of our armed forces. They employ highly talented and educated females into forces and facilitate them so that they can put their hearts and soul and work passionately for the better future of the country.

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APPENDIX

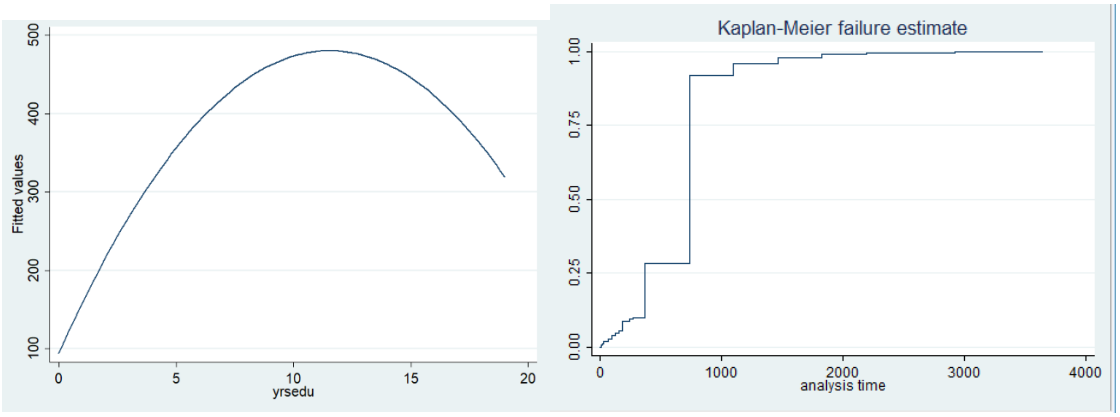

Figure: Author's estimation using LFS (2014-15)

Figure: Kaplan-Meier failure function

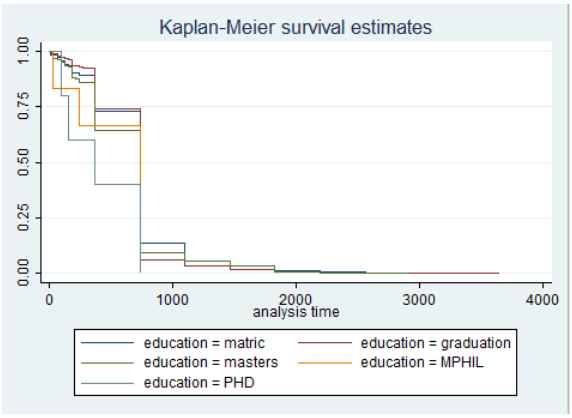

Figure: Survival functions showing the education related information