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The Impact of Education Level and Gender on Job Search Duration in Turkey

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Abstract

This study examines the effects of changes in unemployment rates on job search duration based on education level and gender in Turkey. Using monthly data obtained from the Turkish Statistical Institute for the period January 2005 through February 2013, we investigated the relationship between job search behavior and unemployment among participants with different education levels and genders. Results show that, in general, unemployment rate negatively affected the university graduates' probability of finding a job, though male university graduates' probability of finding a job was affected positively from their unemployment rate. High school graduates were affected positively from an increase in the overall unemployment rate, and when females and males were examined separately, the unemployment rate of the each group showed positive effects. Considering that vocational high school graduates obtain the same degree as traditional high school graduates but are taught required skills for specific jobs, our findings differed for this group compared with traditional high school graduates showing similarities with the results for university graduates. For the illiterate group, unemployment rate was positively related to job-seeking behavior; therefore, unskilled workers found jobs easily during high unemployment periods.

Keywords: Job search • Job search duration • Unemployment • Education • Vector Error Correction Model

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There are two fundamental components that determine the reservation wage and the optimum point to conduct a job search: The education level of the job seeker (i.e., the main element of the reservation wage determination) and the market's current unemployment rate. Another important element is the behavioral differences between males and females. In this context, Ashenfelter and Ham (1979), Nickell (1979), Kiefer (1985), and Kettunen (1997) examined the relationship between education and unemployment, while Durand (1975), Pampel and Tanaka (1986), Psacharopoulos and Tzannatos (1989), Schultz (1990), Tansel (2001), and Bildirici, Aykaç, Özaksoy, and Akgül (2012) emphasized the differences of job search behavior, unemployment rate, and reservation wage determination between males and females, particularly during economic crisis periods.

A limited number of previous studies have examined this issue specifically within Turkey. Dayıoğlu and Kasnakoğlu (1997), Tunalı (1997), Özar and Şenesen (1998), and Dayıoğlu (2000) evaluated the education level and labor force participation in Turkey, while Taşçı and Darıcı (2009) and Kumaş and Çağlar (2011) examined the unemployment rate according to the gender gap. Previous research on the topic is limited due to the absence of reliable data on wages, a problem that still exists and causes issues during econometric analysis processes.

The relationship between job search behavior and education and unemployment rate has drawn attention in both job search theory and human capital theory.

In human capital theory, chosen education level maximizes the utility and income for a person's life. Early empirical research on the subject was conducted by De Wolff and van Slijpe (1973), Willis and Rosen (1979), Garen (1984), and Oosterbeek (1990). Determination of the optimum education level is a crucial issue, as Spence (1973), Hartog (1981; 1986), Duncan and Hoffmen (1981), Tsang and Levin (1985), Rumberger (1981), and Hartog and Oosterbeek (1988) showed that choosing an education level above the optimum point can cause complications in the long run.

In job search models, it is assumed that the higher the level of education, the larger the increase in job opportunities. Since job-offer details proposed to individuals differ for the same job, they build up a job description for each individual. Furthermore, it is assumed that as a result of the increase in job opportunities by schooling year, employment offers that fall short of the education level can be accepted, but the ones that exceed it cannot be accepted or proposed. In addition to this direct effect, the education level and alternatives that increase according to the reservation wage generate a negative effect on duration of unemployment.

This paper is organized as follows. The next sections discuss, respectively, the literature and data and econometric methodology used in this paper, econometric findings and their implications, culminating with some concluding remarks.

Literature

The relationship between job search theory and human capital theory is shown in previous literature in two ways: (1) by showing the relationship between job search duration and education, and (2) by showing the relationship between education and unemployment.

Previous literature reveals that job leaving, job searching, and job changing behaviors differ for females based on the different behavioral patterns of gender imposed by society.

For example, Kettunen (1997) examined the relationship between the duration of unemployment and education by using Finnish data. He used the years of schooling as an explanatory variable for the duration of unemployment and stated that highly educated people have a greater difficulty in finding a new job than their peers with a lower level of education. He also showed that people who hold a master's and/or doctoral degree and people with fewer than nine years of education are the groups with the lowest possibility of finding a new job.

While Ashenfelter and Ham (1979) concluded that education has no impact on unemployment, Kiefer (1985) and Nickell (1979) found a negative relationship between the two variables. As a result, considering the education level as a base factor for increasing function, job-finding probability is a function that first increases and then decreases after the critical point.

Nickell (1979) studied the impact of schooling and qualifications on the probability of becoming unemployed and on the expected duration of unemployment spells in Britain. He also laid the theoretical grounds for expecting a strong link between education level and the probability of becoming unemployed, but there are other, weaker studies that relate education to unemployment duration. By using a logit model estimated by the

standard maximum-likelihood method, Nickell found a strong relationship between schooling and unemployment incidence, up to 12 years of schooling.

