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Analyzing The Length of Unemployment Among First-Time Job Seekers in Emerging Countries: Case of Turkey

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Gelişmekte Olan Ülkelerde İlk Kez İş Arayanlar Arasında İşsizlik Süresinin Analizi: Türkiye Örneği

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Abstract

The aim of this study is to analyze the factors that influence the unemployment duration of individuals entering labor market for the first time and those who have experienced working life before by using the 2020 Household Labor Force Surveys (HLFS) prepared by Turkish Statistical Institute (TURKSTAT). Further, the effects of individual unique factors such as gender, age, marital status, family size and education level on unemployment duration are examined. Empirical results using the Cox Proportional Hazard Model, which is a semi-parametric version of survival analysis, show that the first time job seekers are at risk regardless of genders. Also, family size has no statistically significant impact on unemployment duration, while being married, divorced or widowed has decreasing effect. It takes longer time for women to find a job than men. Another important finding is that as the education level of individuals increases, the duration of their job search increases.

Key Words: *Cox Proportion Regression, Labor Force Participation, Unemployment Duration*

Özet

İşsizlik olgusu ekonomik hayattaki hayati konumunu korumakta ve her geçen gün arttırmaktadır. Bireysel ve ulusal düzeyde ciddi sonuçları olan işsizliğin etkilerinin ciddiyeti, Türkiye İstatistik Kurumu (TUİK) tarafından hazırlanan 2020 Hane Halkı İşgücü Anketleri (HHİA) kullanarak işgücü piyasasına ilk defa adım atan bireyler ile daha önce çalışma hayatını tecrübe etmiş bireylerin işsizlik süresine etki eden faktörleri analiz etmektir. Ayrıca, cinsiyet, yaş, medeni durum, aile büyüklüğü ve eğitim düzeyi gibi bireysel faktörlerin de işsizlik süresi üzerindeki etkileri incelenmektedir. Hayatta kalma analizinin yarı-parametrik bir versiyonu olan Cox Orantılı Tehlike Modeli'nden elde edilen ampirik sonuçlar, ilk kez iş arayanların cinsiyetten bağımsız olarak risk altında olduğunu göstermektedir. Kadınların iş bulmaları erkeklere göre daha uzun sürmektedir. Ayrıca, aile büyüklüğünün işsizlik süresi üzerinde anlamlı bir etkisi olmadığı, evli, boşanmış ya da dul olmanın ise bu süreyi azaltıcı etkisi olduğu belirlendi. Bir diğer önemli bulgu ise bireylerin eğitim düzeyi yükseldikçe iş arama sürelerinin artmasıdır. Bu durum Türkiye'deki emek piyasasındaki iş gücü ve iş uyumsuzluğunu temsil etmektedir.

Anahtar Sözcükler: *Cox Orantılı Regresyon Modeli, İş Gücüne Katılım, İşsizlik Süresi.*

Introduction

The unemployment phenomenon, which has increased its importance day by day, especially with the effects of the technological breakthrough and automation in the last decades, does not cease to be a global threat. Although it has different meanings and imply different problematic issues for countries at different stages of development, it is still one of the enduring challenges that need to be overcome on the agendas of policy makers.

In a broad sense, it refers to the disequilibrium in the labor market. In the economics literature, there are basic hypothesis that cause the increase in unemployment, which are widely agreed upon. The first of these is the excess supply in the labor market. Some of the reasons for the disequilibrium from the supply side are an increase in the labor force participation due to overpopulation, insufficient job creation process, or the base effect created by high unemployment rates (Tansel & Taşcı, 2010; Dhanani, 2004). Another hypothesis is demand-sided, the scarcity of labor demanded as a result of automation and technological production, or the inability to calibrate available labor force and the needed. This mostly caused due to the lack of the qualified human capital or it can refer as labor and job mismatch in the labor market (Dhanani, 2004; Yanindah, 2021). The last one is the luxury hypothesis that Udall and Sinclair (1982) studied on. This hypothesis, which has opponents and supporters in the literature, is shaped within the framework of the households that can afford the unemployment cost and is one of the supply-sided hypothesis. According to that, unemployment tends to rise with the increase of individuals who have a high level of education, have financial support –i.e. family, financial capital, etc.-, that can sustain themselves during the unemployed period or who have little responsibility (Turnham & Eröcal, 1990; Udall & Sinclair, 1982).

In addition to its undeniable importance in economic life, unemployment also of vital stature in the individual and communal stratums. Especially, the long-term unemployment of households creates a fragile structure in terms of government, family and society through individual mental health. On the one hand, it means a decrease in government revenues and an increase in expenditures (i.e. an increase in social security premiums) (Reyher, Koller, & Spitznagel, 1980); on the other hand, it causes results such as a decrease in self-esteem of individuals (Goldsmith, Veum, & Darity Jr., 1996), deterioration of their mental health (Murphy & Athanasou, 1999), an increase in criminal tendencies, atrophy of their abilities and a decrease in reservation wages (Fitzenberger & Wilke, 2007) which all are studied in detail in the literature by so many studies (Kenneth, Lagos, & Wright, 2004; Tansel & Taşcı, 2010).

The severity of the effects of unemployment is directly related to the length of the unemployment period. Long spells of unemployment cause the damage to individuals, families and countries to be permanent. According to ILO (2004), the duration of unemployment is one of the primary factors that determine the future positions of nations and individuals, and long-term unemployment means poverty for nations in the long-run, while for individuals it means detachment from social life and a decrease in quality of life (Taşçı, Özdemir & Darıcı, 2015; Dhanani, 2004). Considering these effects, the unemployment duration, which is a very major

indicator of the labor market and general economic outlook, is an issue that should be addressed by policy makers especially in developing countries (Yanindah, 2021).

According to the mainstream economics literature the main determinants of unemployment duration of household are age, sex, experience, education level, marital status, region of residence, responsibility and financial support status of the individual. For developing countries like Turkey, the effects of these individual characteristics frequently revealed in the studies.

