

ASSORTATIVE MATING AND TURKISH MARRIAGE MARKET

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ABSTRACT

The degree of assortative mating shows the degree of similarity between couples. For instance, couples have similar age, weight, height or income. Economists usually investigate the income relationship. In addition, in marriage market the competition causes to have similar characteristics for spouses. Many papers try to calculate earnings correlations between husbands and wives. This paper tries to calculate the earnings correlations for Turkey and consider the effect of the sample selection. Our results show that there is a weak positive assortative mating in Turkey. It means that the correlation between couples' earnings is not high and the bias from the selection is small. Even though this result contradicts with the theoretical works, it is similar with empirical studies. In addition, we look at the assortative mating coefficients in different regions in Turkey. Mediterranean region has the biggest correlation coefficient while Black sea has a coefficient close to zero.

Keywords: assortative mating, marriage, earnings, Turkey

JEL Codes: J12

GRUPLAŞAN EŞ SEÇİMİ VE TÜRK EVLİLİK PİYASASI

ÖZ

Gruplaşan eş seçiminin derecesi çiftler arasındaki benzerliklerin derecesini gösterir. Örneğin, çiftlerin yaşı, boyu, kilosu veya geliri benzeşmektedir. Ekonomistler ise daha çok gelir ilişkisini incelemektedir. Ayrıca, evlenme piyasasında eş seçimi için olan rekabet çiftlerin özelliklerinin birbirine benzemesine neden olmaktadır. Çeşitli makaleler karı koca arasındaki gelir korelasyonunu hesaplamaya çalışmıştır. Bu makale ise karı koca arasındaki gelir korelasyonunu Türkiye için hesaplarken örneklem seçimi sorununu da göz önüne almıştır. Sonuçlara göre Türkiye'de zayıf bir gruplaşan eş seçimi vardır yani çiftlerin

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gelirindeki korelasyon yüksek değildir ve örneklem seçimi sorunu da küçüktür. Bu teorik çalışmalarla çelişen bir sonuç olmasına rağmen empirik çalışmalarla örtüşmektedir. Ayrıca, Türkiye'nin farklı bölgelerinde olan gruplaşan eş seçimi katsayıları da hesaplanmıştır. Akdeniz bölgesi en büyük korelasyon katsayısına sahipken Karadeniz bölgesi en küçüğe sahiptir.

AnahtarKelimeler: gruplaşaneşseçimi, evlilik, gelir, Türkiye

JEL Kodu:J12

I-INTRODUCTION

Assortative mating is one of the growing topics in Economics. The degree of assortative mating measures the degree of similarities between couples, such as education and earnings (Rose (2001) and Zhang and Liu (2003).) According to Becker (1973 and 1974), knowing the relationship between husbands and wives is crucial to understanding the inequality of inheritable traits. It also helps us to understand the correlation between the traits of parents and children. Therefore, measuring assortative mating is crucial.

Becker (1973) points out that a negative correlation between husbands' and wives' wages maximizes total output because the gain from the division of labor is maximized. In addition, his analysis predicts that many women have a weak attachment to the labor force. The reason for that is husbands' high wages discourage the wives from participating to labor force. Furthermore, his theory predicts a negative correlation between the wage rates, if we hold nonmarket, household, productivity constant. However, he points out that the sample selection leads to find a positive assortative mating.

On the other hand, Becker's theoretical conclusion about assortative mating created many controversies in literature. Even though he concluded that there should be a negative assortative mating on wages as a result of the sexual division of labor, the majority of studies found a strong positive assortative mating. There are a few exceptions, like Zhang and Liu (2003). They considered the effect of the selection bias and found a weak negative assortative mating for Taiwan. In addition, Zimmer (1996) found a negative coefficient for North-American whites.

There are several studies that tried to measure assortative mating for several different countries. This paper is separated from those by its methodological approach. For the first time in the literature we calculate assortative mating for Turkey while we consider the effect of the selection problem. There is one previous study, Dayioglu and Baslevent (2006), for Turkey; however, they did not consider the effect of the selection problem. In addition, for the first time, we used Income and Living Conditions Survey (ILCS) 2006, 2007, and 2008 for the assortative mating analysis. ILCS is a nationally representative dataset. We find that there is a weak positive assortative mating in Turkey, and the bias from the selection is small.