Kiefer (1985) examined the role of education in determining labor turnover by using data from the Denver Income Maintenance Experiment, which was conducted in Seattle, Washington, and Denver, Colorado, from 1971 to 1982. Kiefer's study shows that education has a negative and significant effect on unemployment duration by applying ordinary least squares (OLS) regression.

Theodossiou and Zangelidis (2009) emphasized that job mobility and job-searching behavior differ based on gender, after examining gender differences in job change and working behavior at various education levels in six European countries. Their study used income, health, education, housing, demographic, and employment variables from the European Community Household Panel Survey, which ran from 1994 to 2001. Theodossiou and Zangelidis argued that turnover rates for females were relatively low and reasons for job leaving are primarily employee based issues (such as family or personal matters). Conversely, they found that males generally leave their jobs because of employer-based issues.

Hersch and Stratton (1997) also found similar evidence, pointing out that females generally leave their jobs in response to domestic responsibilities, such as child care.

Biagi and Lucifora (2008) investigated the educational and demographic effects on unemployment in 10 European countries between 1975 and 2002 through a panel data analysis. According to the results, drastic changes in education and demographic features are dependent on age and education level.

Abdel-Mowla (2011) investigated changes in job search behavior of women in Egypt between 1998 and 2006. He studied the effects of structural changes within labor market on the job-search decisions of women, taking into account various factors such as education, region, and marital status found that education had a positive effect.

Becker (2005) included the current state of education during the period when job searching. He examined a sample case, implying that a person who is offered a job as a student is likely to leave school without acquiring a degree because they prefer to get a start in business.

Jayaweera (1997) studied the relationship between education and employment but found no significant relationship between the two variables. She examined 23 Asian countries in two groups: underdeveloped countries and rapidly industrializing countries. Therefore, investigation of a structure that is different than the European system revealed different results.

Bratberg and Nielsen (1998) investigated job search duration after graduation. Study results suggest that reservation wage, which increases according to education level, has a negative effect on job search duration. The duration of the subject's first job implied additional restrictions to job search theory.

Data and Econometric Methodology

This study used the Turkish Statistical Institute (TUIK) labor force statistics database to show the relationship between unemployment rate and job search duration for different education levels by using monthly data for the period January 2005 through February 2013.

The subject group examined was comprised of five educational groups: illiterate people (i.e., those with little or no formal education), primary school graduates, high school graduates, vocational high school graduates, and university graduates (undergraduate degree). Data for the primary school education consists of both primary and secondary school graduates due to a law introduced in 1994 mandating eight-year compulsory education. Under the assumption that labor cannot be substituted by another person from a different education level, the relationship between unemployment rate and job search duration was examined separately for each education level.

Job search duration is defined as the period from the date of leaving a job to finding another one. Job search durations were grouped into seven categories: 1–2 months, 3–5 months, 6–8 months, 9–11 months, 1 year, 2 years, and 3 years.

Separate analyses were done for males and females in order to identify structural differences dependent on gender, using a total of 70 variables. In the first stage of the study, the existing deterministic components for unemployment rates and job search duration were examined, such as time trend and seasonality. Once the deterministic components were identified, the effected data were de-trended and de-seasonalized. Before unit root analysis, the deterministic components of the data

were analyzed. All variables were also subjected to logarithmic transformations.

In the second stage, all data were subjected to unit root analyses. ADF (Augmented Dickey-Fuller) and PP (Phillips Perron) tests were applied; however, the KPSS (Kwiatkowski, Phillips, Schmidt, Shin) test was used for indecisive situations. All unemployment rate data compared to education level had a unit root. This situation also suggests the effect of hysteresis (i.e., when a single disturbance affects the course of the economy), as many previous studies prove the existence of the hysteresis effect during various periods in Turkey. Data related to job search duration were examined, and those with I(1) and I(0) were identified. In the third stage, the VEC (Vector Error Correction) method was used for the stationary data in the same order as for the duration of both unemployment and job search. This method was selected for its ability to detect long-term relationships among variables and to examine the error correction terms and mean reversion behavior after the shocks. For detailed information on unit root and VEC analyses, see Gujarati and Porter (2008) and Greene (2011).

Unit Root Analysis

Augmented Dickey-Fuller (ADF) Unit Root Tests: The Dickey-Fuller (1979) and Augmented Dickey-Fuller (1981) tests are the most reputable tests for determining the presence of a unit root.