The focus of the paper is to examine the main determinants as well as the status of individuals entering the labor market for the first time. The importance of unemployment duration of the first-time job seekers is that they are often young or somehow disadvantaged. The long-term unemployment of the youth which is seen as the trigger of sustainable economic growth and development and considered as a demographic advantage, negatively effects the futures of both individuals and nations (Yanindah, 2021; Tansel & Taşçı, 2010). By employing a semi-parametric version of survival analysis, the Cox Proportional Hazard Model, the impact of gender, age, marital status, family size, and education level on unemployment duration are examined. Also, the difference between first-time job seekers and those who were previously in the labor market are investigated.

The following part of the study examines the economic literature on the unemployment duration. Section three explains the HLFS data in detail and provides summary statistics that would help ground the assessments in the conclusion part of the study. Section four clarifies the analysis method and explains the empirical model, while the last section concludes.

Literature Review

Unemployment duration is a subject that has been extensively studied in the global literature in terms of its vital consequences for both developed and developing countries with special consideration to its determinants especially in recent years. Nickell (1979) focused on the probability of leaving unemployment in Britain using 1972 General Household Survey cross-section data. The study examined the impacts of local labor demands, degree of health, age, marital status, family needs and replacement ratio on the unemployment duration. He found that replacement ratio, which represents the ratio of the household income when the individual is not working to the income while individual is working, has considerable enhancing impact on unemployment duration. It was concluded that the individuals with high family need multipliers or those who were married have longer expected unemployment durations. Age emerged as a highly influential variable. While the expected unemployment duration of the 20-years-old individual were 7.1 weeks, the 50-years-old were 13.4 weeks.

The expected unemployment duration for the male seeking job for the first time after graduation in the USA is examined by Wolpin (1987) by using National Longitudinal

Survey for the year 1979. The paper determined the expected unemployment duration for the post-graduation period as 45.6 weeks. When the cost of searching job decreases, the expected unemployment duration increases through higher reservation wages. While the increase in the mean wage offer reduced the expected unemployment from 46.4 weeks to 45.8 weeks; the increase in probability of the offer shortens the unemployment duration. For each year after graduation, expected unemployment duration doubles on average. The results reveal that the increase in the duration of unemployment after graduation makes it difficult to exit from unemployment.

The joint distribution of the first-time full-time job seeker youth also investigated by Eckstein and Wolpin (1995) based on the search-match-bargaining model with the 1979 National Longitudinal Survey of Labor Market Experience data. They used different schooling groups and race to determine the difference in unemployment durations. The results highlighted the disparities between black and white individuals, with the duration for black people is higher than the white in every level of schooling levels in the USA for 1979.

Chuang (1999) investigated the determinants of unemployment duration of college graduates based on the data of 1984 and 1985 "College Graduate Youths' Employment Status Survey" in Taiwan. According to the results, which focused on the individuals who are looking for a job first time after graduation, age and never getting married negatively affect the unemployment spell, while education, completion of military duty for man and educational status of parents shortens the period.

Another study examining the stage of transition to work after graduation belongs to Lassibille et al (2001). This study focused on the transition from school to work in Spain for the year 1991. They checked both the unemployment duration and job match in the youth labor market. For that purpose, the study employed age, gender, levels of education, father's occupation, population in region, labor market characteristics in region such as unemployment rate and service sector size and used multi-logit estimates for the probability of unemployment. The study found that the human capital has primary effect on the unemployment duration in Spain. Young workers underutilized compared to their adult co-workers. Ceteris paribus, people with higher education level have less unemployment spell. According to result, female have disadvantage while finding the first job after graduation with average spell of 18 months, compared to male. Family history has no significant impact on the unemployment spell. An important result is that if individual leaves school with upper secondary education level, has more difficulties relative to other education levels for finding their first job after graduation.

The main purpose of the studies focusing on the process of finding a job after graduation and the first entry into the labor market emphasize the economic importance of youth employment. In this context, there are many studies on youth unemployment and unemployment duration. One of these studies, Dickens and Lang (1995) aimed to explain the unemployment of youth in Sri Lanka with respect to education, gender, urban-rural-estate sectors and age. They grouped the 25-29 years old population into four subcategories as urban males, rural males, urban women and

rural women and then analyzed the Kaplan-Meier estimates of the hazard rate across a range of education classes. The results are in line with the literature that rural-women encounter longer unemployment duration than the rest of the population. Also as opposed to the literature, the study claims that the duration of unemployment of youth is not related to education.

Podivinsky and McVicar (2002) also estimated the hazard functions for unemployment outflows before and after the UK's labor market policy for young people – New Deal for Young People (ND18-24/NDYP) according to its effect on unemployment duration. As first they estimated all unemployment durations, then they used gender, education, training, and other benefits separately. According to results, in the general evaluation, it was concluded that the unemployment spell of the youth is 25-50% less likely to be unemployed for a year.

The first study on the determinants of unemployment duration for those who are involved in the labor market for the first time in Turkey is carried out by Tansel and Taşçı (2004). They analyzed unemployment spells separately for men and women using 2000-2001 HLFS data. Results from the proportion hazard model imply that women experience longer unemployment duration than men in Turkey. In addition to determining the negative effects of age and local unemployment rates, it was concluded that the increase in education level shortened the unemployment spell. It was also revealed that individuals who entered the labor market for the first time remained unemployed longer than others, regardless of gender. This study emphasizes that the policy authorities should not ignore the disadvantages of married women, single men, first-time job seekers, low level educated people or older job seekers.

Taşçı and Özdemir (2005) tested the effects of labor market and individual characteristics on long-term unemployment with the probit model using 2000 and 2001 HLFS data in Turkey. They carried out the analysis in two stages with respect to the broad and the narrow definitions of unemployment and identified the marginal effects. Results indicated that living in urban has negative impact on long term unemployment as per rural and being female has positive impact for both definitions which is higher in rural areas. While the university and above education levels reduced the probability of being long term unemployed, the effect of all lower education levels was found to be positive. As final, while age increases the probability of long-term unemployed for both men and women, also being head of household decreases it.

