

**GENERAL VERSUS VOCATIONAL HIGH  
SCHOOLS AND LABOR MARKET OUTCOMES IN  
TURKEY\***

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### **Abstract**

The main objective of this paper is to provide evidence on the extent of the wage differential between general and vocational high school graduates who do not go on to higher education. School selection is modeled with a three-way multinomial logit model. Selectivity corrected wage equations are estimated for general and vocational high school graduates. Oaxaca-Blinder decomposition of the wage differential is performed. Analysis is carried out for males and females separately. Individual level data from 1994 Household Expenditure Survey conducted by the State Institute of Statistics are used in the analysis. The main finding is that when controlled for observed characteristics and sample selection, for men, wages of vocational high school graduates are larger than those of the general high school graduates. It was not possible to make a comparison for women due to poor wage equation estimates for vocational high school female graduates. Second, lower unemployment rates are observed among vocational high school graduates than among general high school graduates. Third, for men, private returns to vocational high schooling are higher than general high schooling. Thus, labor market outcomes in terms of private rates of return to schooling, unemployment rates and wages favor vocational high schools than general high schools.

## 1. Introduction

Recently, policy makers in Turkey have been emphasizing that the number of vocational high schools should be increased and students should be streamlined to vocational high school training. This is seen as a panacea for the ever-growing numbers of mostly general high school graduates who can not be placed at a university program and must turn to labor market without skills. However, there is no study that compares the costs and benefits of vocational and general high school education or labor market outcomes in earnings and employment for these groups in Turkey.

The World Bank recent policy recommendations have been to support general secondary education (World Bank, 1995a). Psacharopoulos (1987) provided evidence that the rate of return to investments in general curricula is much higher than that in vocational programs. Psacharopoulos (1994) reviewed studies where returns to general secondary schools are higher than those to the vocational track and stressed that the difference in social rates of return is more dramatic because of the much higher unit cost of vocational education. Bennell(1996) challenged this view by critically examining the studies on relative social profitability of general and vocational schooling in developing countries. He pointed out to a number of more recent studies that provided evidence contrary to the established view about labor market outcomes of general and vocational schools. Mook and Bellew (1990) found in Peru that returns to investment in vocational schooling are comparable to the returns to investment in general schooling while there was no cost differential in their provision. Chung (1990) found higher earnings for vocational than for general education in Hong Kong. World Bank (1990) found higher social rates of return to vocational than to general secondary schooling in Thailand. Neuman and Ziderman (1991) found that, in Israel, vocational high school graduates who are in training-related occupations earn more than general high school graduates while there is no significant difference in earnings of vocational school graduates in occupations unrelated to the course of study and those of general school graduates. Similarly, Arriagada and Ziderman (1992) found that, in Brazil, earnings differential favored vocational school graduates in matched occupations by 16-18 percent. World Bank (1994) found higher returns to vocational skills than to general secondary education in rural Chile. World Bank (1995b) found that, in Indonesia, although the returns to vocational and general education are about the same, former is more expensive than the latter.

This study examines how individuals are selected into general high school, vocational high school or other schools and the wage determination in these choices. The main objective is to provide evidence on the extent of wage differential between general and vocational high school graduates who do not go on to higher education. The analysis is carried out for men and women separately. Individual level survey data from 1994 Household Expenditure Survey are used. Three-way multinomial logit model is estimated for school selection. Mincerian wage equations are estimated for each group taking school selection into account. I address the following questions: how do the earnings of general and vocational high school graduates compare? Are there differentials for men and women? The results obtained in this paper reinforce the recent studies in developing countries. When controlled for observed characteristics and sample selection, wages of vocational high school graduate men are higher than those of general high school graduate men. It was not possible to make a similar comparison for women due to poor wage equation estimates for vocational high school graduate women. Second, unemployment rate is lower among the vocational high school graduates than among the general high school graduates. Third, it is observed that for men, private returns to vocational high schooling are higher than to general high schooling. Thus, vocational high schools are better than general high schools in terms of labor market outcomes such as private rates of return to schooling, unemployment rates and wages.

This paper is organized as follows. Background information about Turkish educational system and a review of the evidence on returns to schooling in Turkey and in Egypt are given in Section 2. The model and empirical specification are explained in Section 3. Section 4 describes the data used in this study. Section 5 gives the estimation results. Implications for population policy are discussed in Section 6 and concluding remarks appear in Section 7.

