International Journal of Assessment Tools in Education
2024, Vol. 11, No. 4, 758–773
https://doi.org/10.21449/ijate.1495346
journal homepage: https://dergipark.org.tr/en/pub/ijate
Research Article

Over-education rates and predictors of entry-level jobs in Türkiye

Sevgi Ernas[1*]

[1]Ankara University, Faculty of Education Science, Department of Elementary Education, Ankara, Türkiye

ARTICLE HISTORY
Received: June 03, 2024
Accepted: Aug. 26, 2024

Keywords:
Education mismatch,
Overeducation,
Overskilling,
Education-employment relationship,
Theories of education economics.

Abstract: This research aims to determine the proportion of overeducated individuals with higher education levels compared to their colleagues who are graduates of associate, undergraduate, and postgraduate education but work at the same status in entry-level jobs. Overeducation rates in entry-level jobs in Türkiye were determined using the Turkish Statistical Institute (TUIK) Household Labor Force Surveys (2014-2019) microdata set. The job analyst measure was used to determine the rate of overeducation. Logistic regression data analysis was conducted to classify the variables that predict the state of being overeducated with the TUIK 2019 Household Labor Force Survey. According to the findings, overeducation rates increased gradually over the years by 8.02% in 2014, 8.98% in 2015, 9.78% in 2016, 10.43% in 2017, 11.00% in 2018, and 12.5% in 2019. For the state of being overeducated, various demographic variables were analyzed and predicted, such as income, age, region, gender, ISCED, marital status, firm size, place of work, additional job searches, ISCO 08 classification, and employment status.

1. INTRODUCTION

After World War II, although the expansion of the education sector and professions significantly slowed down after 1970, the increase in the educated workforce accelerated. This situation indicates that from the 1970s to the early 1980s, professions were educationally rising (Clogg & Shockey, 1984), and an increase in the duration and level of schooling among workers in the United States was observed (Halaby, 1994). In the 1970s, an increase in the number of graduates in the United States and the rising demand for graduates in the workforce led to the emergence of the phenomenon of "overeducation" (Berg, 1970; Freeman, 1976). This phenomenon still holds true (International Labor Organization [ILO], 2019; Kurnaz, 2015). The phenomenon of "overeducation" occurs when the number of educated individuals increases and the educational level on the supply side of the labor market exceeds the level demanded for employment. When the labor market cannot absorb the increasing supply of educated labor, i.e., when there is an imbalance between supply and demand, educated individuals are forced to accept jobs that do not match their education qualifications, thus falling into an "overeducated" situation (Büchel, 2001).

*CONTACT: Sevgi ERNAS ernasevgi@gmail.com Ankara University, Faculty of Education Science, Department of Elementary Education, Ankara, Türkiye

e-ISSN: 2148-7456

1.1. Overeducation

"Overeducation" refers to the mismatch between the educational attainment of the workforce and the level of education required for jobs (Rumberger, 1981). Often, there is a discrepancy between the qualifications offered by the education system and those demanded by the labor market. Although the term "qualification" is used to denote the attainment of or exceeding defined or definable minimum criteria, the criteria for required qualifications for a job are debated (Ünal, 1996). The presence of a mismatch in the labor market is commonly addressed as horizontal and vertical according to labor market theories (ILO, 2019; Kurnaz, 2015; Quintini, 2011a). Horizontal mismatch refers to the situation where knowledge and skills acquired through education are not utilized, whereas vertical mismatch refers to individuals working in jobs below their qualifications (ILO, 2019; Quintini, 2011a). The discrepancy between the education levels of individuals in the labor market and the jobs they perform is termed a qualification mismatch or an educational mismatch. Mismatch occurs when individuals have higher or lower educational qualifications than those required by their jobs, resulting in "overeducation" or "undereducation" (ILO, 2019; Kurnaz, 2015; Quintini, 2011a).

Experimental studies on "overeducation" are categorized into three main categories. First, there are skill and education requirements for each job, accepted by job analysts and countries such as the United States, the Netherlands, and Portugal (Chevalier, 2003). Second, self-assessment of educational requirements by employees is defined (Green, Mcintosh & Vignoles, 1999). Third, education distribution is calculated for each occupation, with deviations from the mean (Verdugo & Verdugo, 1988) or mode (Mendes de Oliviera, Santos & Kiker, 2000) and some specific values (usually a standard deviation) (Chevalier & Walker, 2001). Research analyzing the relationship between education and income has shown that individuals who are overeducated for their jobs face significant wage penalties compared to those with similar educational backgrounds working in jobs that match their qualifications (Chevalier & Walker, 2001). In international studies on overeducation, the impact of overeducation on earnings has been associated with issues such as job satisfaction and job mobility (Delaney et al., 2020; McGuinness, 2006; McGuinness et al., 2018; Pouliakas, 2012; Quintini, 2011b). Experimental studies have been conducted on how earnings are shaped when there is a mismatch between the educational level of the employed person and the educational level required by the job. These studies show income losses for individuals who are overeducated for their jobs. Conversely, the incomes of individuals who are undereducated for their jobs tend to be higher than those of individuals with the same level of education (Sicherman, 1991). Mendes et al. (2000) found that while overeducated workers should earn more than their equally educated but not overeducated colleagues, they earn less than their adequately educated colleagues.

1.2. Overeducation in the Context of Educational Economic Theories

The fundamental principle of Human Capital Theory is that the skills acquired through education represent human capital, which employers value and leads to increased productivity. This productivity is also rewarded with higher wages (Becker, 1975). The theory also demonstrates that education and training are investments. The basic approach of the theory is that short-term expenses can provide “cash flow” in the long term. As with other investment plans, cost-benefit analyses, such as using the internal rate of return, can be performed (Psacharopoulos, 1987). Human Capital Theory primarily explains the supply side of the labor market and does not address job requirements on the demand side (Hartog & Oosterbeek, 1988). Jobs and job requirements are considered consistent elements (homogeneous factors), and these variables are not included in the factors of earnings and matching. Human Capital Theory does not accept mismatched matches and asserts that individuals will reach the most suitable position in the labor market. Any mismatch situation existing in the labor market is also considered temporary within the context of Human Capital Theory (Desjardins & Rubenson, 2011).