Taşçı and Tansel also conducted the first study focusing on youth unemployment in Turkey. They analyzed the determinants of unemployment duration for youth using the HLFS of 2000 and 2001 with non-parametric and semi-parametric methods for men and women separately with the hazard function framework (Taşçı & Tansel, 2005) The results support Taşçı and Özdemir (2005) in the sense that women experience relatively longer unemployment duration than men, and that those living

in the urban are more likely to leave unemployment than those living in rural. Contrary to young women, the university degree of young men was found to have a reducing effect on the unemployment duration. Further, it was concluded that being the head of the household did not have a significant effect on unemployment spell.

One of the studies examining the unemployment duration of the first-time job seekers is belonging to Taşçı (2005), which is examined that in Turkey with the HLFS for 2000 and 2001. This study is conducted with the grouped duration approach. Results showed that the first -time job seeker females are less likely to find a job compared to males. He explained that by women having higher reservation wages due to their traditional home production activities. Also, according to the paper it takes longer to find a job in the rural areas and living in a region with high unemployment rates decreases the probability of leaving unemployment. The study, which emphasized the negative effect of being married for the first-time job seekers, noted that education and age did not have a significant and clear impact on unemployment duration.

The determinants of the unemployment spell also tested by Dendir (2006) by using the Nationally Represented Household Survey in Ethiopia to investigate the determinants of unemployment duration with parametric and semi-parametric models. He used age, gender, marital status, relation to head of household, level of education, region, ethnic group, and support mechanism during unemployment as individual characteristics. Empirical results did not detect significant effect of gender, relation to head of household, and ethnic group. While age, marital status, education level, region, and support mechanism during unemployment were found to have significant effects. The most striking result of the study is that the majority of the unemployed youth population in the country consists of well-educated individuals who live with their families and receive family support when they are unemployed. The study claims that support mechanism during unemployment increases the unemployment duration in this group and that policy makers should intervene to this issue.

Tansel and Taşçı (2010) analyzed the impact of individual and local labor market characteristics on the probability of leaving unemployment for employment with 2000 and 2001 HLFS for Turkey. They used grouped duration methodology and analyzed men and women separately to reveal gender differences. The results of the study once again reflected the disadvantage of women in finding a job in the labor market relative to men. Further, being married decreases the probability of leaving unemployment for women while increasing it for men. Residing in a region with high unemployment reduces the probability of finding a job for both men and women. It was emphasized that the probability of leaving unemployment decreased with age and increased with education level. Also vocational high school graduates were found to be more likely to find a job than general high school graduates for men. It was stated that the hazard rate for the first-time job seekers is not lower than those who are already in the labor market. They found that a notable distinction does not exist for both men and women.

On the contrary, Khan and Yousaf (2013) implied in their study that first-time job seekers are at disadvantage in labor market in Bahawalpur. They researched the determinants of the unemployment duration of individuals aged 20-35 who are looking for a job for the first time. They used education level, age, participation in

training programs, preference for public/private sector job, marital status, size of household, being whether head of household as individual characteristics. Then they tested the level of ability of these characteristics to explain the unemployment duration with the Ordinary Least Squares (OLS) technique. The results obtained that age, being woman, looking for a job in the government, and being educated in government institutions prolong the job search process. On the other hand, it was revealed that participating in training programs, being head of household, and being married shortened the unemployment duration. Moreover, it was determined that individuals with higher education levels find a job faster than others, but this is reversed when it comes to professional education, i.e., doctor, engineer.

Karasoy et al. (2015) aimed the analyze the unemployment duration and its determinants in Turkey with the survival methods which are the Cox regression non-proportional hazards and the accelerated failure time models. They used the actual data of TEA (Turkish Employment Agency). Empirical results concluded that women, unmarried, those who did not attend vocational courses, and those who are not between the ages of 25-34 have a longer time to find a job than the others.

The individual characteristics impact on long-term unemployment in Turkey for the two-year period after the Global Economic Recession by using 2010 and 2011 HLFS is investigated by Taşçı et al. (2015). The results indicated that the post-crisis long-term unemployment is affected by individual characteristics. In support of previous literature, gender inequality against women was reached and it was determined that being a women had a positive impact on long-term unemployment. An increase in education level and age of individuals increases the probability of long-term unemployment. The co-movement of education level and unemployment probability shows that individuals have difficulty in finding suitable jobs and the failure of the labor and job matching mechanism.

Galecka-Burdziak (2016) investigated the influence of age, gender, and education level on hazards of leaving unemployment for employment in Poland by using semi-parametric survival analysis for 2007-2017 period. Empirical results indicated that men with primary education have the highest probability of finding a job. The high probability of leaving unemployment relative to others at primary education level was reported as an indicator of qualified labor and job mismatch in the labor market. Also, the effect of gender and education level decreases in subsequent spells which can be explained by experience.

The impact of education level, marital status, being head of household, age, and gender on unemployment duration for the 2005-2015 period is also examined by Keskin-Özberk (2021). The study employed the Cox proportional hazard model and used the HLFS of the TURKSTAT. Empirical results support the literature. According to the results, it becomes difficult for individuals to find a job as age and education level increase. The long unemployment duration of well-educated, highly skilled individuals is explained by the high reservation wages in the study. Moreover, while

being women extends the time to have a job, being the head of household shortens this process.

Data and Summary Statistics

Household Labor Force Survey (HLFS)

To assess the influence of certain factors on the length of unemployment for individuals, we intend to utilize the 2020 Household Labor Force Survey (HLFS), which is a cross-sectional data source. TURKSTAT broadly provides information on the unemployment and labor force participation of those living in Turkey who were interviewed, including demographic information. The survey provides information about the household's previous work experience, length of unemployment, family income, occupation status, sectoral distribution, etc. The main focus of the sample is the working-age population, with 404,657 people of working age in the 2020 HLFS. The following summary statistics and graphs are obtained from the 2020 HLFS.