## 2. Turkish Educational System

The formal educational system consists of eight years of primary schooling, three or four years of high schooling and tertiary levels of schooling. Until recently five years of primary schooling was the only compulsory education. Before the educational reform of August 1987, five years of compulsory primary schooling was followed by three years of middle schooling. In August 1997, compulsory education is extended from five to eight years covering middle schooling also. High schools include general, vocational and technical high schools. General high schools give three or four years of training. Vocational high schools give three

years and technical high schools give four years of training. Tertiary levels of schooling take place at institutions of two-year programs or at universities of four- to six-year programs. Formal education is provided by the government free of charge in public schools. There are private schools at all levels and of all kinds except the vocational and technical high schools.

Enrollments at all levels have increased substantially during the past three decades. Five-year primary school gross enrollment ratio was over 100 percent for both males and females in 1993. The secondary school gross enrollment ratio was 50 percent for females and 74 percent for males in 1993. The tertiary gross enrollment ratio was 16 percent in 1993 (these enrollment ratios are from World Bank, 1997). The enrollment ratio at the general high school level is higher than that at the vocational high school level. In 1995, the enrollment ratio was 31 percent in general high schools and 22 percent in vocational and technical high schools (State Planning Organization, 1995: 28). This indicates that students choose vocational and technical high schools less often over general high schools.

### ***General, Vocational and Technical High Schools***

General high schools prepare students specifically for university education. Vocational and technical high schools (henceforth, referred to as vocational high schools) provide vocational training with the main objective of imparting specific marketable skills. Their graduates are also eligible to participate in the university entrance examinations. There is excess demand for tertiary level schooling and supply is highly restricted by two tier competitive entrance examinations. Recently, only about 20 percent of the applicants were able to gain admittance to a program. A follow up study of the vocational high school graduates indicated that about 40-53 percent of them were attending a tertiary level of study while 30-40 percent were preparing for the competitive examinations for a place at the tertiary level study (Ministry of Education, 1997).

Table 1 gives information about the distribution of general and vocational high schools. The number of schools and that of teachers are both higher in the vocational than in the general high schools while the number of students is higher in the general than in the vocational high schools. About 42 percent of all high school students are registered in vocational high schools. Table 2 gives the structural distribution of high schools. It is noteworthy that 71 percent of the total general high school students are in "General High Schools", and 18 percent are in "Distance High Schools". Student-teacher ratios are lowest at the private high

schools and in Anadolu high schools. Of the vocational high school students, almost 40 percent are in men's technical high schools and almost 20 percent are in religious vocation high schools.

Anadolu high schools are especial schools where instruction of some of the courses is in a foreign language, mostly in English or German. There are Anadolu vocational high schools also. Such schools comprise about 25 percent of men's technical high schools, 22 percent of women's technical high schools, 31 percent of trade and tourism high schools and 18 percent of the religious vocational high schools (Ministry of Education, 1998). In Anadolu schools, students spend a preparatory year in studying the foreign language of instruction of the school.

### ***Private Returns to Schooling in Turkey and in Egypt***

Table 3 provides the private rates of return to general and vocational high school graduate men and women in Egypt and Turkey compiled from different sources. First, consider the figures for Turkey: For men we observe that in all cases, the private rate of return to vocational high schools are higher than that to general high schools by substantial margins. The results for women are less unambiguous. Only in the case of the 1994 survey, vocational high school returns, for women, are markedly higher than general high school returns. These returns are computed over a middle school education. In both the general and vocational high school computations, training is assumed to take three years although in both cases some programs take four years. Opposite results are observed in Egypt: The vocational and general high school returns are similar to each other for men while for women general high school return is higher than that of vocational high school. In Egypt, vocational schools are primarily commercial schools which impart clerical skills. Psacharopoulos(1994) reports higher social returns to general secondary school curricula than to vocational curricula, which is mainly due to the higher unit costs of vocational school programs<sup>1</sup>.

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<sup>1</sup> There is no study on the relative costs of general and vocational high schools in Turkey. However, international evidence in Psacharopoulos (1987) shows that costs of vocational programs are considerably higher than those of general schooling.