Dickey-Fuller created an amended t-table in 1979, titled τ (tau). They indicated that this table should be used as decision criteria for a deviation in t-statistics. The critical values were formed for three general models, if $\Delta_{yt} = y_t - y_{t-1}$. These models are constructed as follows:

$$\Delta y_t = \Upsilon y_{t-1} + u_t \quad 1$$

$$\Delta y_t = m_0 + \Upsilon y_{t-1} + u_t \quad 2$$

$$\Delta y_t = m_0 + \Upsilon y_{t-1} + m_2 t + u_t \quad 3$$

The equation (1) contains only the stochastic trend. The equation (2) contains the stochastic trend and a constant term. The equation (3) describes a process that has a constant term, where the stochastic and deterministic trends are modeled together.

The test hypotheses are formed as H_1 : g = 0.and H_1 : g < 0. If H_1 is rejected, the Υ_1 series is stationary in zero order. If the H_0 hypothesis is not rejected, then the series is one of the following: not stationary in zero order, stationary in higher orders, or never stationary. In this case, the H_0 hypothesis could not be rejected, so the series was subjected to a subtraction p, and a second test was applied. In this step, the y_t series was replaced by the Δy_t series to test its stationarity.

The DF (1979) test assumed that the error terms underwent the White Noise process.(i.e., random process of a variable with a constant mean and variance and independently distributed). However, in order to achieve more reliable estimations in the case of serial correlations, the test was improved and titled the Augmented Dickey Fuller (ADF) unit root test in 1981. The equations generated as a result of the DF test have been calculated in the ADF test, as shown below:

$$\Delta y_t = \gamma y_{t-1} + \sum_{i=2}^{p} \beta_i \Delta y_{t-i+1} + u_t \quad 4$$

$$\Delta y_t = m_0 + \gamma y_{t-1} + \sum_{i=2}^{p} \beta_i \Delta y_{t-i+1} + u_t \quad 5$$

$$\Delta y_t = m_0 + \gamma y_{t-1} + \sum_{i=2}^{p} \beta_i \Delta y_{t-i+1} + m_2 t + u_t \quad 6$$

For these models, τ table values, developed by DF (1979), can also be used, while various methods can be used to determine the lag length in the models. These include: the Akaike Final Prediction Error (FPE), the Akaike Information Criterion (AIC), the Schwartz Criterion (SC), the Bayesian Information Criterion (BIC), the Hannan-Quinn Criterion (HQ), and the Campel-Perron Criterion. In this study, AIC and SC information criteria were used.

Phillips and Perron (PP) Test: Phillips and Perron (1988) developed an alternative unit root test procedure that does not affect the asymptotic distribution of the test statistics while testing for a unit root, and is also robust to general forms of heteroskedasticity (i.e., the circumstance in which the variability of a variable is unequal across a time period). The test adds two important analysis factors that are important during its implementation. The first is the existence of a constant, and the second is the existence of a constant and linear trends.

y_t is assumed to be generated by the following:

$$\Delta y_t = \mu + y_{t-1} + u_t \quad 7$$

Similar to the DF tests, PP tests are also formed on one of three different regression models. However, the difference is the centralization of the trend term (Phillips & Perron, 1988). The regression equations of the PP test are formed as follows:

$$y_t = \alpha y_{t-1} + u_t \quad 8$$

$$y_t = \hat{\mu} + \hat{\alpha} y_{t-1} + \hat{\mu}_t \quad 9$$

$$y_t = \tilde{\mu} + \tilde{\beta}(t-T/2)\, \tilde{\alpha} y_{t-1} + \tilde{\mu}_t \quad 10$$

For (3.8), (3.9), and (3.10) regressions, they defined t-statistics of coefficient estimates. These t-statistics are given below where, $\hat{S}$ and $\tilde{S}$ are standard errors of regressions (9) and (10),

$$t_{\hat{\alpha}} = (\hat{\alpha} - \alpha)\left\{\sum (y_{t-1} - y_{-1})^2\right\}^{1/2} / \hat{S} \quad 11$$

$$t_{\hat{\mu}} = (\hat{\mu} - \mu)\left\{\sum (y_{t-1} - y_{-1})^2 / \sum y_{t-1}^2\right\}^{1/2} / \hat{S} \quad 12$$

$$t_{\tilde{\mu}} = (\tilde{\mu} - \mu) / \left(\tilde{S}^2 c_1\right)^{1/2} \quad 13$$

$$t_{\tilde{\beta}} = (\tilde{\beta} - \beta) / \left(\tilde{S}^2 c_3\right)^{1/2} \quad (14)$$

$$t_{\tilde{\alpha}} = (\tilde{\alpha} - \alpha) / \left(\tilde{S}^2 c_3\right)^{1/2} \quad (15)$$

With the modifications used for *t*-statistics, Phillips and Perron (1988) also calculated Z(a), $Z(t_\alpha)$, $Z(\mu)$, $Z(t_\mu)$, $Z(\tilde{\alpha})$, $Z(t_{\tilde{\alpha}})$, $Z(\tilde{\mu})$, $Z(t_{\tilde{\mu}})$, $Z(\tilde{\beta})$ statistics, which eliminates the nuisance parameter (i.e. any parameter which has not vital impact on model but must be taken into account for the analysis) dependencies asymptotically.