Table 1: Two Sample Test Proportion of Unemployed Individuals & Unemployed Individuals Who Experience Working Life for The First Time

Variable	Mean	Std. Dev.	z	P>|z|	[%95 conf. interval]	
Unemployed Individuals	0.127	0.007			0.111	0.142
Unemployed Individuals Who Experience Working Life for The First Time	0.092	0.001			0.088	0.095
diff	0.035	0.007			0.019	0.050
	Under Ho:	0.007	4.95	0.000		

Source: 2020 Household Labor Force Survey (HLFS). Authors' calculation. ***Unemployed Individuals***: Number of observations=1,827 (whole sample), ***Unemployed Individuals Who Experience Working Life for The First Time***: Number of observations=26,274. ***Ho****: there is no difference in population*.

Table 1 displays the results of the two-sample proportion test for unemployed respondents and those seeking employment for the first time. Prior to analyzing test results it should be noted that the proportion of unemployed individuals in working age population is about 13. On the other hand, people who experience working life for the first time consist 9 percent of the population. The test results indicate that the difference between the two samples is statistically significant. Based on this outcome, our investigation focuses on analyzing the factors that impact the length of unemployment for both groups. In other words, the result motivates us to explore the potential reasons for the unemployment duration of inexperienced individuals.

Table 2: Descriptive Statistics of Unemployment Duration According to Age Groups & Gender, 2020

		Mean	Std. Dev.	Number of Observation
Working Age Population, 15-64				
	Total Sample	9.27	10.54	26,132
	Male	8.55	10.20	16,334
	Female	9.798	10.46	9,798
Prime Age Population, 24-55				
	Total Sample	10.03	11.29	17,092
	Male	9.07	10.72	10,714
	Female	11.64	12.01	6,378

Source: Authors' calculation. 2020 Household Labor Force Survey (HLFS).

Table 2 focuses on the differentiation of age groups and gender for two crucial samples in labor market: the working – age population and the prime-age population. The table has been prepared for all individuals in working age population. The finding that women have a longer duration of unemployment than men in both age groups is significant. This aligns with the expectation that it is more difficult for women to find paid employment. However, women are less likely to experience a shorter spell of unemployment compare to men. Table 2 also reveals that it takes longer to secure employment at an older age, regardless of gender.

Table 3: Descriptive Statistics of Unemployment Duration of Individuals Seeking for A Job for the First Time According to Age Groups & Gender, 2020

		Mean	Std. Dev.	Number of Observation
Working Age Population, 15-64				
	Total Sample	12.27	12.57	1,860
	Male	11.44	12.32	608
	Female	12.67	12.68	1,252
Prime Age Population, 24-55				
	Total Sample	16.43	15.55	721
	Male	16.27	17.67	156
	Female	16.48	14.93	565

Source: Authors' calculation. 2020 Household Labor Force Survey (HLFS).

Our main interest is to analyze the length of unemployment for respondents without prior work experience. Table 3 displays the unemployment period for these individuals, broken down by gender and age groups, for the same population groups. As expected, women and men seeking employment for the first time wait longer to secure paid work than those who have previous work experience.

Table 4: Average Unemployment Spell, 2014-2020 (Month)

	Average Unemployment Spell		
Year	*Total*	*Female*	*Male*
2014	7,17	8,25	6,56
2015	7,01	7,94	6,42
2016	7,08	8,08	6,39
2017	7,06	8,65	6,83
2018	7,95	9,07	7,11
2019	8,45	9,59	7,67
2020	9,27	10,46	8,55

Source: Authors' calculation. 2014-2020 HLFS raw data.

Table 4 displays the average unemployment period for the entire population between 2014 and 2020, as well as separate statistics for men and women. In all categories, there is a rising trend in the length of unemployment over the years. The average period of unemployment for the population was 7.17 months at the beginning of the period and increased to 9.27 months by 2020. The difference in unemployment

duration between females in the relevant periods is nearly 2.21 months, and for males it is 1.99 months.

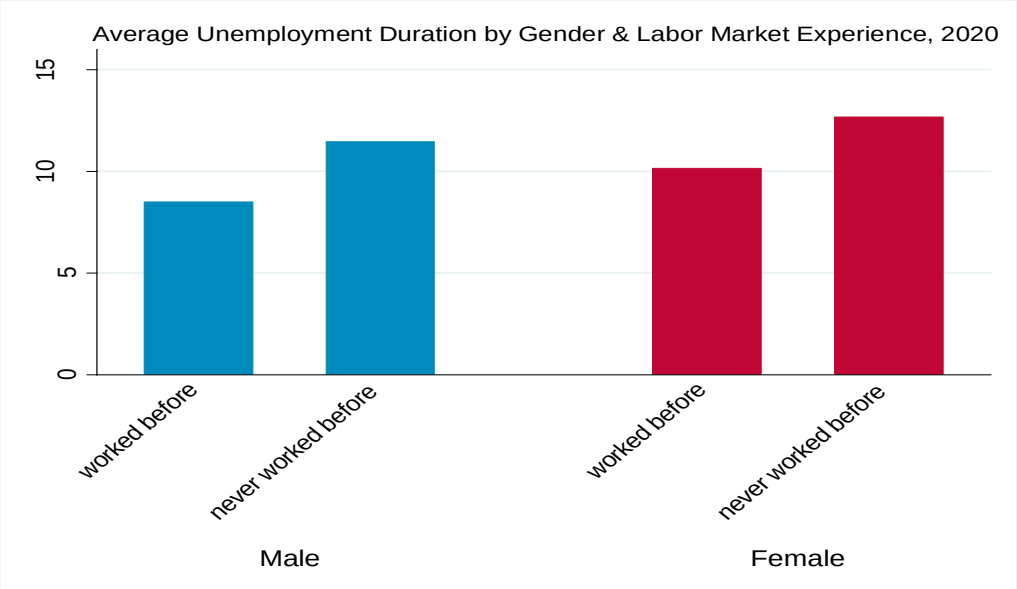
Table 5: Unemployment Type, 2020

	Total	Female	Male
Short-Term	67,24	59,68	71,78
Long-Term	32,76	40,32	28,22

Source: Authors' calculation. 2020 HLFS raw data.