The paper proceeds as follows. Section II describes the Turkish marriage market. Section III describes previous literature on the assortative mating. In Section IV, the dataset is described. Section V presents the methodology used in the study. Section VI describes the main results, and Section VII summarizes and discusses the findings.

II-TURKISH MARRIAGE MARKET

In this part, we provide some information about the Turkish marriage market. According to Turkish Statistical Institute (TUIK) data, in 2009, 47.5 percent of the population were married. In addition, there were 591,742 new marriages. 84,667 of them took place in July. This is 14.3 percent of all Turkish marriages in 2009. The average marriage age is 28.3 and 24.3 for grooms and brides, respectively. 95 percent of grooms have never married before and 93.6 percent of brides have never been married before.

In addition, the average age at the first marriage is 26.3 and 23.0 for grooms and brides, respectively. In 449,997 marriages, the groom is older than the bride. In 58.3 percent of them, the age difference is less than six years. 45 percent of first time married grooms are between 25 and 29 years old. 40 percent of first time married brides are between 20 and 24 years old.

Furthermore, 32.2 percent of illiterate grooms married a bride who was illiterate. 23.6 percent of grooms who did not complete any school married a bride who did not complete any school. In addition, 42 percent of grooms who graduated from the high school married a bride who graduated from a high school. 33.9 percent of university graduate grooms married a bride who graduated from a university. On the other hand, 49 percent of university graduate brides married a groom who graduated from a university.

According to The International Standard Classification of Occupations (ISCO-88), there are nine different occupation groups in our survey. 14.92 and 15.08 percent of couples worked in the same occupation in 2006 and 2007 respectively. In addition, according to Classification of Economic Activities in the European Community (NACE REV 1.1,) there are fourteen different groups on the firms' main economic activities in our survey like agriculture, hunting and forestry or education. 17.64 and 18.67 percent of couples worked in firms which had the same economic activities in 2006 and 2007 respectively.

III-THEORETICAL BACKGROUND

Becker (1974) points out that the method of selecting a mate as similar to the method of selecting any other consumer good designed to increase a person's level of utility. Normally, Becker (1974) claims that there should be a negative assortative mating on earnings. However, Becker (1974) finds that the positive assortative mating on wages, the rich marries with rich, exist when he includes caring into the model.

Lam (1988) expanded Becker's model and included household public goods into the model. Lam (1988) asserts that there is a positive assortative mating on spouses' wealth. After that simple analysis, he allowed for household public goods that are produced within the home instead of being purchased in the market. In that case, he found two opposite effects and the possibility of a negative assortative mating.

Table-1 shows the list of empirical studies on the assortative mating. Nakosteen and Zimmer (2001) use Panel Study of Income Dynamics (PSID) and find evidence of positive assortative mating on the earnings for the US. In addition, Nakosteen et al. (2004) use Swedish data and find the existence of positive assortative mating on earnings.

To date, the negative assortative mating on wages has been obtained by few studies like Zimmer (1996), with a negative coefficient for North-American whites. In addition, Becker (1993) cites two studies: negative coefficients obtained by Gregg Lewis (unpublished,) and a much weaker correlation obtained by Smith (1979).

Furthermore, Zhang and Liu (2003) also found a weak negative assortative mating. They also calculated the direction of the selection bias. They found that the simple regression coefficient between spouses' wages is 1.03. When they control the selection problem, the partial regression coefficient become negative (-0.0004).

In addition, there is just one previous study for Turkey, Dayioglu and Baslevent (2006). They used the 2003 Household Budget Survey (HBS) in their analysis. Dayioglu and Baslevent (2006) found that the correlation coefficient between the husbands' and the wives' earnings is 0.44. However, they did not consider the effect of the sample selection. One common approach is to use Heckman's (1979) procedure to correct the model for potential selection bias. We follow that method in this paper.

IV-DATA

The Turkish Statistical Institute (TUIK)'s Income and Living Conditions Survey (ILCS) from 2006,2007,2008 is used in this study. ILCS is a nationally representative dataset. The ILCS data are especially well suited for this study because the data come from a national probability sample, avoiding sample homogeneity. Second, we can observe the income of both husbands and wives in the ICLS.