With the developments mentioned in their study, PP tests provide an improved nonparametric approach, which is appropriate for weakly dependent and heterogeneously distributed data.

Vector Error Correction Models (VECM)

Vector auto-regression (VAR) was first introduced by Sims (1980) as a system containing a set of variables where each is expressed as a linear function of p lags of itself and all of the other variables, and an error term.

A bivariate and one-lagged VAR model can be expressed as follows:

$$y_t = \alpha_0 + \alpha_1 x_{t-1} + \alpha_2 y_{t-1} + \varsigma_{yt} \quad 16$$

$$x_t = b_0 + b_1 x_{t-1} + b_2 y_{t-1} + \varsigma_{xt} \quad 17$$

If those two variables are stationary in the same order and possess a co-integration relation and the error term u_t, which is obtained from this relation ($u_t = y_t - \gamma_0 - \gamma_1 x_t$), is stationary $u_t \sim I(0)$, then the error correction model would be as follows:

$$\Delta y_t = \beta_0 + \beta_1 \Delta x_t + \lambda u_{t-1} + \varepsilon_t = \beta_0 + \beta_1 \Delta x_t + \lambda(y_{t-1} - \Upsilon_0 - \Upsilon_1 x_{t-1}) + \varepsilon_t \quad 18$$

The coefficient λ is an error correction term and it is expected to be negative. This negative and statistically significant coefficient shows the amount of correction per period (t-1) if disequilibrium happens during period t.

A VEC model takes into consideration this error correction mechanism, which was introduced by Engle and Granger (1987) in the VAR system and takes the following form:

$$\Delta y_t = \beta_{y0} + \beta_{yy1} \Delta y_{t-1} + \beta_{yx} \Delta x_{t-1} + \lambda_y(y_{t-1} - \Upsilon_0 - \Upsilon_1 x_{t-1}) + \upsilon_{yt}$$

$$\Delta x_t = \beta_{x0} + \beta_{xy1} \Delta y_{t-1} + \beta_{xx1} \Delta x_{t-1} + \lambda_x(y_{t-1} - \Upsilon_0 - \Upsilon_1 x_{t-1}) + \upsilon_{xt} \quad 19$$

This system helps to estimate both the long-term relationship and the short-term dynamics that takes the system into equilibrium.

Findings

In this study, all data were subjected to unit root tests. The ADF and PP test results for the variables indicated first order stationarity (and therefore have been used in the VECM analysis) are stated below. Table 1 indicates the results of the unit root test for the variables of female, male, and overall unemployment. Table 2 indicates the unit root test results related to job search duration variables. The critical values for the ADF and PP tests are stated in the tables below as well.

The test results show that the variables are stationary at order one. (**) is used if the null hypothesis, indicating the existence of the unit root, was accepted with a 10% margin of error, while (***) is used if the variable is stationary. This exceptional situation is reported when the ADF and PP tests show different results. At the end of both test results, if the variables did not have a unit root, they were excluded from the VECM analysis because of the limitations of this method.

Using the VECM method, the relationship between job-search duration and unemployment rate was examined for university graduates, with separate examinations for females and males. The results of this VECM with a long-term equilibrium and ECM terms are stated below. In the table, only the economically and statistically significant relationships are presented. Furthermore, in the event of a shock with ECM terms and in the case of a divergence from equilibrium, the return to equilibrium, existence of equilibrium, and the lag length were reported.

Table 3 shows that the overall market unemployment rate generally affected the job-search duration of males positively; however, it shows negative effects on female labor for different job search durations. When the

Table 1
Unit Root Test Results for Male, Female, and Total Unemployment Variables

Gender	Unemployment	ADF	ADF (first diff)	PP	PP (first diff)
Male	Illiterate	− 1.26	−4.44	−2.23	−12.80
	Primary school	−1.83	−5.86	−1.60	−8.91
	High school	−1.27	−5.54	−1.06	−10.39
	Voc. high school	−2.03	−4.18	−1.49	−9.49
	University	−1.89	−8.71	−2.38	−12.82
Female	Illiterate	−2.71	−7.63	−2.79	−10.26
	Primary school	−2.77	−5.78	−2.74**	−10.77
	High school	−1.39	−4.73	−1.59	−8.47
	Voc. high school	−2.56	−4.44	−2.36	−10.92
	University	−2.45	−4.60	−2.47	−7.92
Education level	Illiterate	−2.22	−9.81	−2.35	−9.82
	Primary school	−2.75	−10.48	−2.75	−10.91
	High school	−2.24	−9.28	−2.44	−9.28
	Voc. high school	−2.81	−9.34	−2.98	−9.36
	University	−1.50	−9.86	−3.01**	−18.97

PP Critical Values:
1% = −3.49; 5% = −2.89; 10% = −2.58
ADF Critical Values:
1% = −3.50; 5% = −2.89; 10% = −2.58

female and male unemployment rates were examined separately, there was not a significant difference between them, and both were negatively affected. At this point, it can be said that the increase in the overall unemployment of university graduates had a negative impact for females and a positive impact for males on job-search duration.