It is stated that the low wages of overeducated individuals are due to variables not considered in the measurements (Kucel, 2011). However, it is accepted that the fundamental argument of Human Capital Theory—that earnings increase as the level of education increases—is inconsistent due to the phenomenon of overeducation (Dolton & Vignoles, 2000). According to Human Capital Theory, individuals with lower levels of education are more likely to be unemployed than those with higher education levels. According to the theory, the failure of the education system to respond at the same pace to changes in the labor market and the lack of new graduates who can adapt to new jobs emerging as a result of technological developments are among the causes of unemployment (Kurnaz, 2015). Consequently, wages are always aligned with the marginal product of an individual worker, which is determined by the level of human capital accumulated through formal education or on-the-job training (Quintini, 2011b). In this context, as firms adjust their production processes to fully utilize individuals' human capital or as this situation persists, educational mismatches can be eliminated in the short term.

According to the Screening Hypothesis, the formal recognition of an individual's qualifications through diplomas and certificates offered by the education system during job placement can lead to the phenomenon of overeducation due to qualification inflation and the exclusion effect (Desjardins & Rubenson, 2011). The increase in the number of highly educated individuals is among the reasons for qualification inflation, as it reduces the importance, distinctiveness, and prestige of having high educational qualifications and thus the selection feature (Kurnaz, 2015). Qualification inflation also indicates that as the number of highly educated individuals increases, the level of qualification decreases. Employers will not be able to fully utilize the qualifications and skills of the workforce unless they adapt their production technologies to the workforce, leading to a loss of earnings for individuals as labor productivity does not increase. Ultimately, situations of "over-education" and "over-skilling" will emerge, where the qualifications and skills possessed by employees in the labor market are not utilized, resulting in a potential loss of value in investments made through education (Desjardins & Rubenson, 2011).

According to the Queue Hypothesis, qualification mismatch is considered a permanent phenomenon in the labor market. Additionally, according to the Queue Hypothesis, there is no wage return for overeducation, i.e., having an education above the job requirements. According to the hypothesis, wages are determined entirely based on the educational qualifications required for the job (Quintini, 2011a). The Queue Hypothesis characterizes a market where individuals compete for job opportunities based on their relative education costs rather than competition based on wages determined by their human capital (McGuinness, 2006). According to the Job Competition Model on which the Queue Hypothesis is based, individuals with inadequate education and skills can succeed in competition for qualified jobs and earn higher incomes (Desjardins & Rubenson, 2011; McGuinness et al., 2018).

Employers raising the qualifications at the hiring stage direct individuals forming the supply to receive more education than the job requires to obtain the desired job or to advance their job positions. Entry-level jobs, as the most visible part of labor markets, are viewed by employers as a tool for temporarily selecting candidates for highly qualified positions (Aksoy, 1998). "Over-educated" individuals, having received education above the level required for the job they perform, will accept lower jobs to find employment, thus forming the subject of this research problem in entry-level jobs. This study aims to determine the ratios of "over-educated" individuals who graduated from associate, bachelor's, and postgraduate education levels, who work in entry-level jobs, having higher education levels compared to their colleagues in the same status. It addresses this issue in the context of the education-employment relationship. To achieve this aim, the following questions were asked:

1. What are the levels of "over-education" in entry-level jobs in Türkiye, and do they change over the years?

2. What are the predictors of being over-educated in entry-level jobs in Türkiye?

2. METHOD

The investigation was based on a detailed analysis of overeducation rates and predictors of entry-level jobs in Türkiye. The context in which the study took place is described in the research model/design, sampling, data collection tool, and data analysis.

2.1. Research Model

Quantitative methodology was employed in this study. The proportions of highly educated individuals, including those with associate, bachelor, and postgraduate degrees, employed at entry-level positions in Türkiye were determined. Additionally, variables predicting highly educated individuals employed at entry-level positions in Türkiye were identified. The research adopted a survey and a correlational research design. Survey research designs involve researchers collecting information from a sample group selected from a population or the entire population to explain the attitudes, opinions, behaviors, and characteristics of individuals in that population (Creswell, 2017). Using data from the Turkish Statistical Institute's Household Labor Force Survey between 2014 and 2019, the proportions of overeducated individuals were determined over the years through a longitudinal survey design called "panel studies." Panel studies are longitudinal survey designs that examine the same group of people over a specified period (Creswell, 2017).

To address the second aim of the study, variables predicting overeducation were identified using data from the 2019 Turkish Statistical Institute's Household Labor Force Survey. This section of the study employed a predictive design based on correlational research. The goal of predictive research design is to identify variables that forecast specific outcomes and criteria. (Creswell, 2017).

2.2. Sampling and Data Collecting Tool

In this study, the entire sample from the Turkish Statistical Institute's Household Labor Force Survey between 2014 and 2019 was used to determine the number and proportion of overeducated individuals employed in entry-level jobs. The data for this research were obtained from the "Micro Data Set of Household Labor Force Survey" conducted by the Turkish Statistical Institute. The Household Labor Force Survey covers the years 2014-2019. Access to these data was obtained electronically through official correspondence between Ankara University's Institute of Educational Sciences and the Turkish Statistical Institute.

2.3. Data Analysis

In this section, the data analysis methods used in the research process are presented according to the sequence of research questions. For the first research question, data from the Turkish Statistical Institute's Household Labor Force Survey were analyzed to examine the overeducation status of individuals employed in entry-level jobs. A matching matrix was applied to determine the overeducation rate. The matching matrix was constructed in four stages. In the first stage, only the employed individuals from the panel dataset were considered; in the second stage, those employed in entry-level jobs were identified; in the third stage, graduates with bachelor's and postgraduate degrees were identified; and in the fourth stage, those employed in entry-level jobs with bachelor's and postgraduate degrees, i.e., overeducated individuals employed in entry-level jobs, were determined. ISCO 08 codes were utilized to define entry-level jobs and identify graduates in these jobs. The ISCO 08 occupational classifications published in 2012 were used for occupational classifications in the dataset. The proportions of overeducated individuals were determined by years through percentage and frequency analyses and are presented in tables.

For the second research question, multiple logistic regression analysis was conducted to determine the variables that predicted whether employees are overeducated or not. Logistic

regression analysis is a statistical technique used when the dependent variable is binary or multinomial. This analysis predicts the probability of belonging to a certain class of dependent variables and models the relationship between independent variables and dependent variables. The logistic regression model transforms probabilities using a function called the logit function, and predictions are made based on this logit transformation (Menard, 2002). As the independent variable considered in this research is the overeducation status of employees, binary logistic regression analyses were performed. The predictors included employee gender, place of residence, age, nationality, type of employment, working hours, and income. While continuous variables were directly included in the analysis, categorical variables with more than two subgroups were coded as dummy variables and included in the analysis. The standard (enter) method was used because all variables were included simultaneously in the analysis (Field, 2018).