On the other hand, ILCS has several limitations that may cause errors in the estimations. First of all, the dataset is not longitudinal, meaning that we can only use one year for the analysis. This limitation makes the study vulnerable to transitory earnings shocks. In addition, age and education variables are recorded in intervals rather than the actual values.

In the survey, the education variable has intervals, instead of having the actual number. There are seven brackets. 0 means illiterate and 6 means graduated from college or above. Therefore, we have to convert those into the continuous variables. Table-2 shows the values, we

used instead of those intervals. Husbands' and wives' averages are close, around nine years of schooling.

In addition, we observe ages in intervals, too. Therefore, we also have to convert those into the continuous variables. We used the midpoint method for that transformation. Again, Table-2 shows the values, we used instead of those. When we looked at the age, we realize that the ages are pretty close in those three years. However, the husbands are older than wives. The average age is around 38 for husbands. Besides, the average age of wives is around 35.

Table-3 reports the summary statistics of our sample. There are 693 and 747 couples in 2006 and 2007, respectively. In addition, there are 913 couples in 2008. For husbands, even though 2006 has the maximum earning, the average earnings are higher in 2008 in those three years. The difference between averages is less than 2,000TL. Wives' earnings are significantly lower than husbands' earnings. The wives' earnings are about 65 percent of the husbands' earnings in three years.

V-ESTIMATION PROCEDURE

To obtain an estimate of the partial correlation between spouses' earnings when we are controlling for spouses' other characteristics, we use the following equation

$$\begin{aligned} Earnings_h = & \alpha_0 + \alpha_1 Earnings_w + \alpha_2 Age_h + \alpha_3 Age_w \\ & + \alpha_4 Education_h + \alpha_5 Education_w + \epsilon \end{aligned} \quad (1)$$

where subscripts h and w represent husbands and wives respectively. Age includes control variables such as the husband's and wife's ages and the square and cube of those respective ages. Our analysis will depend on Equation-1.

In addition, we calculated an OLS estimate and Heckman's two step procedure in this study. OLS estimates depend on the form in Equatin-1. However, in the OLS we use the logarithmic of husband's and wife's earnings like Zhang and Liu (2003).

For Heckman's two step procedure, first we estimate a probit equation over the full sample of wives. It is related with the probability of labor force participation on a set of variables that might affect it: age and education. Then, the computed inverse Mills' ratio, λ , entered into a second-round equation for the sample of working wives.

VI-RESULTS

In this section, we will present nine different results from three different methods we have used. Our regressions depend on Equation-1. Table-4 shows all those results. First of all, the partial correlation is shown in the first row of Table-4. Results are pretty similar for three different samples. The partial correlations are 0.20, 0.25, and 0.36 for 2006, 2007, and 2008 samples,

respectively. These results suggest that there is a weak positive assortative mating in Turkey. It means that men marry with women who are from different income level.

On the other hand, we also examined the effect of sample selection. To do so, firstly we estimated an OLS regression, then we used Heckman's selection model to find the direction of the selection bias. The second row of Table-4 shows that the estimates of OLS are 0.12, 0.09, and 0.10 for 2006, 2007, and 2008, respectively. The OLS results are also proving there is a weak positive relation between husbands' and wives' earnings. After OLS analysis, we focused on the selection problem.

In spite of the large sample size, sample selection bias might remain a problem. Therefore, we ran a Heckman's selection model and estimates became 0.13, 0.10, and 0.11 for 2006, 2007, and 2008, respectively. It means that the impact of the bias is small. When we control the regression for age and education, the partial regression coefficient becomes around 0.1. It means that we reject Becker's prediction on assortative mating by spouses' wages in Turkey. However, this should not be a big surprise because he makes several simplifying assumptions in his study.

Furthermore, we also calculate the partial correlations for seven different regions in Turkey. For that, we used Income and Living Conditions Survey (ILCS)-2008. Table-4 shows those estimates. In addition, Mediterranean has the highest coefficient that is 0.61. East and South East Anatolia has the second highest coefficient. Both of those are higher than Turkey's overall coefficient which is 0.36. In these two regions, there is a strong positive assortative mating. Black sea region has the lowest coefficient which is almost zero. Istanbul and Aegean have 0.34 which is close to the Turkey's overall coefficient. These suggest that there is a big difference among regions. In Mediterranean and East and South East Anatolia, men marry with women who are from similar income level. However, the relationship is weaker in Black sea region. Even though cultural differences might explain the difference, we need more researches on this issue.