When the ECM terms were examined, the return to equilibrium after the deviation, which was caused by a shock in the system, was faster in females. In addition, the behavior of finding a job within 1–2 months was the fastest return to equilibrium for both males and females.

Similarly, Table 4 presents the results of the analysis for the high school graduates and reveals that this group is usually positively affected from an increase in the overall unemployment rate. The increase in the market unemployment rate also increased the rate of finding jobs for different job search durations. The VECM analysis also shows that, at this level of education, the effect of the shock had a longer effect, and the return to equilibrium appeared to be later than at the other education levels.

The number of significant models that displayed the unemployment rate of high school graduates for different job search periods were quite limited; nonetheless, the significant models obtained are reported for the job-finding rates, such as 6–8 months for male and 3–5 months for female. The focus on the effects of unemployment rate should be placed on the high school graduates overall, rather than separated by gender.

Table 5 reports the models of vocational school graduates and shows that an increase in the total unemployment rate had a negative effect on their job-finding behavior in both the short and long terms. The males' behavior of finding job was shown to be in a positive direction with the male unemployment rate; however, the females' behavior of finding job was shown to be in a negative direction with the female unemployment rate.

It is not surprising that vocational high school graduates and university graduates job search behavior showed parallel results, as the tables clearly display the effect of vocational training and specialization.

The negative relation obtained for total unemployment and both male and female job finding behaviors can be explained by the Mahiroğulları and Korkmaz (2013) study. In Turkey, vocational high schools lost the ability to adequately train intermediate stuff over time; therefore, they have become unpreferable institutions. Also, university graduates who are willing to work in positions suitable for vocational high school graduates reduce the probability of the latter group finding a job during high unemployment periods (Mahiroğulları & Korkmaz, 2013).

The results for the illiterate group are displayed in Table 6. Significant results were generally obtained for males only. Considering that illiterate females often avoid work life or their participation in the registered labor force is limited, the results were found to be meaningful.

Table 2
Unit Root Test Results for Variables Defined by Job-Search Duration

Job search period	Gender	Education level	ADF	ADF (first diff)	PP	PP (first diff)
1–2 month	Male	Primary school	−1.75	−8.36	−2.52	−9.37
		High school	−2.79	−7.37	−3.26**	−9.97
		Voc. high school	−2.69	−4.83	−3.46**	−12.43
		University	−2.31	−5.35	−3.00**	−18.96
	Female	High school	−2.80	−5.69	−3.88***	−20.10
		Voc. high school	−2.73	−13.84	−4.67***	−20.71
		University	−0.73	−4.88	−1.78	−16.75
3–5 month	Male	Illiterate	−2.88	−7.32	−3.15**	−12.10
		Primary school	−1.12	−9.58	−2.13	−5.00
		High school	−2.61	−3.98	−3.19**	−10.52
		Voc. high school	−2.79	−3.60	−3.48***	−13.74
		University	−2.39	−7.01	−1.11	−13.00
	Female	Illiterate	−2.14	−7.97	−2.87	−13.75
		High school	−2.67	−7.63	−3.09**	−18.70
		Voc. high school	−2.95**	−4.18	−3.49**	−16.17
		University	−0.55	−8.61	−2.65	−17.30
6–8 month	Male	Illiterate	−2.47	−5.78	−3.23**	−13.40
		Primary school	−0.65	−6.55	−3.49	−11.75
		High school	−2.39	−5.09	−3.42**	−12.42
		Voc. high school	−2.25	−5.02	−3.27	−22.66
		University	−2.57	−7.07	−2.53	−16.65
	Female	Illiterate	−2.64	−5.99	−2.76	−12.21
		Primary school	−1.48	−3.56	−0.77	−13.81
		High school	−2.50	−8.68	−2.83	−11.23
		Voc. high school	−2.32	−4.98	−3.44	−13.38
		University	−1.95	−5.16	−2.98**	−17.37
9–11 month	Male	Illiterate	−1.78	−7.90	−2.56	−13.85
		High school	−2.17	−4.87	−3.44**	−13.38
		Voc. high school	−2.85	−6.38	−3.51***	−14.64
	Female	University	−2.01	−5.74	−2.89**	−14.04
1 year	Male	Primary school	−2.55	−5.84	−2.80	−7.82
		High school	−2.85	−6.68	−2.88	−8.88
		Voc. high school	−2.85	−6.68	−2.88	−8.88
		University	−1.04	−6.78	−3.12**	−19.97
	Female	High school	−0.72	−7.37	−3.44**	−11.61
		Voc. high school	−1.99	−7.39	−3.44**	−11.60
		University	−1.47	−9.34	−2.63	−27.17
2 year	Male	Primary school	−2.68	−5.62	−3.19**	−9.73
		High school	−2.30	−7.36	−2.76	−9.59
		Voc. high school	−2.69	−4.92	−2.83	−16.58
		University	−2.68	−6.50	−4.82	−21.15
	Female	High school	−2.30	−7.36	−2.76	−10.20
		Voc. high school	−2.86	−5.37	−3.24	−22.68
		University	0.07	−7.93	−1.11	−13.00
3 year	Male	University	−1.35	−7.18	−2.54	−13.08
	Female	University	−0.52	−5.92	−2.53	−16.65