Before analysis, the assumptions of logistic regression were tested. An effort was made to achieve a participant size of 10-15 times the number of variables to ensure the adequacy of the sample size. Because 366.556 participants were reached in this research, this assumption was met. Variance inflation factor (VIF) values were examined to determine whether multicollinearity existed among the predictor variables. The VIF values for all variables were found to be less than 10, indicating no multicollinearity issues. Standard residuals were examined to identify univariate outliers, with variables outside the range of 3 to +3 considered outliers. Cook's distance and Mahalanobis distance coefficients were calculated to identify multivariate outliers. In this context, observations with Cook's distance greater than 1 and Mahalanobis distance coefficients statistically significant (p <0.05) were excluded from the analysis (161 observations). Model data fit was tested using the Hosmer-Lemeshow test before the main analysis, and it was decided that the model fit was adequate (χ^2 = 56.893, p> .05). The findings are presented in tables.

3. RESULTS

This section presents the overeducation rates derived from the analysis of data from the Turkish Statistical Institute's (TUIK) Household Labor Force Survey between 2014 and 2019, as well as the variables predicting overeducation from the analysis of the 2019 Household Labor Force Survey data.

3.1. Overeducation Rates Among Entry-Level Workers

To determine the overeducation rates among entry-level workers, the education levels, employment statuses, and occupations according to the International Standard Classification of Occupations (ISCO) of participants in the TUI Household Labour Force Survey were examined. By analyzing the dataset from 2014 to 2019, the overeducation rate among entry-level workers in Türkiye was determined. Before determining the overeducation rates, the distribution of variables that determine overeducation across years is shown. Table 1 provides the distribution of demographic information regarding the education and employment status of the workforce according to the TUIK 2014, 2015, 2016, 2017, 2018, and 2019 Household Labour Force Survey. These demographic details are the variables used to determine the overeducation rate.

To determine the rate of overeducation, the job analyst method was employed. This method, which is used to create occupational dictionaries, relies on evaluations by professional job analysts tasked with measuring educational requirements by occupation. The job analysis method has been used by Thurow and Lucas (1972), Hartog and Oosterbeek (1988), Kiker and Santos (1991) in Portugal, and Hartog (2000) in the Netherlands. Rumberger (1987) analyzed the relationship between educational mismatch and earnings using this classification. It is also possible to define over- and under-education using the International Standard Classification of Education (ISCED) for large occupational groups and the International Standard Classification of Occupations (ISCO) for classifying by education level. For instance, ISCO classifies top

executives and managers as having a higher education level (ISCED 5-6) (McGuinness et al., 2018).

To determine the overeducation rates, a four-stage matrix process was conducted using the job analyst method. This model is based on systematic evaluation by job analysts of the necessary education level and type for occupations classified by education level. The job analysis method relies on evaluations by professional job analysts tasked with measuring educational requirements by occupation. Table 1 presents the distribution of overeducated entry-level workers over the years.

Table 1. *Rates of overeducation in entry-level jobs by year (2014-2019).*

Year	Sample Size	Employed		Entry-Level Job Worker		Associate, Bachelor's, and Postgraduate Graduates		Over-Educated in Entry-Level Jobs	Over-Education Rates
	N	*f*	%	*f*	%	*f*	%	*f*	%
2014	393.822	174.287	44.2	117.797	67.5	43.660	11.0	9.459	8.0
2015	389.035	174.452	44.8	116.148	66.5	46.060	19.8	10.437	8.9
2016	380.709	171.402	45.0	112.571	65.6	48.861	12.8	11.013	9.7
2017	378.691	171.152	45.2	112.589	65.7	51.003	12.4	11.745	10.4
2018	374.179	170.240	45.5	111.352	65.4	52.905	14.1	12.249	11.0
2019	366.556	161.300	44.0	104.354	64.7	55.477	15.1	12.689	12.1

Source: Created by the author based on data from TÜİK (Turkish Statistical Institute).

Table 1, which shows the rates of overeducated entry-level workers, indicates that the employment rate was 44.2% in 2014, with some partial increases over the years, although the lowest employment rate was 44% in 2019. The rate of entry-level workers decreased gradually from 67.5% in 2014 to 64.7% in 2019. However, the percentage of associate, undergraduate, and postgraduate graduates increased from 11.0% in 2014 to 15.1% in 2019. The increase in the educational levels of individuals on the supply side also affects the educational levels of employed persons on the demand side.

3.2. Variables Predicting Overeducation Among Entry-Level Workers

This section identifies the variables that predict the overeducation status of entry-level workers based on the TUIK 2019 Household Force Surveys. Descriptive analysis and logistic regression results of variables predicting overeducation, supported by the literature, are presented here.

3.2.1. *Descriptive statistics of variables predicting overeducation*

The descriptive statistics of variables predicting overeducation include personal information, working style, earnings, statistical region classification, firm characteristics, International Standard Classification of Occupations (ISCO 08), and International Standard Classification of Education (ISCED-F). Descriptive statistics are categorized into two categories: entry-level workers and overeducated entry-level workers. Table 2 shows the distribution of personal information among entry-level workers who participated in the TUIK 2019 Household Labour Force Survey.

When examining the gender distribution of entry-level workers in Table 2, 67.1% are male and 32.9% are female, while 70.7% are male and 29.3% are female. This indicates that the proportion of male workers is higher than that of female workers among overeducated entry-level workers. Regarding the marital status of entry-level workers, the highest proportion is married individuals at 74.1%, followed by never married individuals at 21.6%, divorced individuals at 2.7%, and widowed individuals at 1.6%. Among overeducated entry-level workers, 59.1% are married, 37.8% have never married, 2.8% are divorced, and 0.3% are

widowed. This finding highlights that married individuals are the majority of overeducated entry-level workers.