Finally, we also tried to replicate Dayioglu and Baslevent (2006)'s results. Our correlation coefficients are 0.49 and 0.53 for 2006 and 2007, respectively. Our results are slightly larger than their 0.44.

VII-CONCLUSION

Normally, married couples tend to have similar demographic and economic characteristics. However, there is a debate on economic characteristics, specifically on earnings. Empirical studies could not find similar results with theoretical works. Therefore, we need more studies for different countries.

This study is the first attempt to investigate assortative mating and the selection problem simultaneously for Turkey. Our results reveal that assortative mating is small in Turkey. Even though we could not find a negative assortative mating, our results show that there is a weak positive assortative mating in Turkey.

Even though this result contradicts with the theoretical works, it is similar with empirical studies. It means that we reject Becker's prediction on assortative mating by spouses' wages in Turkey. However, this should not be a big surprise because he makes several simplifying assumptions in his study.

In addition, we also calculated regional assortative mating. Mediterranean region has the biggest correlation coefficient. Black sea region has the lowest coefficient which is almost zero. Istanbul and Aegean have 0.34 which is close to the Turkey's overall coefficient. Even though cultural differences might explain the difference, we need more researches on this issue.

In this study, there was an important problem which is our data set is not longitudinal. Therefore, our results may suffer from the effect of the transitory earnings shocks. It means that earnings from one year may not represent the lifetime income. Therefore, future research must focus on this issue.

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Table-1: Literature Review

Article	Country	Method	Result
Zhang and Liu (2003)	Taiwan	Heckman's two steps	-0.0004
Nakosteen and Zimmer (2001)	US	Heckman's two steps	0.181
Nakosteen et al. (2004)	Sweden	The SUR model	0.177
Zimmer (1996)	White	Correlation Coefficient	-0.075
	Black		0.067
	Hispanics		-0.111
Dayioglu and Baslevent (2006)	Turkey	Correlation Coefficient	0.44

Table-2: Intervals

Education		Value
0	Illiterate	0
1	People who can read without holding a degree	0
2	Elementary School	5
3	Middle School	8
4	High School	12
5	Vocational School	12
6	College	16
 Age		
1	between 0 and 4	2
2	between 5 and 11	7
3	between 12 and 14	13
4	between 15 and 19	17
5	between 20 and 24	22
6	between 25 and 29	27
7	between 30 and 34	32
8	between 35 and 39	37
9	between 40 and 44	42
10	between 45 and 49	47
11	between 50 and 54	52
12	between 55 and 59	57
13	between 60 and 64	62
14	65 or older	65

Table-3:Summary Statistics

	2006				2007				2008			
	Mean	Std. Error	Min	Max	Mean	Std. Error	Min	Max	Mean	Std. Error	Min	Max
Husbands												
Earnings	8720.56	9360.58	50	144000	9705.10	8835.47	100	80000	10758.70	9156.24	120	95000
Age	38.30	8.28	22	65	38.09	8.78	17	65	38.00	8.45	17	65
Education	9.40	5.04	0	16	9.53	4.83	0	16	9.40	4.97	0	16
Wives												
Earnings	5585.89	5972.10	20	43000	6208.60	6922.21	45	58800	7062.84	8211.21	20	90000
Age	35.29	8.08	17	65	34.84	8.62	7	57	34.58	8.39	7	62
Education	8.73	5.44	0	16	8.84	5.28	0	16	8.79	5.29	0	16
N	693				747				913			

Table-4: Estimates

	Partial Correlation			OLS			Heckman's		
	2006	2007	2008	2006	2007	2008	2006	2007	2008
	0.20	0.25	0.36	0.12*** [0.03]	0.09** [0.03]	0.10*** [0.02]	0.13*** [0.02]	0.10*** [0.02]	0.11*** [0.02]
N	693	747	913	693	747	913	5578	5387	5457

Notes: *** It is significant at 99% significance level.
 ** It is significant at 95% significance level.
 * It is significant at 90% significance level.

Table-5: The Partial Correlations

Region	Coefficient
Istanbul	0.34
Marmara	0.22
Aegean	0.34
Central Anatolia Region	0.24
Mediterranean	0.61
Black Sea	0.05
East and South East Anatolia	0.52
Turkey	0.36