PP Critical Values: 1% = −3.49; 5% = −2.89; 10%−= −2.58
ADF Critical Values: 1% = −3.50; 5% = −2.89; 10% = −2.58

Table 3
VECM Results for the Relationship between Job Search Duration of Undergraduates and Unemployment Rate (Total and Same Gender Group)–*

Undergraduate Degree							
Job search length (dependent variable)	**ECM term**	**Male unemployment (independent variable)**	**Trend**	**Job search length (dependent variable)**	**ECM term**	**Total unemployment (independent variable)**	**Trend**
1–2 month	−0.58	−0.79		**1–2 month**	−0.36	0.71	
	(0.10)	*(0.18)*			*(0.09)*	*(0.29)*	
3–5 month	−0.41	−0.995724	0.005	**3–5 month**			
	(0.07)	*(0.24099)*	*(0.00)*				
6–8 month				**6–8 month**	−0.52	−0.38	
					(0.12)	*(0.29)*	
1 year	−0.30	−0.916	0.001	**1 year**	−0.46	0.71	
	(0.06)	*(0.34)*	*(0.00)*		*(0.10)*	*(0.24)*	
2 year				**2 year**	−0.29	0.92	
					(0.08)	*(0.54)*	
Job search length (dependent variable)	**ECM term**	**Female unemployment (independent variable)**	**Trend**	**Job search length (dependent variable)**	**ECM term**	**Total unemployment (independent variable)**	**Trend**
1–2 month	−0.98	−0.55	0.003	**1–2 month**	−0.80	−0.65	
	(0.14)	*(0.30)*	*(0.00)*		*(0.15)*	*(0.54)*	
3–5 month	−0.59	−0.57		**3–5 month**			
	(0.15)	*(0.44)*					
6–8 month	−0.73	−0.887670		**6–8 month**	−0.67	−0.91	0.001
	(0.17)	*(0.45878)*			*(0.11)*	*(0.69)*	*(0.00)*
9–11 month	−0.57	−0.92		**9–11 month**			
	(0.12)	*(0.56)*					
1 year				**1 year**	−0.78	−0.36	0.01
					(0.12)	*(0.28)*	*(0.00)*

*Standard errors are shown in the brackets.

There are two issues that are considered important in job search theory: reducing the reservation wage during the period of education, and determining how unemployment causes faster job location. This group lacks formal education, and they do not have another opportunity to increase chances of employment other than a decrease in the reservation wage during times of crisis.

Table 4
*VECM Results for the Relationship between Job Search Duration of High School Graduates and Unemployment Rate (Total and Same Gender Group)**

High School Degree					
Job search length (dependent variable)	**ECM term**	**Male unemployment (independent variable)**	**Job search length (dependent variable)**	**ECM term**	**Total unemployment (independent variable)**
1–2 month			**1–2 month**	−0.25	0.68
				(0.08)	*(0.22)*
3–5 month			**3–5 month**	−0.54	−0.30
				(0.13)	*(0.10)*
6–8 month	−0.23	0.96	**6–8 month**		
	(0.07)	*(0.71)*			
9–11 month			**9–11 month**	−0.37	0.81
				(0.08)	*(0.41)*
1 year			**1 year**	−0.11	0.91
				(0.05)	*(0.44)*
Job search length (dependent variable)	**ECM term**	**Female unemployment (independent variable)**	**Job search length (dependent variable)**	**ECM term**	**Total unemployment (independent variable)**
1–2 month			**1–2 month**	−0.54	−0.43
				(0.09)	*(0.25)*
3–5 month	−0.25	0.76	**3–5 month**	−0.14	0.89
	(0.09)	*(0.49)*		*(0.07)*	*(0.54)*
6–8 month			**6–8 month**	−0.34	0.93
				(0.09)	*(0.51)*
1 year			**1 year**	−0.17	0.64
				(0.07)	*(0.52)*

*Standard errors are shown in the brackets.