Table 2. *Distribution of entry-level workers by personal information (2019).*

Personal Information		Over-Educated		Total	
		f	%	*f*	%
Gender	Female	4.176	32.9	30.619	29.3
	Male	8.513	67.1	73.735	70.7
	Total	12689	100	104.354	100.0
Marital Status	Never Married	4.801	37.8	22.532	21.6
	Married	7.498	59.1	77.361	74.1
	Divorced	352	2.8	2.790	2.7
	Widowed	38	0.3	1.671	1.6
	Total	12.689	100.0	104.354	100.0
Age	15-24 Years Old	1.716	13.52	14.278	13.7
	25-34 Years Old	5.565	43.85	21.567	20.7
	35-44 Years Old	3.223	25.39	26.493	25.4
	45-54 Years Old	1.474	11.61	22.819	21.9
	55 and over	711	5.60	19.197	18.4
	Total	12.689	100	10.4354	100.0
Place of Residence	Provincial Center	3.814	30.1	11.978	11.5
	Distict Center	2.889	22.8	14.006	13.4
	Town or Village	378	3.0	7.249	6.9
	Total	7.081	55.8	33.233	31.8
	Unspecified	5.608	44.2	71.121	68.2
	Total	12.689	100.0	104.354	100.0

Source: Created by the author based on data from TÜİK (Turkish Statistical Institute).

Examining the age distribution of entry-level workers in Table 2, the highest proportion is workers aged 35-44 at 25.4%, followed by 45-54 at 21.9%, 25-34 at 20.7%, 55 and over at 18.4%, and 15-24 at 13.7%. Among overeducated entry-level workers, 43.8% are aged 25-34, 25.3% are aged 35-44, 13.5% are aged 15-24, and 5.6% are aged 55 and over. This indicates that the highest proportion of overeducated entry-level workers is in the 25-34 age group.

The distribution of entry-level workers by place of residence in Table 2 shows that the majority live in district centers, whereas the distribution of overeducated workers by place of residence indicates that the highest proportion, 30.1%, live in provincial centers. This finding considers that overeducated entry-level workers are more likely to live in provincial centers because job opportunities are predominantly available in these areas. Table 3 presents the distribution of entry-level workers according to employment information.

Table 3 shows the distribution of entry-level workers by earnings according to the TUIK Household Labour Force Survey. According to the distribution of earnings in Table 3, the highest proportion of entry-level workers, 30.7%, earned between 0 and 2.020 TL, followed by 22.2% earning between 2.020-4.000 TL, 3.9% earning between 4.001-7.000 TL, and 0.2% earning over 7.000 TL. For over-educated workers, 37.2% earn between 2.020-4.000 TL, 25.0% earn between 0-2.020 TL, 19.9% earn between 4.001-7.000 TL, and 0.8% earn over 7.000 TL. In summary, the highest proportion of over-educated workers, 37.2%, earned between 2.020-4.000 TL.

Table 3. *Distribution of earnings for entry-level workers participating in the TÜIK household labor force survey (2019).*

Rank	Income Groups	Over-Education		Total	
		f	%	*f*	%
1	0-2.020 TL	3.175	25.0	32.082	30.7
2	2.020- 4000 TL	4.723	37.2	23.160	22.2
3	4.001-7.000 TL	2.535	19.9	4.046	3.9
4	7000 TL and over	102	0.8	169	0.2
5	Total	10.535	83.0	59.457	57.0
6	Unspecified	2.154	16.9	44.897	43.0
	Total	12.689	100	104.354	100.0

Source: Created by the author based on data from TÜİK (Turkish Statistical Institute).

3.2.2. *Variables predicting overeducation among entry-level workers*

Logistic regression analysis was performed to identify variables that accurately classified the overeducation status of individuals after examining the assumptions required for logistic regression analysis in the dataset used in the research. Logistic regression included personal information (gender, marital status, age, place of residence), employment information (SGK registration status, job status, number of employees in the workplace, job finding method, working style, job continuity, side job status, job search status, lifelong participation in activities), ISCO 08, income, ISCED classification, and region classification as variables to classify overeducation. Initially, the "forward LR" method was used to include variables in the analysis. Variables that did not significantly contribute to the model were excluded. According to Field (2009), if the exclusion of an independent variable results in a significant difference in model fit, the variable is retained in the model. Subsequently, the analysis was repeated using the "enter method" with the significant variables. The initial model obtained with significant variables had a 2LL value of 26.651.254, which is a likelihood value similar to the sum of squares that indicates how well the maximum likelihood estimation fits (Çokluk et al., 2010).

Regarding the initial model, the constant term, its error, the Wald statistic (154.89), the degrees of freedom (1) of the Wald statistic, the significance level (p=.000), and the exponential logistic regression coefficient (Exp(β)= 1.19) are given. The significant outcome of the error chi-square statistic ($\chi\beta02$ = 8029.020, $p\leq.05$) for predictor variables not included in the initial model suggests that adding these predictor variables to the model would increase its predictive power. In the initial model without independent variables, the program classified all participants as overeducated, resulting in a correct classification percentage of 54.5%. The omnibus test results for the intended model after logistic regression analysis are provided in Table 4.

Table 4. *Omnibus test of the model coefficients.*

Step		Chi-square (χ^2)	*df*	*p*
1	Step	9902.260	51	.000
	Blok	9902.260	51	.000
	Model	9902.260	51	.000

Upon examining Table 4, the p-value for the chi-square statistic was found to be significant. This indicates the presence of a relationship between the dependent and predictor variables. The result of the Hosmer and Lemeshow test, calculated when the independent variables are included in the model, is presented in Table 5.

Table 5. *Hosmer–Lemeshow test*.

Step	Chi-square (χ^2)	*df*	*p*
1	56.893	8	.060

The non-significant Hosmer and Lemeshow test statistic (χ^2 = 56.893, p>.05) in Table 5 indicates that the model-data fit is adequate and that there is a relationship between the predictor and predicted variables. This implies that the model predictions do not significantly differ from the observed cases. The final classification status of the dependent variable after logistic regression analysis is given in Table 6.

Table 6. Summary of the targeted model *with the predictor variables*.

	-2LL	Cox and Snell R^2	Nagelkerke R^2
Step 1	17116662	.389	.5206

In Table 6, the 2LL value of the intended model with predictor variables is 16. The initial model's 2LL value was 26.651.254, and the decrease to 16.748.993 in the intended model signifies a significant improvement in model fit. The 2LL difference of 9.902.261 indicates improvement due to predictor variables (Çokluk, 2010). Additionally, the Cox and Snell R^2value shows that predictor variables explain 40.1% of the variance in overeducation status. The Nagelkerke R^2 value is 52%, indicating the proportion of variance explained by the logistic model, where higher values correspond to better model fit (Hair et al., 2019). Table 7 lists the predictor variables not included in the initial model.