Table 5 provides important information about the nature of unemployment, using the International Labor Organization's (ILO) definition of long-term unemployment. According to ILO (2022), to be considered long-term unemployed, people must have experienced continuous unemployment for a year or more. Over 60% of the population can be classified as short-term unemployed, while almost 33% identify as long-term unemployed. Unfortunately, a higher proportion of females are experiencing unemployment lasting more than 52 weeks compared to males.

Figure 1: Average Unemployment Duration by Gender & Labor Market Experience, 2020

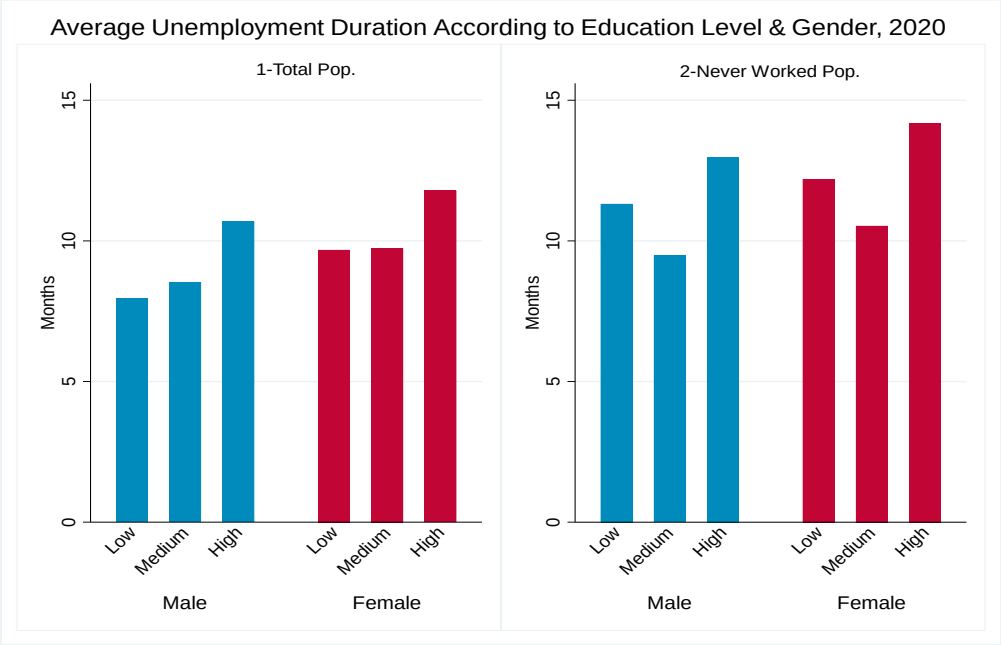


Source: Authors' calculation. 2020 Household Labor Force Survey (HLFS).

In the first graph, the distribution of unemployment duration by gender and labor market experience is shown. The two categories of labor market experience are "worked before" and "never worked before". As expected, the proportion of females is

higher in both categories than males. The average unemployment duration of respondents in the "never worked before" category is higher for both genders, exceeding 10 months. It is also noted that people without previous work experience long-term unemployment, which is particularly severe for female respondents, with an average duration of unemployment higher than that of men.

Figure 2: Comparison of Average Unemployment Duration According to Education Level & Gender, 2020



Source: Authors' calculation. 2019-2020 Household Labor Force Survey (HLFS).

The second chart shows a comparison of the average unemployment duration of genders according to education level for both total (1) and never worked population (2). Education categories are consisted as low, medium and high education. The first category gives the information of the individuals with no education, primary and secondary education. Category medium shows people with high education. And, last category is the last category that university, master and doctorate degree education. In all cases, people with high education deal with longer unemployment spell. Similar with the expectations, the number of females who work for a job is higher than those of males. While the share of females with low and medium education is almost same in whole population, those who has medium education have shorter unemployment duration.

Estimation Methodology & The Model

Survival Analysis

The survival analysis is a specific statistical design that is used to observe the length of time of a certain event occurs. Survival analysis is also called as the transition analysis, the time-to event analysis, the event-history analysis, the reliability analysis or the

failure-time analysis. The objective is to describe how or why certain events happen or do not happen. Individuals, firms, countries or subjects are followed until an event occurs (failure). And it is needed to know how long they remain in the sample (survival). In the last step of the analysis, the possibility of failing is interested (hazard risk) (Allison, 2010). In fact, this application is common in medical surveys for the purpose of obtaining clinical results. In labor economics, the model is used to analyze the time until being employed or finding a new job, time to retirement etc.

Cox Proportional Hazard Model

Survival analysis is a kind of statistical method that commonly used in economy to measure unemployment length in addition to another disciplines like biology. This one of the popular technique is used for relate hazard risk and survival time. That is why it is called time to event analysis. Besides, to understand the dependency of survival time on predictor variables, the Cox Proportional Survival Regression is commonly used (Fox and Weisberg, 2011). One of the most useful characteristics of the method is that it is achievable for all types of datasets. It is not necessary for an investigator to assume a survival distribution for the estimation of a proportional Cox model. Any investigator requires an estimate of a survival distribution to estimate the Cox Proportional model. The basic hypothesis of the Cox proportional model is to assume that the predictors have multiple effects on the hazard and are consistent over time. (George an et al, 2014).

In the model, it is needed to work on a continuous time and random sample of lengths (Jenkins, 2005). The value of z, which is the function of time, should be assigned to the person. (Cox, 1972). Then we should assume that *zi=(z1i...,zni)* where z is the vector of covariates for x individuals. The primary goal of the model is to evaluate the distribution of failure time and *z*. (Cox, 1972). Assuming that **i** individuals under observation, the hazard of the Cox Proportional Model at time t[1] can be shown as,

(1) $$\theta(t;\boldsymbol{z}) = \exp(\boldsymbol{z\beta})\theta_0(t)$$

where θ is unknown parameters and $\theta_0(t)$ is an unknown function that gives the hazard function for the standard set of conditions z=0 (Cox, 1972, p.189). In the model, *t* stands for survival time. For this research, the Cox model would be defined by the hazard function θ (*t; z*) which is explained as the risk of being in the labor force or being out of the labor force.