Table 5
*VECM Results for the Relationship between Job Search Duration of Vocational High School Degree and Unemployment Rate (Total and Same Gender Group)**

Vocational High School Degree

Job search length (dependent variable)	ECM term	Male unemployment (independent variable)	Job search length (dependent variable)	ECM term	Total unemployment (independent variable)	Trend
1–2 month	−0.50	0.32	**1–2 month**			
	(0.08)	(0.21)				
3–5 month	−0.59	0.55	**3–5 month**	−0.41	−0.68	
	(0.09)	(0.20)		(0.07)	(0.27)	
6–8 month			**6–8 month**	−0.42	−0.68	
				(0.10)	(0.20)	
1 year			**1 year**	−0.23	−0.64	
				(0.06)	(0.23)	
Job search length (dependent variable)	**ECM term**	**Female unemployment (independent variable)––**	**Job search length (dependent variable)**	**ECM Term**	**Total Unemployment (independent variable)**	**Trend**
1–2 month	−0.22	−0.89	**1–2 month**	−0.27	−0.66	
	(0.08)	(0.54)		(0.11)	(0.37)	
3–5 month	−0.16	−0.87	**3–5 month**	−0.32	−0.57	
	(0.08)	(0.52)		(0.09)	(0.32)	
6–8 month			**6–8 month**	−0.26	−0.68	
				(0.09)	(0.47)	
1 year			**1 year**	−0.52	0.40	−0.003
				(0.10)	(0.12)	(0.001)

*Standard errors are shown in the brackets.

Table 6
*VECM Results for the Relationship between Job Search Duration of Illiterate People and Unemployment Rate (Total and Same Gender Group)**

Illiterate

Job search length (dependent variable)	ECM term	Male unemployment (independent variable)	Job search length (dependent variable)	ECM term	Total unemployment (independent variable)
3–5 month	−0.57	−0.89	**3–5 month**	−0.57	0.74
	(0.11)	(0.30)		(0.11)	(0.50)
6–8 month	−0.71	0.82	**6–8 month**	−0.50	0.60
	(0.12)	(0.20947)		(0.14)	(0.31)
9–11 month			**9–11 month**	−0.45	−0.58
				(0.12)	(0.39)
Job search length (dependent variable)	**ECM Term**	**Female unemployment (independent variable)**	**Job search length (dependent variable)**	**ECM term**	**Total unemployment (independent variable)**
1–2 month	−0.39	0.57	**1–2 month**	−0.33	0.69
	(0.09)	(0.23)		(0.09)	(0.39)
3–5 month	−0.29	0.62	**3–5 month**		
	(0.10)	(0.27)			

*Standard errors are shown in the brackets.

The results of this study suggest that probability of finding a job for illiterate people increases with the rise of unemployment. During relatively higher unemployment periods, illiterates, who are traditionally at the bottom of the income distribution, decrease their own salary expectations. Therefore, their probability of finding a job increases..

Data for the primary school group consists of both primary and secondary school graduates due to a law introduced in 1994 requiring eight-year compulsory education. In order to provide more information to the reader, this group is analyzed, but most of the data in this group were stationary (I(0)) and not available for long-term relationship analysis. The VECM results are presented for this group in Table 7 below, and include data appropriate for VECM analysis.

Table 7
*VECM Results for the Relationship between Job Search Duration of Primary School Graduates and Unemployment Rate (Total and Same Gender Group)**

Primary Education Degree					
Job search length (dependent variable)	**ECM term**	**Male unemployment (independent variable)**	**Job search length (dependent variable)**	**ECM term**	**Total unemployment (independent variable)**
1–2 month	−0.74	−0.07	**1–2 month**	−0.97	0.03
	(0.12)	(0.09)		(0.14)	(0.06)
3–5 month	−0.39	0.07	**3–5 month**	−0.32	−0.91
	(0.05)	(0.05)		(0.10)	(0.19)
6–8 month	−0.38	0.19	**6–8 month**	−0.35	0.13
	(0.07)	(0.06)		(0.07)	(0.08)
1 year	−0.34	0.18	**1 year**		
	(0.07)	(0.06)			
2 year	−0.26	0.22	**2 year**		
	(0.06995)	(0.09813)			
Job search length (dependent variable)	**ECM term**	**Female unemployment**	**Job search length (dependent variable)**	**ECM term**	**Total unemployment**
6–8 month	−0.59	0.47	**6–8 month**		
	(0.12)	(0.18)			

*Standard errors are shown in the brackets.

Conclusion and Evaluation

The VECM results in this study empirically represent the relationship between job search behavior in the market for the periods January 2005 through February 2013 and unemployment. The foremost important point in job search theory is that job-seeking behavior differs depending on the education level of individuals. The other focal point is demographic structure, which was also taken into account in previous studies. Considering these two factors, this study separately examines the relationship between job search behavior and unemployment for different education levels and genders.