### 3. The Model

The distribution of individuals between general and vocational high schools is not random. If this is ignored, potential biases could result when estimating the wage equations (Heckman, 1974). In order to take this into account, I assume that individuals face three mutually exclusive choices: not continuing to high school ( $j=0$ ), going to general high school ( $j=1$ ) or going to vocational high school ( $j=2$ ). The perceived net differentials in the wage or non-wage compensations determine the school choice. The individual's tastes, preferences and other characteristics will also influence the school choice. At this point, I also note that while general high school students are specifically trained for pursuing a university education, the vocational high school students are trained for a vocation. However, vocational high school students are also allowed to take part in the competitive university entrance examinations albeit with a lesser chance of succeeding.

I assume a conditional logit model for the probability that the individual chooses alternative  $j$  as follows.

$$P_j = \exp(Z\alpha_j) / (1 + \sum_{j=1}^3 \exp(Z\alpha_j))$$

where,  $Z$  is a vector of explanatory variables affecting school choice,  $\alpha_j$  is a vector of unknown parameters of the alternative  $j$ . I adopt a two-step method in estimating the wage equations (Lee, 1983; Trost and Lee, 1984). In the first stage, I estimate the school choice probabilities by maximum likelihood logit method and construct the selection term for the alternative  $j$  as follows:

$$\lambda_j = \phi(H_j) / \Phi(H_j) \text{ where } H_j = \Phi^{-1}(P_j)$$

$\phi$  and  $\Phi$  are the standard normal density and distribution functions respectively. In the second stage, I estimate by OLS Mincerian wage equations including the estimated  $\lambda_j$  among its explanatory variables. In the Mincerian wage equations (Becker, 1975; Mincer 1958 and 1974), log wages are explained by human capital characteristics and locational factors ( $X$ ), and the estimated  $\lambda_j$ :

$$\ln W_j = \beta_{0j} + X_j \beta_j + \theta_j \lambda_j + \nu_j$$

where  $\beta_0$  is the unknown intercept term,  $\beta$  is the vector of other unknown parameters,  $\theta = p_j \sigma_j$ , and  $\nu$  is the random disturbance term. This method provides consistent estimates of  $\beta_0$ ,  $\beta$  and  $\theta$ .

### *Empirical Specification*

The explanatory variables considered are as follows. Experience and a quadratic term in experience are included in both the multinomial logit and the wage equations. Experience is computed as age minus the number of years of schooling minus six, the age of entry into school (Mincer, 1974). A dummy variable indicates whether the individual resides in an urban location or not. Settlements with a population of over twenty thousand are defined as urban locations. Further, dummy variables for regions of residence are included to control for the differential in labor market conditions. Marmara was the reference region. Interviews were conducted in different months throughout 1994. To control for seasonal factors if any, I included seasonal dummy variables.

Unearned income of the individual, unearned income of the other household members and the amount of land owned are the other variables I included only in the multinomial logit equations of school choice. These variables are expected to increase the probability of an individual's attendance of a general or vocational high school. Unearned income is defined to include rental income and the interest income.

### 4. Data

I use the results of the 1994 Household Expenditure Survey conducted by the State Institute of Statistics of Turkey<sup>2</sup>. In this study, the sample is restricted to individuals 15 to 65 years of age. I focus on those individuals who terminated

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<sup>2</sup> The survey was administered to 26,256 households. Interviews covered 58 provinces out of the total of 76 provinces in the country. There were 281 clusters which were selected with stratified, multistage sampling. The stratification was on seven geographical regions, rural-urban settlements in each region and according to the size of its population. Further stratification was according to socioeconomic status of the settlements as developed, developing and undeveloped. Household was the sampling unit. Each household was interviewed ten times a month. A different series of households were interviewed in each month throughout 1994. Details may be found in State Institute of Statistics (1997).

schooling at a general high school or at a vocational high school<sup>3</sup>. It was not possible to identify the type of high school completed by those who went on to higher schooling. Details of the subject of study of vocational high school graduates were not asked in the survey. The main characteristics of the data are given in the Appendix Table. In both the men and the women samples, the hourly wages of the vocational high school graduates are higher than those of general high school graduates. However, in both samples, vocational high school graduates are about two years older and have two years more experience than the general high school graduates.

Wages are the sum of cash earnings, bonuses and the value of income in kind. I considered only the wages on the main job. For those individuals employed in secondary jobs, I ignored the earnings from the second job since information on hours of work on the second job was not collected. Two types of information on wages were collected. One was the wage earnings for the month of the interview and the other was the wage earnings for the previous year. I used wage earnings for the month of the interview assuming that they involve less errors of recollection than the wage earnings for the previous year. The survey also asked the usual question about hours of work per week. I imputed the monthly hours of work by multiplying the usual weekly hours of work by 4.3 since no information was collected on the number of weeks worked per month. I obtained the hourly wage by dividing the reported monthly wage by the imputed monthly hours of work<sup>4</sup>.