It has been determined that the variables of gender (Wald: 24.39, p<0.05), age (Wald: 128.63, p<0.05), ISCEDDF (Wald: 2576.93, p<0.05), marital status (Wald: 277.29, p<0.05), number of employees (Wald: 22.54, p<0.05), ISCO08 (Wald: 817.19, p<0.05), additional employment status (Wald: 11.26, p<0.05), and income (Wald: 294.81, p<0.05) statistically significantly predict the likelihood of being overeducated. However, it has been found that working style (Wald: 1.205, p>0.05) and job continuity (Wald: 0.899, p>0.05) are not significant predictors of overeducation.

Considering the gender variable, men are 0.78 times less likely to be overeducated compared to women (B=-0.235, ExpB=0.790). In other words, women are 1.26 times more likely to be overeducated than men. A one-unit increase in age increases the likelihood of being overeducated by 1.01 times (B=0.013, ExpB=1.013). Individuals included in the ISCEDF_K3 field are 0.002 times less likely to be overeducated compared to others (B=-0.063, ExpB=0.002). In other words, individuals in this occupational group are 500 times more likely not to be overeducated compared to other occupational groups. Divorced individuals are 0.28 times less likely to be overeducated compared to others (married, single, widowed) (B=-1.268, ExpB=0.281). In other words, divorced individuals are 3.56 times more likely not to be overeducated compared to others.

Additionally, individuals working in workplaces with 50 or more employees are 1.24 times more likely to be overeducated compared to those with fewer employees (B=0.212, ExpB=1.236).

Individuals in the ISCO08K10 occupational group are 0.076 times less likely to be overeducated compared to individuals in other occupational groups (B=-2.573, ExpB=0.076). In other words, individuals in this occupational group are approximately 13.15 times more likely not to be overeducated compared to others. Individuals with additional employment are 1.50 times more likely to be overeducated compared to those without additional employment (B=0.402, ExpB=1.495).

Finally, individuals with an income level of 3 or higher are 3.43 times more likely to be overeducated compared to those with lower income levels (B=1.232, ExpB=3.426). The final classification status of the dependent variable after logistic regression analysis is provided in Table 7.

Table 7. *Final classification status of dependent variables after logistic regression analysis.*

Observed Value	Predicted Value		Correct Classification Percentage
	NotOver-Education	Over-education	
Not OverEducated	6.810	1.992	77.7
OverEducated	2.107	8.428	80.0
Total Correct Classification Percentage			78.8

In Table 7, the logistic regression analysis shows that 78.8% of the overeducation status was accurately classified. Of the 8.802 individuals not overeducated, 6.810 were correctly classified, whereas 1.992 were incorrectly classified as overeducated. Of the 10.535 overeducated individuals, 8.428 were correctly classified as overeducated, whereas 2.107 were incorrectly classified as not overeducated, with a correct classification rate of 80%.

While the overall classification percentage in the model without the inclusion of variables (null model) was 54.5%, it increased to 78.8% in the model with the inclusion of variables. In this case, it can be stated that the variables contributed to the classification power of the model and strengthened it." In other words, these results clearly demonstrate that the model performs better and increases its classification accuracy when independent variables are included.

4. DISCUSSION and CONCLUSION

This section discusses the overeducation rates among entry-level workers between 2014 and 2019 and the variables predicting overeducation.

4.1. Discussion and Conclusion on Over-Education Rates Among Entry-Level Workers Between 2014 and 2019

The job analyst method, which involves evaluations by professional job analysts tasked with measuring educational requirements by occupation, was used to determine overeducation rates. This method has been employed by Thurow and Lucas (1972), Hartog and Oosterbeek(1988)., Kiker and Santos (1991) in Portugal, and Oosterbeek and Webbink (1996, as cited in Hartog, 2000) in the Netherlands. Rumberger (1987) analyzed the relationship between educational mismatch and earnings using this classification. The International Standard Classification of Education (ISCED) can define over- and under-education for large occupational groups, whereas the International Standard Classification of Occupations (ISCO) can be used to classify by education level. For instance, ISCO classifies top executives and managers as having a higher education level (ISCED 5-6) (McGuinness et al., 2018).

According to data from the TUIK Household Labour Force Survey, the number of employed individuals showed an increasing trend until 2018 but decreased in 2019. During the same period, the number of entry-level workers decreased, whereas the rates and numbers of overeducated associate, undergraduate, and postgraduate graduates increased. According to the TUIK Household Labour Force Survey, the employment rate slightly decreased from 44.25% in 2014 to 44% in 2019, despite some increases in certain years. Parallel to these data, the rate of entry-level workers decreased gradually from 67.0% in 2014 to 64.70% in 2019. Examining the schooling rates on the supply side, the rate of associate, undergraduate, and postgraduate graduates increased from 11.02% in 2014 to 15.13% in 2019. Accordingly, the number of higher education graduates on the supply side increased. The increase in the rates of associate, undergraduate, and postgraduate graduates has also raised the education levels of individuals eligible for employment on the demand side. The rise in education levels on the supply side,

without adequately meeting the demand for jobs requiring higher education, has led to a growth in overeducation rates. Overeducation rates among entry-level workers increased gradually from 8.02% in 2014 to 8.98% in 2015, 9.78% in 2016, 10.43% in 2017, 11.00% in 2018, and 12.5% in 2019.

According to OECD (2019) data, the education levels of the workforce have increased, leading to a higher number of highly educated workers for jobs. The overeducation rates showed a gradual increase from 8.0% in 2014, 8.9% in 2015, 9.7% in 2016, 10.4% in 2017, 11.0% in 2018, and 12.5% in 2019. The increasing overeducation rates over the years indicate a future imbalance in the labor market. Overeducation rates have increased in developed countries due to rising higher education participation rates in recent years (Delaney et al., 2020). The increase in higher education participation rates raises the growth rate of the workforce and overeducation rates, while also increasing unemployment rates, negatively impacting returns to education (Groot & Maassen van den Brink, 2000).

McGuinness et al.'s (2018) review of 98 overeducation studies based on approximately 40 high-income countries found that the overeducation rate remained around 18% in many European Union countries from 2003 to 2013, with an average overeducation rate of 24%. Compared with other countries' data, Handei et al., (2016) found that the overeducation rate in the STEP sample was 22.3% in North Macedonia and 70.1% in Vietnam, with an average rate of 36%. These rates are much higher than those in developed labor markets. According to the International Labour Organization's (ILO, 2019) School to Work Transition Survey (SWTS), the overeducation rate among young people was 16%, with an inter-country average of 47% in low- and middle-income countries. Comparing these data with the overeducation rate in Türkiye, it can be said that the overeducation rate in Türkiye is lower.