The hazard ratio can be also calculated by using individual *i* and *n*. It is expression as follows;

(1) $$\frac{\theta_i}{\theta_n} = \frac{exp(z\beta).\theta_i(t)}{exp\,(z\beta).\theta_n(t)}$$

[1] The entire formulation of the hazard function is based on Cox's 1972 study.

According to assumption of the model, the hazard would give the ratio of effects of covariates over independent variables for all individuals in the sample. And the rate specified in equation (2) indicates the likelihood that respondents' experience according to event at certain timeline. In the case of this paper, the event is participating to the labor force, and we specifically interest how long individuals stay in the sample (survival over the duration of time to being in the labor force). Staying out of the labor force is the risk of failure which gives hazard rate as well. The rate below 1 indicates decreasing risk, which is being out of the labor force. Or hazard rate above 1 shows higher risk.

Variables

In the subsequent sections, the length of unemployment is used as the time variable and is determined based on the answer to a specific question in the survey: "How long have you been looking for a job?" The responses are reported in months. Additionally, Table 7 details the other variables employed in the analysis. The explanatory variables in the study include socio-economic and demographic factors as well as the prior work experience of the respondents.

Table 7: Definition of the Variables Used in the Analysis

Dependent Variable	
labor force participation	It is a dummy variable. Base category which is zero "0" represents individuals who are not in the labor force. It is equal to 1 if individual is in the labor force.
Independent Variables	
worked before	It is a dummy variable with the value of "0" means worked before and with a "1" means never worked before**.** That is our primary interest as well.
age	A key variable in both the labor force participation and the unemployment duration. It is an independent continuous variable
education	Educational attainment is also defined in three categories. It is divided into low education (0), medium education (1) and high education (2). Low education is base category.
gender	Gender is also dummy variable with the reference category male. Male which is denoted by zero "0" is the base category.
marital status	This is another demographic categorical variable with single, married and divorced/widowed groups. Being single is base category.
family size	It is a continuous variable that indicates the total number of people living in a same household.

Table 8: Regression Results Including Outliers

	Coefficient	Std.Err.	p-value	[95% Confidence	Interval]
Age	-0.053***	0.0038	0.000	-0.060	-0.045
Age Square	0.0004***	0.0000	0.0000	0.0003	0.0005
Medium Education	-0.0881***	0.0160	0.000	-0.119	-0.056
High Education	-0.224***	0.0171	0.000	-0.258	-0.191
Worked Before (No)	-0.3158***	0.0255	0.000	-0.365	-0.265
Married	0.156***	0.0183	0.000	0.120	0.192
Divorced or Widowed	0.171***	0.0318	0.000	0.108	0.233
Female	-0.175***	0.0139	0.000	-0.203	-0.148
Family Size	-0.0036	0.0034	0.282	-0.010	0.003

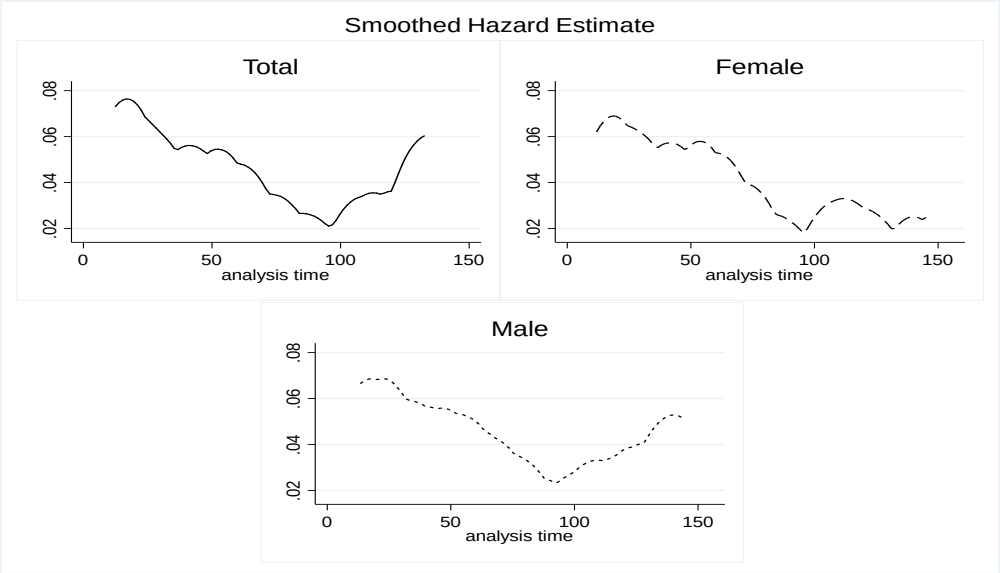
Note: Number of observations is *** *p<.01, ** p<.05, * p<.1.* Regression results include working-age (15-64) population.

Before interpreting the results of the regressions, it should be underlined that base categories are not given in the tables but we interpret the results with respect to base categories in order to make comparison. table 8 Age, age square, previous work experience and marital status are statistically significant among selected variables. On the other hand, only family size variable is not statistically significant. In line with the expectations, unemployment spell of individuals with working experience before is lower than those of people who was not employed before. Women are seeking for a job almost 17 % longer than men. This finding is also the same with the study of Khan and Yousaf (2013) which is that women suffer longer duration of unemployment than men. An inverse U-shaped relationship is also observed between age, age group and duration of unemployment. As age increases, the duration of unemployment decreases, but over a period of time, any increase in age means an increase in the duration of unemployment.

The employability of individuals with high or medium educational attainment takes longer than that of individuals with low educational attainment. For instance, the duration of unemployment for respondents with a high level of education is 22% longer than for respondents in the reference category.

Being married and divorced or widowed implies a decrease in the duration of unemployment in our case.