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<sup>3</sup> Since highest rates of return to schooling in Turkey are observed at the tertiary levels of study, there is a high demand for university education and most general and vocational high school graduates would like to continue studying at a university program. Since the sample used in this study is restricted to general and vocational high school completers who did not continue studying at a tertiary level institution, it is possible, that some of these individuals were not successful at the competition for entry into a university program. As such, they may relate to academically less able individuals.

<sup>4</sup> The annual inflation rate was about 90 percent during 1994. Since households were interviewed at different months throughout 1994, I deflated the wages and unearned income figures by the local monthly consumer price index (CPI). Households located in 16 major cities were assigned the monthly CPIs for those cities. Households in other locations were assigned either a rural or an urban, regional monthly CPI according to their region of location and whether it is a rural or urban location. A location is considered urban if its population is over twenty thousand. The base for the CPI was 1987. They were obtained from the State Institute of Statistics (1994).

Appendix Table also shows the regional distribution of individuals. The percentage of general and vocational high school graduate men and women are about the same in all regions except in East Anatolia and Southeast Anatolia where in the men's sample, the percentages of general high school graduates are twice those of vocational high school graduates.

### *Unemployment Rates*

Table 4 shows the occupational distribution of the vocational and general high school graduate men and women in the sample. It is noteworthy that a larger percentage of men are working while a larger percentage of women are housewives. Percentages of working men and women are higher among vocational high school graduates than among general high school graduates. For both men and women unemployment rates are lower among vocational high school graduates than among general high school graduates. Skills acquired in vocational high schools may be helpful in finding jobs in the labor market. Further, I note that almost twice as large a percentage of general high school graduates are students as compared to vocational high school graduates. This confirms the hypothesis that while vocational high schools prepare students for vocational life, general high schools prepare students for further study.

## **5. Estimation Results**

### *Multinomial Logit estimates*

Multinomial logit estimates of school choice of men and women are shown in Tables 5 and 6 respectively. The tables provide the marginal effects and the associated asymptotic-t-ratios. The marginal effects of each variable on the probability of school choice are calculated at the mean values of the variables.

The multinomial logit estimates for men indicate that experience has a negative effect on the probability of high school choice. The unearned income of the individual, unearned income of the other household members and the land holdings all increase the probability of choice of general high school. They also increase the probability of choice of vocational high school but statistically significant only for the individual unearned income. In the case of the multinomial logit estimates for women, experience similarly decreases the probability of high school choice but is insignificant in the case of vocational high school. As in the case of men, individual unearned income, and land holdings both

increase the probability of choice of general high school while household unearned income is statistically insignificant. However, all these terms are statistically insignificant in the case of vocational high schools. In all cases, an urban location increases the probability of the choice of vocational high schools.

### *Wage Equations*

Selectivity corrected estimates of the general and vocational high schools wage equations are given in Tables 7 and 8 for men and women respectively. All of the wage equations are overall statistically significant as indicated by the F-statistics. However, in the case of women the vocational high school wage equation has a poor fit and most of the individual coefficients are statistically insignificant. Therefore, in the ensuing discussion, it will not be possible to make a proper comparison of the wages of general and vocational high school women graduates.

Linear and quadratic terms in experience have the expected positive and negative signs respectively in all cases except in the vocational high school estimates for women. For general high school graduate men, wages peak at about 20 years of experience and for vocational high school graduate men, wages peak at about 23 years of experience. For general high school graduate women, the wages peak at 23 years of experience. In all cases, urban wages are higher than rural wages. Regional wage differentials are mostly statistically insignificant. The coefficient estimates of the selection terms, in all cases, are statistically insignificant. Thus, the OLS estimates of the wage equations would also be unbiased and consistent.

Table 9 shows the expected wages for general and vocational high school graduates at different levels of experience. At all levels of experience, the wages of vocational high school graduate men are larger than those of the general high school graduate men. For both groups, wages start to decline after about 20 years of experience. It is not possible to make a similar comparison for women due to poor wage equation estimates for vocational high school graduate women.