4.2. Discussion and Conclusion on Variables Predicting Overeducation

According to the 2019 TUIK Household Force Survey, the number of overeducated male workers in entry-level jobs is higher than that of their female counterparts. The majority of entry-level workers in the labor market are male. Among the overeducated individuals in entry-level jobs, the highest proportion are married, followed by never-married, divorced, and widowed individuals. In terms of age distribution, the over-educated entry-level workers are primarily aged 25-34, followed by those aged 35-44, 15-24, 45-54, and 55 and over. Overeducated entry-level workers predominantly reside in provincial centers, followed by districts and villages. The most overeducated individuals hold associate or undergraduate degrees, followed by postgraduate or doctoral degrees. Examining the work locations of overeducated individuals, the majority work in the private sector, followed by the public sector and other organizations (foundations, associations, cooperatives, political parties, NGOs, international organizations, and embassies). In the public sector, entry-level workers are more likely to match the required education levels for their jobs.

According to Frank (1978), married women are more likely to be overeducated because they tend to seek jobs near their spouses' workplaces. Evidence also suggests that married women are more over-educated than their spouses (McGoldrick & Robst, 1996). García-Mainar et al., (2014) attribute this to women traditionally occupying female-dominated occupations, which often require lower education and skill levels. The lower number of over-educated female workers in entry-level jobs in Türkiye differs from the literature. This can be attributed to the lower labor force participation rate of women compared with men in Türkiye, as shown in Table 3. The European Commission's (2019) Türkiye Report on Employment and Social Policy highlights that the primary source of inequality and gender discrimination is the low labor force participation rate of Turkish women. The report also indicates a significant gap (38%) between the employment, labor force participation, and unemployment rates of men and women.

In a study examining the relationship between skill mismatch, educational participation, and structural changes in employment in Sub-Saharan African countries, Sparreboom and Gomis

(2015) found that overeducation increases with age, and women are more likely to be overeducated or undereducated than men. This finding is similar to the lower overeducation rate among those aged 55 years and above.

According to the 2019 TUIK Household Labour Force Survey, most overeducated entry-level workers are registered with the Social Security Institution (SGK). Overeducated entry-level workers are predominantly paid employees, followed by employers, self-employed individuals, and unpaid family workers. The majority of overeducated workers are employed in workplaces with 50 or more employees, followed by those with 10 or fewer, 20-49, and 11-19 employees. Thus, overeducated individuals are mostly employed in large-scale workplaces.

Overeducated individuals primarily found jobs through their own efforts, relatives, friends, acquaintances, the Turkish Employment Agency, and private employment offices. Most overeducated individuals work full-time and in permanent jobs and generally do not have side jobs. Most overeducated individuals are not actively looking for a new job. A very low proportion of overeducated individuals participate in lifelong learning activities. The regional classification (IBBS) of entry-level workers' distribution shows that the regions with the highest number of overeducated workers are, in order: the Aegean Region, Western Anatolia Region, Mediterranean Region, Istanbul Region, Eastern Marmara Region, Western Black Sea Region, Western Marmara Region, Central Eastern Anatolia Region, Southeastern Anatolia Region, Central Anatolia Region, Eastern Black Sea Region, and Northeastern Anatolia Region.

Franzen (2006) found that graduates who found jobs through communication networks or direct employer communication were more likely to find jobs requiring qualifications than those who used formal job search methods. This finding contradicts the distribution of job search methods among overeducated individuals, where the largest proportion (25.1%) answered "by my own means." This discrepancy can explain the high proportion of individuals (65%) who did not respond to the relevant question. Additionally, job searching through official institutions and career offices reduces overeducation due to the information asymmetry between applicants and employers (Carroll & Tani, 2015). The low proportion of overeducated individuals who found jobs through the Turkish Employment Agency is consistent with Carroll and Tani's (2015) findings.

According to the ISCED-F classification of education and training fields, overeducated individuals are predominantly educated in business and management, engineering and engineering operations, social sciences and behavioral sciences, education, personal services, and security services. The rates of over-educated individuals in other education and training fields are as follows: information and communication technologies, agriculture, forestry, and fisheries, manufacturing and processing, humanities, architecture and construction, health, arts, physical sciences, languages, and welfare (social services), law, occupational health and transport services, journalism and information, biology and environmental science, mathematics and statistics, and veterinary medicine. According to the TUIK Household Labour Force Survey, the most common occupations of overeducated entry-level workers according to the International Standard Classification of Occupations (ISCO 08) are sales workers, followed by protection services workers, general office clerks, keyboard clerks, and numerical and material recording clerks.

Logistic regression analysis identified 11 variables predicting the overeducation status of entry-level workers: income, age, region, gender, ISCED, marital status, firm size, work location, side job search status, ISCO 08 classification, and job status. "In the initial classification of the logistic regression analysis, the baseline classification accuracy for the dependent variable, overeducation, was 54.50%, while the final classification accuracy was correctly predicted at 81.2%. Budria and Moro-Egido (2018), using data from the European Skills and Jobs Survey,

found that overeducation rates were higher among part-time workers. This finding differs from that of overeducated entry-level workers in Türkiye.

The literature indicates that overeducated individuals experience negative earnings outcomes compared with their well-matched peers (Kucel, 2011). Many studies on the impact of overeducation on income show that overeducated individuals experience earnings losses. According to the "Hunger and Poverty Threshold" survey by TURK-IS (Confederation of Turkish Trade Unions) (2019), the poverty line for a family of four was 6.733 TL. Considering that most overeducated workers earn between 2.020 and 4.000 TL, they are likely living at or below the poverty line, indicating significant earnings losses.

According to an ILO (2019) study, overeducated individuals with side jobs have lower wages, less job satisfaction, and earn more additional income than their colleagues. Individuals have managed to increase their productivity levels (Leuven & Oosterbeek, 2011; McGuinness, 2006; Quintini, 2011b). Literature on the relationship between education and income indicates that overeducated individuals experience significant earnings losses compared to individuals working in the same jobs (Delaney et al., 2020). McGuinness et al., (2018), in their study examining 98 overeducation studies based on approximately 40 high-income countries, found evidence of income losses among overeducated individuals. The inclusion of income as a predictor of overeducation is consistent with the literature. The identified variables predicting overeducation are equivalent to the findings of research in the literature.