The results from this study can be summarized in four ways based on group analyses: First, the relationship between total unemployment rate and males' job finding behavior; second, the relationship between total unemployment rate and females' job finding behavior; third, the relationship between the male unemployment rate and males' job finding behavior; and fourth, the relationship between the female unemployment rate and females' job finding behavior. For all group analyses, university graduates, high school graduates, vocational high school graduates, primary school graduates, and illiterates are taken into consideration separately.

An increase in total unemployment rate during various periods for male university graduates might increase their probability of finding a job. For females of the same education level, an increase in total unemployment causes a decrease in the probability of finding a job. Consequently, the current total unemployment rate for university graduates affects males and females job finding behavior in opposite ways. When this comparison is made for the unemployment rate of the same-gender groups, an increase in the female unemployment rate was shown to have a negative impact on their possibility of finding a job. Similarly, an increase in the male unemployment rate was shown to have a negative impact on their possibility of finding a job. Therefore, it can be understood that, in general, university graduates are affected negatively by an increase in the unemployment rate. An exception was found for the relationship between total unemployment rate and males' job finding behavior.

Generally, an increase in the unemployment rate leads a decrease in overall wage rates; however, the reservation wages of university graduates do not follow the same pattern. Our results are consistent with these explanations, except for the relationship between male university graduates' job finding behavior and the market unemployment rate. Overall, there is a positive relationship between total employment and university graduates' job finding behavior. It is possible that, due to the current societal role of males as being responsible for earning a living, males may have found jobs by lowering their reservation wages.

This behavior of males lowering their reservation wage stems from their obligation to ensure the livelihood of the family. It can be assumed that, during high unemployment periods, changes in occupational preferences occur at the expense

of their reservation wage. The results also have different implications in terms of the employers' behavior. During periods of high unemployment, the demand for labor is in favor of males; however, further analysis is required for these aspects to be widely accepted.

Vocational high school graduates have the same level of education as high school graduates, but they are trained and educated in their chosen field; therefore, results for this group differ from those of high school graduates but show similarities to those of university graduates. In this group, an increase in current unemployment usually has a negative effect on finding a job. The only exception is that it has a positive impact on females' possibility of finding a job within one year. When male and female unemployment rates are analyzed separately, an increase in unemployment rate shows a negative effect on females' possibility of finding a job but a positive effect on males' possibility of finding a job.

The probability of finding a job for vocational high school graduates decreases with an increase of the market unemployment rate. In Turkey, vocational training institutions have lost the ability to adequately train intermediate staff; therefore, they have become unpreferable by individuals. Also, the existence of university graduates who are willing to work in positions suitable for vocational high school graduates reduces the latter group's probability of finding a job during high unemployment periods (Mahiroğulları & Korkmaz, 2013).

High school graduates are affected positively from an increase in the overall unemployment rate. Also, when females and males are examined separately, the unemployment rate shows positive effects on both groups.

In the light of the theory of human capital, parallel results for the level of education and level of salary must be obtained. In this case, the cost of staying unemployed rises as the level of education increases. Conversely, among the educated labor force, a relatively higher level of salary increases the probability of finding a job with a commensurately high salary. This is the wealth-based trade-off between staying unemployed for receiving a higher salary and lowering reservation wage in order to find a job immediately. The educated labor force with higher salaries may have been able to accumulate enough savings prior to becoming unemployed, allowing them to continue to look for new work with a better salary. Within this context, one of the reasons for the positive relationship between the market unemployment rate and probability of finding a job for high school graduates is that the educated labor force's preference for jobs with higher wages enables the former group to find a job, as they not have been able to bear the cost of staying unemployed due to a lack of savings.

Considering the fact that a period of high unemployment also can imply a period of crisis and decreasing real salaries, it is not surprising to find a positive relationship between rising unemployment levels and improved employment potential for people within the unspecialized high school graduates group.

When total unemployment increases, the possibility of finding a job for illiterate males and females also increases. During relatively higher unemployment periods, illiterates, who are traditionally at the bottom of the income distribution, decrease their own salary expectations, thereby increase their probability of finding a job. Employment probabilities of primary school graduates follow the same behavior. According to TUIK, in 2013, 46.5% of Turkey's employed population was comprised of people with an education level lower than high school, which is consistent with the dynamics of the labor market. The reason for this may be that the construction industry became more active in the economy during this period, although a more detailed analysis should be carried out to confirm this trend.

Overall, this study reveals that the possibility of finding a job for both university graduates and vocational high school graduates has a negative relationship with the market unemployment rate. In contrast, the job search duration of high school graduates, primary school graduates, and illiterate people is positively affected by an increase in the unemployment rate.

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