### *Oaxaca-Blinder Decomposition*

Table 10 provides the decomposition of wage differentials for general and vocational high school graduates. Such decompositions are due to Oaxaca(1973) and Blinder (1974). I decompose the total mean log wage differential for general and vocational high school graduates into four components as follows:

$$\ln W_j - \ln W_i = (\beta_{0j} - \beta_{0i}) + 0.5 (\beta_j + \beta_i) (X_j - X_i) + 0.5 (X_j + X_i) (\beta_j - \beta_i) + (\theta_j \lambda_j - \theta_i \lambda_i)$$

where the last two terms refer to the differentials caused by the selectivity bias (Idson and Feaster, 1990). Bar indicates the mean of the variables; j denotes general high school and i denotes the vocational high school. The first component is the difference in the intercept terms. It is commonly interpreted as the premium or pure rent from being in a given sector (Terrell, 1993). The second component is due to the differences in endowments of the individuals. The third component is due to the difference in coefficients or due to market returns to the endowments. The last component is due to the difference in selection terms. The differentials due to the intercept terms and the coefficients are often referred to as unexplained differentials. The decomposition in Table 10 indicates that for men, the wage differential between general and vocational high school graduates in favor of vocational high school graduates is mostly due to the differential in intercept terms and a small part is due to the differential in coefficients. Thus, we can talk about pure rent in the case of vocational high school graduate men. I do not interpret the results for women due to poor wage equation estimates for vocational high school graduate women.

## **6. Population Policy Implications**

Demographers agree that Turkey has recently passed into the third phase of the demographic transition. The population growth rate which was at its highest (2.8 percent per year) during the 1950s and 1960s declined to 2.2 percent during the 1980s. It was 1.6 percent by 1995 and projected to be 1.4 percent by 2000. The total fertility rate (TFR) has been declining since the 1950s and reached 2.5 children per woman by 1995. Declining mortality, longer life expectancy and better health contributed to a nationwide lower fertility (State Institute of Statistics, 1995). Although the population continues to grow due to population momentum (Shorter, 1995), the age structure of the population is expected to change dramatically. The population will stabilize at 98 million by the mid twenty-first century. The young population (0-14 years), which has been increasing up until the 1990s, is projected to stabilize while the elderly population (65 and over) is projected to register a slight increase and the so called producer population (20-54) is projected to show a large increase (SIS, 1995). The argument of the "demographic window of opportunity" suggests that fast rates of growth of the producer population can factor in a faster economic growth (Barlow, 1994). However, the current quality of the labor force is poor. According to the 1990 Census, about three-fifths of the literate population had only primary

schooling and no more (SIS, 1993). To take advantage of the demographic window of opportunity, it will be necessary to raise the educational levels of the producer population. Until recently, high fertility rates and the population growth meant increasing numbers of youth to educate. This required an expansion of the educational system. With the stabilization of the youth population, it will be possible to concentrate on improving the quality of education and on expanding higher levels of schooling including general and vocational high schools and the universities.

Since fertility rates have fallen substantially over the past decade, the size of the high school age cohort (15-19) has already stabilized while the size of the university age cohort (20-24) is projected to increase by 18 percent by the year 2005 before it stabilizes (Shorter, 1995). Thus, although the high school population will not change, enrollments at the high school level will expand due to improvements in the enrollment ratios at this level. The seventh five-year development plan targets universal enrollments for the eight-year schooling and 75 percent enrollment rate at the high school level (SPO, 1995). In the future, income growth, increased parents' education and urbanization will all contribute to higher demand for schooling (Tansel, 1998a).

This means that provision of university education must also be expanded to accommodate the high-school cohort as it moves through the system. Since the highest rates of return to schooling in Turkey are observed at the university level, a large proportion of the high school graduates will aim at obtaining a university degree. There will be an ever-larger accumulation of students at the doors of universities. This is why, it will be very important for high school graduates to be equipped with skills demanded in the labor market in case they are not successful at the university entrance examination. Such skills can apparently be better provided at vocational high schools than at general high schools since labor market wages of the vocational high school completers are found to be larger than those of the general high school completers. Taking this into account, planners should pay especial attention to the provision of vocational high schools in the future.

## **7. Conclusion**

This paper examines the school choice and the wage differentials of general and vocational high school graduates in Turkey. For this purpose, I use the individual level, 1994 Household Expenditure Survey data of the State Institute of Statistics.