Although the overeducation rate in Türkiye is lower than that in other countries, the increase rates over the years and the accompanying overkilling issue indicate that it will become a problem for the labor market in the future. The continued education of individuals, especially when not matched by the supply side, is one of the problematic elements of the labor market. Universities should review their programs to ensure that the skills imparted align with labor market needs. In this way, graduates will possess the necessary qualifications during the implementation phase in the job market. Additionally, longitudinal studies on overeducation rates can help take preventive measures as the rates increase. Therefore, it is essential to continue research on these topics to develop policies related to these phenomena in universities, relevant ministries, and labor market sectors. Research can also be conducted on other occupational classifications beyond entry-level jobs, which is a limitation of this study.

Acknowledgments

The paper was derived from the PhD thesis completed at Ankara University Graduate School of Educational Sciences under the supervision of Prof. Dr. Hasan Hüseyin Aksoy.

Declaration of Conflicting Interests and Ethics

The author declares no conflict of interest. This research study complies with research publishing ethics. The scientific and legal responsibility for manuscripts published in IJATE belongs to the author. **Ethics Committee Number**: Ankara University, Ethics Committee, 2021/16.

Orcid

Sevgi Ernas https://orcid.org/0000-0003-1213-7285

REFERENCES

Aksoy, H.H. (1998). Relationship between education and employment: how do employes use educational indicators in hiring? *Journal of Interdisciplinary Education, 3*(1). https://files.eric.ed.gov/fulltext/ED426207.pdf

Atasoy, D. (2001). *Lojistik regresyon analizinin ve bir uygulaması.* [*Examination of logistic regression analysis and an application*] [Master's dissertation, Cumhuriyet University].

Becker, G.S. (1975). *Human capital: a theoretical and emprical analysis with special reference to education*. NBER.

Berg, I. (1970). *Education and jobs: The great training robbery*. Praeger.
Budra, S., & Moro-Egido, A.I. (2018). Qualication and skill mismatches: Europe from a cross-national perspective. *Cuadernos Económicos de ICE, 95,* 151-188. https://doi.org/10.32796/cice.2018.95.6646
Büchel, F. (2001). *Overqualification: reasons, measurement issues and typological affinity to unemployment.* Office for Official Publications of the European Communities. https://www.cedefop.europa.eu/files/3008EN244Buechel.pdf
Carroll, D., & Tani, M. (2015). Job search as a determinant of graduate overeducation: Evidence from Australia. *Education Economics, 23*(5), 631–644. https://ftp.iza.org/dp7202.pdf
Chevalier, A., & Walker, I. (2001). Further results on the returns to education in the UK. (I. Walker, N. Westergard-Nielsenand & C. Harmon (Eds.), *Education and earnings in europe: a cross-country analysis of returns to education*. (pp.302-330). Edward Elgar. http://eprints.lse.ac.uk/19277/
Chevalier, A. (2003). Measuring overeducation. *Economica, 70*(279), 509-531. https://doi.org/10.1111/1468-0335.t01-1-00296
Clogg, C.C., & Shockey, J.W. (1984). Mismatch between occupation and schooling: prevalence measure, recent trends and demographic Analysis. *Demography, 21*(2), 235-257. https://doi.org/10.2307/2061042.
Cohn, E., & Ng, Y.C. (2000). Incidence and wage effects of overschooling and in Hong Kong. *Economics of Education Review*, *19*, 159-168. https://www.sciencedirect.com/science/article/pii/S0272-7757(99)00006-0
Creswell, J.W. (2017). *Eğitim araştırmaları: nicel ve nitel araştırmanın planlanması yürütülmesi ve değerlendirilmesi*. [*Educational research planning, conducting and evaluating quantitative and qualitative research*] (Çev. H. Ekşi). Eğitim Danışmanlığı ve Araştırmaları Merkezi.
Çokluk, Ö. (2010). Lojistik regresyon analizi: Kavram ve uygulama, [Logistic regression analysis: Concept and application] Educational Sciences in Theory and Practice, *Kuram ve Uygulamada Eğitim Bilimleri, 10*(3), 1357-1407.
Çokluk, Ö., Şekercioğlu, G., & Büyüköztürk, Ş. (2010). *Sosyal bilimler için çok değişkenli istatistik SPSS ve LISREL uygulamaları [Multivariate statistics for social sciences: SPSS and LISREL applications]*. Pegem Akademi Yayıncılık.
Delaney, J., McGuinness, S., Pouliakas, K., & Redmond, P. (2020). Educational expansion and overeducation of young graduates: a comparative analysis of 30 European countries. *Oxford Review of Education*, *46*(1), 10-29. https://doi.org/10.1080/03054985.2019.1687433
Desjardins, R., & Rubenson, K. *(2011). An Analysis of Skill Mismatch Using Direct Measures of Skills, OECD Education Working Papers. OECD Publishing.* https://doi.org/10.1787/5kg3nh9h52g5-en
Dolton, P.J., & Vignoles, A. (2000). The incidence and effects of overeducation in the U.K. graduate labor market, *Economics of Education Review, 19*, 179–198.
Dunn, D.S. (2001). *Statistics and data analysis for the behavioral sciences.* McGraw Companies.
Field, A. (2009). *Discovering statistics using SPSS (Third Ed.)*. SAGE Publications.
Field, A. (2018). Discovering Statistics Using IBM SPSS Statistics (5th ed.). Sage Publications.
Frank, R.H. (1978). Why women earn less: The theory and estimation of differential over qualification, *American Economic Revie*w, *68*(3*),* 360- 373.
Franzen, A. (2006). Social networks and labor market outcomes: The non-monetary benefits of social capital. *European Sociological Review, 22(*4), 353-368. https://doi.org/10.1093/esr/jcl001
Freeman, R.B. (1976). *The overeducated American*. Academic Press.
Freeman, R.B. (1979). Why is there a youth labor market problem? *NBER Working Paper Series, 365.* 1-32. https://doi.org/10.3386/w0365

García-Mainar, I., García-Martín, G., & Montuenga, V. (2014). Overeducation and gender occupational differences in Spain. *Social Indicators Research, 124*(3), 807–833. https://doi.org/10.1007/s11205-014-0811-7

Green, F., Mcıntosh, S., & Vignoles, A. (1999). *Overeducation and Skills: Clarifying the Concepts*. *Centre for Economic Performance Discussion Paper*, London: School of Economics and Political Science. http://cep.lse.ac.uk

Groot, W., & Maassen Van Den Brink, H. (2000). Overeducation in the labor market: A meta analysis. *Economics of Education Review, 19,* 149-58. http://www.sciencedirect.com/science/article/pii/S0272-7757(99)00057-6

Hair, F.J., Black, C.W., Babin, B.J., & Anderson, E.R. (2019). *Multivariate data analysis* (Eighth Ed.). Cengage Learning.