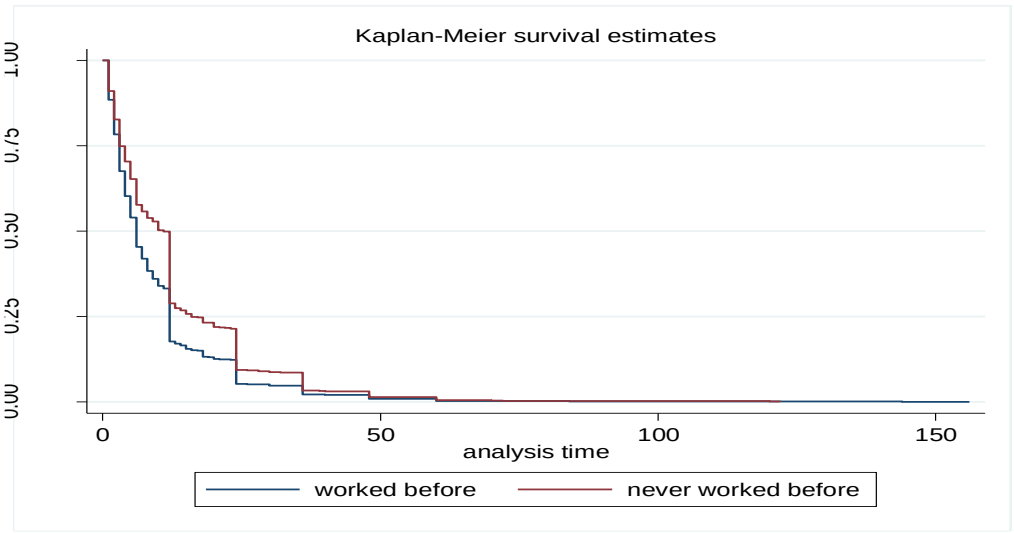
Figure 3: Smoothed Hazard Estimate Including Outliers



Source: Authors' calculations. 2020 Household Labor Force Survey.

In Figure 3, the Smoothed Hazard estimate gives the probability of having an event. In this case, the event is being in the labor force. It is possible to see the results of the total population, women and men one at a time in the figure. The probability of having event of total population goes down from %6,5 to %2,3 during analysis time 15 to 95. This means that the likelihood of being in the workforce of individuals diminishes associated period. Then, it starts to go up again. When one looks at the female sample, there is still a decreasing trend but this time the form of the line is a little more distinct and fluctuated.

Figure 4: Kaplan-Meier Survival Estimates of Group Variable



Source: Authors' calculation. 2020 Household Labor Force Survey (HLFS).

We choose worked and never worked before as group variable. Figure 4 shows the Kaplan-Meier survival function of the group that worked before (worked=1) and the group that never worked before (never worked before=0). The first thing that stands out about the graphic is that after a point survival rates of the groups become zero until at the end of the analysis time. Moreover, the survival functions show that the lack of experience in the labor market means a higher survival rate than the other group.

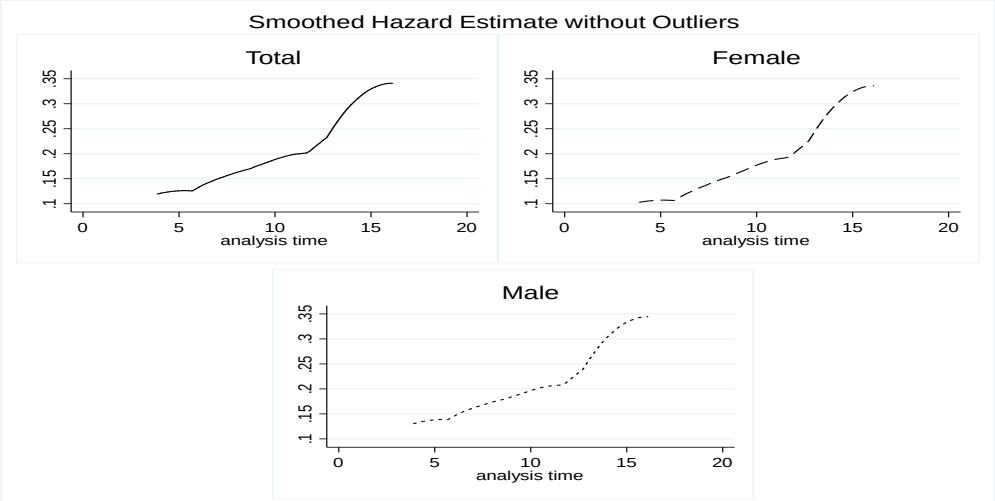
Table 9: Hazard Regression Results Including Outliers

	Hazard Ratio	**Std.Err.**	**p-value**	**[95% Confidence**	**Interval]**
Age	0.948***	0.003	0.000	0.941	0.955
Age Square	1.000***	0.000	0.000	1.000	1.000
Medium Education	0.915***	0.147	0.000	0.887	0.944
High Education	0.798***	0.013	0.000	0.772	0.825
Worked Before (No)	0.729***	0.018	0.000	0.693	0.766
Married	1.169***	0.021	0.000	1.128	1.212
Divorced or Widowed	1.186***	0.037	0.000	1.114	1.263
Female	0.838***	0.011	0.001	0.816	0.862
Family Size	0.996	0.003	0.282	0.989	1.003

*** p<.01, ** p<.05, * p<.1.* Regression results include working-age (15-64) population results.

The working age population's hazard function results are displayed in Table 9. The results show that women are 16.2% less likely to be employed compared to men. Those with a medium or high level of education are 8.5% and 20% less likely to find a job than those with low education, consistent with the Keskin-Özberk (2021) finding that those with primary education are more likely to find work than those with a medium or high level. The marital status also affects job prospects, with married individuals 27% more likely to find work than single individuals, and divorced or widowed respondents also having an advantage. The likelihood of ending unemployment is 16.5% higher for unemployed males than for unemployed females, meaning Turkish men are more likely to find employment than Turkish women. Unemployed individuals with no prior work experience are 27% less likely to be employed, possibly because employers prefer experienced workers. On the other hand, an additional age means 5.2 percent longer unemployment spell.

Figure 5: Smoothed Hazard Estimate without Outliers



Source: Authors' calculation. 2020 Household Labor Force Survey (HLFS).