High school choice is explained with a three-way logit model. Selectivity corrected wage equations for general and vocational high school graduates are estimated for men and women separately. The results obtained reinforce the findings of recent studies in the developing countries. When controlled for observed characteristics and sample selection, for men, the wages of vocational high school graduates are larger than those of general high school graduates. For women, it was not possible to make a comparison due to poor wage equation estimates for vocational high school graduates. Further analysis using Oaxaca-Blinder decomposition indicates that this differential is a premium or pure rent to the skills of vocational high school graduates. It is also observed that the unemployment rate is lower among vocational than among general high school graduates. Furthermore, previous studies show that, for men, private rates of return to vocational schooling are higher than those to general high schools. Thus, in Turkey, vocational high schools are superior to general high schools in enhancing labor market outcomes in terms of several indicators of efficacy



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**Table 1: Distribution of High Schools, 1997-1998 Academic Year, Turkey**

Characteristics	General High Schools	Vocational High Schools
Number of Schools	2,555	3,369
Number of students(in ths.)	1,313.9	949.5
Percent Male	57.3	61.5
Percent Female	42.7	38.5
Number of Teachers	70,454	72,518
Student-Teacher Ratio	18.7	13.1

Source: Ministry of Education (1998: 17).

**Table 2: Structural Distribution of High Schools, 1997-1998 Academic Year, Turkey**

	<b>Distribution of Schools (percent)</b>	<b>Distribution of Students (percent)</b>	<b>Student Teacher Ratio</b>
<b>General High Schools:</b>			
General High School	62.9	70.7	19.2
Anadolu High School	15.3	4.3	6.2
Science High School	1.5	0.6	12.3
Fine Arts High School	0.6	0.2	8.2
Evening High School	0.3	0.03	11.7
Anadolu Teacher's HS	3.1	1.8	15.6
Private High School	16.4	4.3	5.4
Distance High School	-	18.2	-
Total	100.0	100.0	18.7
Total in Numbers	2,555	1,313.9 (in ths.)	-
<b>Vocational and Technical High Schools:</b>			
Men's Technical High School	32.4	39.0	15.9
Women's Tech. High School	18.9	10.8	7.9
Trade and Tourism High Sch.	19.3	25.0	22.3
Sch. Religious Vocation High Sch.	18.0	18.8	9.5
Other Vocational High Sch.	11.4	6.4	9.0
Total	100.0	100.0	13.1
Total in Numbers	3,369	949.5 (in ths.)	-

Source: Ministry of Education (1998: 18-21).

**Table 3: Private Rates of Return to General and Vocational High Schools in Turkey and Egypt**

Kind of Survey Used	General High School		Vocational High School	
	Men	Women	Men	Women
Turkish Household Budget Survey 1987 <sup>b</sup>				
Wage Earner				
All Ages	8.6	6.5	13.0	2.0
Under 25 years of age	11.5	-	37.0	-
25-44 years of age	7.7	-	11.0	-
Over 44 years of age	15.8	-	15.0	-
Turkish Household Labor Force Survey 1989 <sup>c</sup>				
Wage Earner	10.1	11.7	13.0	12.5
Self Employed	3.2	12.3	6.7	2.1*
Turkish Household Expenditure Survey 1994 <sup>d</sup>				
Public Administration	11.1	8.8	16.3	16.1
State Owned Enterprises	8.5	-	14.1	-
Formal Private Sector	13.6	11.4	15.3	20.9
Egyptian Capmas Survey 1988 <sup>e</sup>	2.7 <sup>a</sup>	8.2 <sup>a</sup>	3.1	6.1

Source: b. Tansel (1994)  
c. Tansel (1996)  
d. Tansel (1998)  
e. Assaad (1994)

Notes: \* Insignificant at five percent level.  
a. These figures for Egypt refer to the secondary school cycle which also includes the middle school.  
b,c,d, In both the general and vocational high school computations for Turkey training is assumed to take three years.