Halaby, C.N. (1994). Overeducation and skill mismatch. *Sociology of Education, 67(1),* 47-59. https://doi.org/10.2307/2112749

Handel., M.J., Valerio, A., & Sanchez Puerta, M.L. (2016). Accounting for mismatch in low- and middle-income countries: Measurement, magnitudes, and explanations. *Directions in Development* World Bank Group. http://documents.worldbank.org/curated/en/837391472639964572/Accounting-for-mismatch-in-low-and-middle-income-countries-measurement-magnitudes-and-explanations

Hartog, J., & Oosterbeek, H. (1988). Education, allocation and earnings in the Netherlands: 0verschooling? *Economics of Education Review, 7(2)*, 185-194. https://doi.org/10.1016/0272-7757(88)90043-X

Hartog, J. (2000). Overeducation and earnings: Where are we and where should we go? *Economics of Education Review, 19*, 131–147. https://doi.org/10.1016/S0272-7757(99)00050-3

International Labour Organization. (2019). Skills and jobs mismatches in low and middle income countries. GILO.

Kalaycı, Ş. (2014). *SPSS uygulamalı çok değişkenli istatistik teknikleri*] [*Multivariate statistical techniques with SPSS*]. Asil Yayıncılık.

Kiker, B.F., & Santos, M.C. (1991). Human capital and earnings in Portugal. *Economics of Education Review*, *10* (3), 187–203. https://doi.org/10.1016/0272-7757(91)90043-O

Kucel, A. (2011) Literature survey of the incidence of overeducation: a sociological approach. *Revista Espanola de Investigaciones Sociológicas, 134*, 125-142. http://www.reis.cis.es/REIS/PDF/Reis_134_061302519925436.pdf

Kurnaz, I. (2015). *İşgücü piyasalarında uyumsuz eşleşme ve aşırı eğitimlilik olgusu: Türkiye'nin ilk 500 firması, Ankara ili örneği.* [*Overeducatıon and mısmatch ın the labor market: the case of top 500 largest ındustrıal organızatıons of Turkey, Ankara provınce*] [Doctoral dissertation, Gazi University].

Leuven, E., & Oosterbeek, H. (2011). Overeducation and mismatch in the labor market*, IZA Discussion Paper Series, 5523*, 1- 53. https://docs.iza.org/dp5523.pdf

Long, J.S. (1997). *Regression models for categorical and limited dependent variables.* Sage Publications.

McGuinness, S. (2006). Overeducation in the labor market. *Journal Econonic of Surveys, 20*, 387–418. https://doi.org/10.1111/j.0950-0804.2006.00284

McGuinness, S., Pouliakas, K., & Redmond, P. (2018) Skills mismatch: concepts, measurement and policy approaches, *Journal of Economic Surveys, 32(4),* 985-1015. https://doi.org/10.1111/joes.12254

Menard, S. (2002). *Applied logistic regression analysis* (2nd ed.). Sage Publications.

Mendes De Oliviera, M., Santos, M., & Kiker, B. (2000). The role of human capital and technological change in overeducation. *Economics of Education Review, 19,* 199–206. https://doi.org/10.1016/S0272-7757(99)00020-5

Mertler, C.A., & Reinhart, R.V. (2017). *Advanced and multivariate statistical methods practical application and interpretation.* Routledge.

Nieto, S., & Ramos, R. (2017). Overeducation, skills and wage penalty: evidence for Spain using PIAAC data. *Social Indicators Research, 134*(1), 219-236. https://doi.org/10.1007/s11205-016-1423-1

Pallant, J. (2005). *SPSS survival manual: a step by step guide to data analysis using SPSS.* Allen & Unwin Publications.

Pouliakas, K. (2012). The skill mismatch challenge in Europe. In: European Commission (Eds.). *Employment and social developments in Europe* (pp. 351- 394). Publications Office,

Quintini, G. (2011a). *Over-qualified or under-Skilled: A review of existing literature*. OECD Social, Employment and Migration Working Papers. OECD Publishing. https://doi.org/10.1787/1815199X

Quintini, G. (2011b). *Right for the Job: Over-Qualifiedor Under-Skilled?* France: OECD Social, Employment and Migration Working Papers. https://doi.org/10.1787/5kg59fcz3tkd-en

Rumberger, R. (1981). *Overeducation in the U.S. labor market*. Praeger.

Rumberger, R. (1987). The impact of surplus schooling on productivity and earnings. *Journal of Human Resources, 22(1),* 24–50. https://doi.org/10.2307/145998

Sicherman, N. (1991). Overeducation in the labor market. *Journal of Labor Economics, 9*(2)*, 101-122* https://www.jstor.org/stable/2535236?seq=1/subjects.

Stephenson, B. (2008). *Binary response and logistic regression analysis.* http://pages.stat.wisc.edu/~mchung/teaching/MIA/reading/GLM.logistic.Rpackage.pdf

Tabachnick, B.G., & Fidell, L.S. (2007). *Using multivariate statistics (Fifth Ed.).* Pearson Publications.

Thurow, J., & Lucas, R. (1972). *The American distribution of income: a structural problem*. U.S Government Printing of Fice. https://www.jec.senate.gov/reports/92nd%20Congress/The%20American%20Distribution%20of%20Income%20%20A%20Structural%20Problem%20(546).pdf

Tinsley, H.E.A., & Brown, S.D. (2000). *Handbook of applied multivariate statistics and mathematical modeling.* Elsevier Science & Technology Books.

Ünal, I.L. (1996). *Eğitim ve yetiştirme ekonomisi*. [*Economics of education and training*]. Epar Yayınları.

Verdugo, R., & Verdugo, N. (1988). The ımpact of surplus schooling on earnings: some additional findings. *The Journal of Human Resources, 24*(4), 629-643. https://doi.org/10.2307/145998