The impact of outliers on the frequency of unemployment duration is significant. To assess the validity of the results, the model is re-evaluated without outliers. We prefer to exclude individuals who have experienced prolonged periods of unemployment by utilizing the frequency of unemployment duration. People with unemployment duration longer than 20 months are excluded from estimation. Figure 5 displays the Smoothed Hazard Estimate of both total population and gender without outliers. As previously mentioned, the time frame for analysis is limited to 20 months. Unlike Figure 3, the likelihood of being employed for both groups increases with time. For instance, the chance of an event for the total population goes up from 12% to 25% over the 20-month period, while the likelihood of being employed for women increases from 10% to 23%. The same trend can be observed for men.

Table 10: Regression Results (without outliers, unemployment duration<=20)

	Coefficient	**Std.Err.**	**p-value**	**[95% Confidence**	**Interval]**
Age	-0.0346***	0.0041	0.000	-0.0428	-0.0264
Age Square	0.0003***	0.0000	0.000	0.0002	0.0004
Medium Education	-0.0589***	0.0171	0.001	-0.0926	-0.0252
High Education	-0.1676***	0.0187	0.000	-0.204	-0.1301
Worked Before (No)	-0.2086***	0.0287	0.000	-0.265	-0.1520
Married	0.1197***	0.0201	0.000	0.0803	0.1591
Divorced or Widowed	0.1017***	0.0343	0.003	0.0345	0.1689
Female	-0.162***	0.0149	0.000	-0.1918	-0.133
Family Size	-0.0004	0.0036	0.909	-0.0075	0.0066

*** *p<.01*, ** *p<.05*, * *p<.1* Regression results include working-age (15-64) population results.

In the revised model, outliers are excluded to assess the robustness of the results. Respondents who are unemployed for more than 20 months are removed from the sample. The results showed that all variables are statistically significant, except for family size. However, being without previous employment experience is still found to be a significant factor leading to longer unemployment. Education level also has a significant impact, with an increase in education leading to a reduction in unemployment duration. Those with a high level of education had a 17% shorter job search period compared to those with a low level of education, while those with medium education have a 5% shorter unemployment duration. The gender gap is also observed, with female respondents having a longer job search period than men.

Table 11: Hazard Regression Results (without outliers, unemployment duration<=20)

	Hazard Ratio	**Std.Err.**	**p-value**	**[95% Confidence**	**Interval]**
Age	0.965***	0.0040	0.000	0.9580	0.9739
Age Square	1.000***	0.0000	0.000	1.0002	1.0004
Medium Education	0.942***	0.0162	0.001	0.9115	0.9750
High Education	0.845***	0.0158	0.000	0.8151	0.8773
Worked Before (No)	0.811***	0.0233	0.000	0.7671	0.8587
Married	1.127***	0.0226	0.000	1.083	1.172
Divorced or Widowed	1.107***	0.0379	0.003	1.035	1.184
Female	0.849***	0.0127	0.000	0.8254	0.875
Family Size	0.999	0.0036	0.909	0.9925	1.006

*** p<.01, ** p<.05, * p<.1.* Regression results include working-age (15-64) population results.

The hazard regression results reported in Table 11 are consistent with the early regression results. having a higher education level such as a college, university, or master's degree, decreases the chances of getting a job by 15%. On the other hand, those who are not single are more likely to be employed compared to single respondents. The findings from the risk function regression show a gender gap, with men being 15.1% more likely to find a job than women. Inexperienced individuals have a 19.9% lower chance of being hired compared to experienced workers. The hazard rate for women is 15.1% higher than that of men in Turkey in 2020. The relationship between age, squared age, and hazard has been re-estimated and shows an inverse U-shape.

Conclusion

The duration of unemployment and the parameters affecting it grow increasingly important since the consequences of unemployment is one of the barriers to achieving

sustainable economic growth and development. The aim of this study is to analyze the determinants that influence the unemployment duration of individuals by using the 2020 Household Labor Force Surveys (HLFS) prepared by Turkish Statistical Institute (TURKSTAT). More specifically, we try to understand whether being a first-time job seeker has an impact on the duration of unemployment. Taşçı (2005) measures the determinants of unemployment duration for the first time job seekers in Turkey by observing women and men separately via non-parametric analysis. Khan and Yousaf (2013) also assess people without labor market experience for Bahawalpur using same estimation methodology. In addition, individual differences in socio-economic and demographic factors such as gender, age, marital status, family size and level of education are also considered as other explanatory components. This study is conducted with the Cox Proportional Hazard model which is employed is a semi-parametric version of survival analysis.

The study's results indicate that women are less likely to participate in the labor force than men in the working-age population. The results align with Keskin-Özberk (2021) which found that domestic responsibilities, particularly child-rearing, may decrease female labor force participation. Both males and females who enter job market for the first time face higher risks of unemployment. This may be a result of employers' preferences that employees with job-specific experience in Turkey. Furthermore, a higher education level does not ensure a shorter term of unemployment. The study also discovered that while the importance of education level varies, family size is a key factor in influencing the length of unemployment. Also, it demonstrated the gender disparity, with women experiencing longer periods of unemployment than men. Additional research is needed to validate these results.

The document suggests that educational institutions like colleges or universities can implement effective internship programs to end the extended unemployment of first-time job seekers. By doing this, it is possible to meet the need of business regarding human capital. To eliminate the gender difference in the labor market, it is essential to balance the division of family responsibilities between women and men. This should be supported and accepted throughout the society. This objective of fair distribution of family responsibilities between genders should also be backed by legal regulations in the labor market. One other hand, the study also addresses the gap of younger and first time job seeker individuals in the Turkish literature. As observed in both summary statistics and empirical results, younger individuals face an important unemployment spell. It is important to underline the issue of prolonged youth unemployment before the demographic window of opportunity closes.

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Appendix

Appendix 1: Correlation Matrix of Average Unemployment Spell & Unemployment Rate

```
. pwcorr, star(.50)

                | averag~l unempl~e
----------------+------------------
average_un~l    |   1.0000
unemployme~e    |   0.8037*  1.0000
```

Appendix 2: Frequency of Individuals According to Unemployment Durations