**Table 4: Occupational Distribution of General and Vocational High School Graduates, 1994, Turkey**

Occupation	Men		Women	
	General High School	Vocational High School	General High School	Vocational High School
Working	70.8	78.0	28.1	38.2
Unemployed	12.8	8.8	12.1	9.7
Student	10.8	4.8	13.2	6.2
Housewife	-	-	43.0	36.9
Retired	3.6	5.8	1.9	7.2
Other	2.0	2.6	1.7	1.8
Total	100	100	100	100
Total in Numbers	4,972	703	3,067	390

**Table 5: Maximun Likelihood Multinomial Logit Estimates of Secondary School Choice of Men, Turkey, 1994**

Variables	General High School		Vocational High School	
	Marginal Effect	t-Ratio	Marginal Effect	t-Ratio
Constant	- 0.1248	450	- 0.0425	10.0
Experience ( $\times 10^{-2}$ )	- 0.2956	157	- 0.0892	4.28
Experience Square ( $\times 10^{-4}$ )	- 0.8374	183	0.0260	0.57
Unearned Income ( $\times 10^{-4}$ )	0.3077	299	0.0487	4.14
Unearned HH Income ( $\times 10^{-5}$ )	0.3639	40.0	0.0525	0.54
Land ( $\times 10^{-4}$ )	0.1382	16.8	0.0081	0.09
Urban location	0.0648	390	0.010	4.99
Regions:				
Aegean	-0.0002	1.02	-0.0010	0.40
Mediterranean	0.0119	48.4	-0.0098	3.58
Central Anatolia	0.0142	72.1	0.0017	0.79
Black Sea	0.0280	126	-0.0042	1.78
East Anatolia	0.0536	203	-0.0098	3.41
Southeast Anatolia	-0.0180	50.9	-0.0259	5.33
- Log Likelihood			11,474	
Chi-Squared			2,835	
Sample Size			26,035	

**Table 6: Maximum Likelihood Multinomial Logit Estimates of Secondary School Choice of Women, Turkey, 1994**

Variables	General High School		Vocational High School	
	Marginal Effect	t-Ratio	Marginal Effect	t-Ratio
Constant	- 0.0411	909	- 0.0161	2.46
Experience (x10 <sup>-3</sup> )	- 0.8934	420	0.0691	0.50
Experience Square (x10 <sup>-4</sup> )	- 0.2574	463	- 0.0982	1.49
Unearned Income (x10 <sup>-4</sup> )	0.1725	587	0.0367	1.56
Unearned HH Income (x10 <sup>-7</sup> )	- 0.1445	1.03	- 1.0420	0.12
Land (x10 <sup>-3</sup> )	0.1327	358	- 0.0339	1.27
Urban location	0.0365	1906	0.0072	2.37
Regions:				
Aegean	0.0020	103	0.0007	0.59
Mediterranean	- 0.0004	18.6	-0.0014	1.01
Central Anatolia	- 0.0015	70.4	0.0004	0.30
Black Sea	0.0032	176	0.0012	1.06
East Anatolia	0.0010	45.5	0.0016	1.20
Southeast Anatolia	-0.0065	195	-0.0014	0.70
- Log Likelihood		2,728		
Chi-Squared		1,924		
Sample Size		9,908		

**Table 7: Selectivity Corrected Estimates of Wage Equations of Men, Turkey, 1994**

Variables	General High School		Vocational High School	
	Coefficient	t-Ratio	Coefficient	t-Ratio
Constant	0.0127	0.03	0.9657	0.50
Experience	0.1069	15.1	0.1125	5.81
Experience Square	-0.0027	14.7	-0.0025	8.57
Urban location	0.4110	4.23	0.4367	2.04
Regions:				
Aegean	-0.2870	4.06	-0.2257	1.53
Mediterranean	-0.3153	4.81	-0.0135	0.05
Central Anatolia	-0.0092	0.14	-0.0715	0.55
Black Sea	-0.1660	2.34	-0.0181	0.10
East Anatolia	0.0432	0.47	0.1879	0.64
Southeast Anatolia	-0.0817	1.05	-0.1013	0.17
Selection term	0.2773	1.09	0.0928	0.10
R-Square	0.1504		0.2120	
F (K, N-K-1)	47.7		11.58	
SER	1.00		1.11	
Sample Size	3,520		548	

**Table 8: Selectivity Corrected Estimates of Wage Equations of Women, Turkey, 1994**

Variables	General High School		Vocational High School	
	Coefficient	t-Ratio	Coefficient	t-Ratio
Constant	0.3906	0.77	2.9086	2.08
Experience	0.0771	6.68	-0.0713	3.57
Experience Square	-0.0017	4.10	-0.0021	2.95
Urban location	0.5672	2.18	-0.1085	0.32
Regions:				
Aegean	-0.0047	0.05	-0.1699	0.85
Mediterranean	-0.0031	0.03	-0.0281	0.12
Central Anatolia	0.1400	1.41	-0.1245	0.58
Black Sea	-0.0531	0.63	-0.1271	0.68
East Anatolia	0.0560	0.56	-0.0469	0.22
Southeast Anatolia	0.3191	1.98	0.4504	1.68
Selection term	0.1236	0.47	-0.5095	0.98
R-Square	0.2079		0.2580	
F (K, N-K-1)	17.14		3.61	
SER	0.7640		0.7465	
Sample Size	863		149	

**Table 9: Expected Wages at Different Levels of Experience by School Choice and Gender, Turkey, 1994**

Experience	Men <sup>b</sup>		Women <sup>a,b</sup>
	General High School	Vocational High School	General High School
Five Years	1.81	4.18	2.86
Ten Years	2.53	6.07	3.70
Fifteen Years	3.09	7.77	4.40
Twenty Years	3.31	8.77	4.80
Twentyfive Years	3.10	8.73	4.81
Thirty Years	2.54	7.66	4.43
Thirtyfive Years	1.83	5.92	3.74

Source: Author's calculations based on wage equation estimates in Tables 7 and 8.

Notes: a. Expected wages for women vocational high school graduates are not presented since the wage equation estimates for this group were unsatisfactory.

b. In the computation of expected wages, the selection terms are ignored. Therefore, they represent the expected wages for a randomly drawn individual from the population. For each high school category, the expected wages are computed at the means of the variables.

**Table 10: Decomposition of Wages Differentials for General and Vocational High School Graduates and Gender, Turkey, 1994**

	Mean Log Wage Differential Between General and Vocational High School Graduates(%)	
	Men	Women <sup>a</sup>
Total Mean Differential	- 29.99	- 45.85
Component Attributed to:		
Intercept term	- 95.30	-251.82
Selection	60.75	130.42
Endowments	53.10	- 9.04
Coefficients	0.747	84.57
Total Unexplained differential	- 96.05	- 167.23

Source : Author's calculations based on the wage equation estimates in Tables 7 and 8. Each of the components are evaluated at the sample means of the variables.

Notes: a. Results for women are not reliable due to poor wage equation estimates for women vocational high school graduates.

**Appendix Table  
Means and Standard Deviations of Variables by High School and Gender, Turkey, 1994.**

Variables	Men		Women	
	General High School	Vocational High School	General High School	Vocational High School
Hourly Wage <sup>a</sup>	6.063 (9.32)	8.251 (10.96)	5.42 (5.25)	7.72 (4.72)
Log Hourly Wage	1.290 (1.08)	1.590 (1.11)	1.379 (0.85)	1.837 (0.75)
Age	32.20 (8.88)	33.95 (10.6)	27.89 (7.33)	30.25 (8.00)
Experience	14.19 (8.87)	15.95 (10.6)	9.90 (7.32)	12.26 (8.00)
Experience Square	280.4 (321)	365.9 (451)	151.6 (192)	213.8 (241)
Unearned Income <sup>a</sup>	92.09 (1164)	89.53 (438)	33.81 (217)	36.87 (125)
Unearned HH Income <sup>a</sup>	3352 (196170)	39.50 (180)	92.91 (361)	88.52 (319)
Land(dekar) <sup>c</sup>	9.19 (101)	9.34 (73.2)	4.27 (22.8)	4.93 (25.1)
Urban Location <sup>b</sup>	0.812	0.796	0.867	0.832
Regions <sup>b</sup> :				
Marmara	0.134	0.212	0.169	0.161
Aegean	0.099	0.148	0.170	0.168
Mediterranean	0.144	0.110	0.160	0.107
Central Anatolia	0.159	0.237	0.122	0.134
Black Sea	0.177	0.161	0.232	0.248
East Anatolia	0.201	0.099	0.114	0.148
Southeast Anatolia	0.087	0.035	0.034	0.034
Selection term	1.424 (0.31)	2.291 (0.25)	1.339 (0.42)	2.235 (0.29)
Sample Size	3,520	548	863	149

- Notes: a. Measured in 1987 Turkish Liras.  
b. These are dummy variables. Their standard deviation(sd) are not reported for brevity but may be computed from their reported means (m) as  $sd = (m(1-m))^{1/2}$   
c. One dekar is thousand square meters or .247 acres.