DETERMINANTS OF THE CHOICE OF HIGH SCHOOL TRACK IN TURKEY

by

YUNUS ARSLAN

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APPROVED BY:

Doç Dr. Abdurrahman Aydemir

(Thesis Supervisor)

Yrd. Doç. Dr. Esra Durceylan Kaygusuz
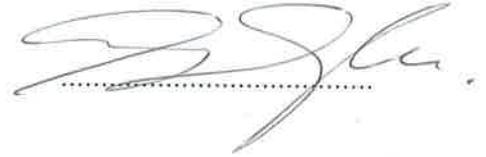
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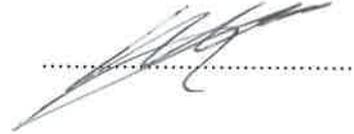
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Yunus Arslan

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Supervisor: Abdurrahman B. Aydemir

Abstract

This study attempts to find out main determinants of high school track choice in Turkey, particularly the vocational high schools. For this purpose we use Labor Force Surey data and estimate multinomial logit and nested logit models. We find that higher the parental education higher, family income or birth ranking of the students the higher is the likelihood of attending a general/academic high school rather than a vocational high school. Increase in total number of children in the family, on the other hand, increases the probability of attending a vocational high school. Residing in an urban area increases the probability of attending a vocational high school more than a general high school. Another finding is that the probabilty of choosing a vocational education track has significantly increased over years 2003-2015. Finally, we find a positive relationship between the number of a type of high school in a given region and the probabilty of choosing that type of high school.

TÜRKİYE'DE LİSE TERCİHİNİ BELİRLEYEN ETKENLER

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Özet

Bu çalışmanın amacı Türkiye'deki lise tercihini, özellikle de meslek lisesi tercihini belirleyen temel etkenleri ortaya çıkartmaktır. Bunun için Hanehalkı İşgücü Anketi veri setinden faydalandık, hesaplamaları multinomial logit ve nested logit modelleri kullanarak yaptık. Ebeveyn eğitim seviyesi, aile geliri ve öğrencinin doğum sırası arttıkça genel/akademik bir liseye devam etme ihtimalinin arttığını bulduk. Ailedeki toplam çocuk sayısının artması ise meslek lisesine devam etme ihtimalini artırıyor. Şehirde ikamet etmek liseye devam ihtimalini artırırken meslek lisesinin seçilme ihtimalini genel liseye göre daha fazla artırıyor. Ayrıca 2003-2015 yılları arasında meslek liselerinin giderek daha fazla tercih edildiğini ortaya çıkarttık. Son olarak, bir bölgedeki bir lise türündeki okul sayısıyla o lise türünün seçilme ihtimali arasında pozitif bir korelasyon bulduk.

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1. Introduction

Choice of attending a particular type of high school has important impacts on future outcomes of children. Completing a vocational high school often leads students to enter labor force early while completing a general/academic high school leads them to university education. While wage returns on completing university are greater than completing vocational education (Srinnang 2014 and Sakellariou 2003), vocational education provides labor market earnings earlier than a university education as it requires less time to complete. Further, attending a particular type of high school would affect the future social environment of children that they will belong to.

Given various constraints such as income, distance to the school or lack of required exam scores/ability, students and parents decide whether to attend a high school or not and if they aim high school they choose the high school type. For most of the cases these constraints or characteristics of children play important roles on the choice of attending a particular high school or not attending at all. Understanding the roles of these constraints or characteristics of students may help to design better policies aiming to improve attainment in education. For instance, if family income is very effective on the enrollment decision of students to high schools then a subsidy for the costs of going to school may improve high school attendance.

There is limited number of studies investigating determinants of this choice in different countries however research on this issue is missing for Turkey. This study attempts to find out main factors determining this choice in Turkey. Similar to other studies we simplify these choices as having three alternatives: not attending school, attending a vocational high school and a general/academic high school. By using the Household Labor Force Survey data for years 2004-2011 we mainly

analyze the impacts of parental education level, parental income, rural/urban residence, the region of residence for the family (11 different regions). Similar factors are analyzed in other studies investigating the the choice of attending the vocational education track in other countries (Dustmann 2014, Sonk,Loyalka and Wei 2013, Siala and Ammar 2014). In addition, we incorporate the role of the total number of children in the family and his/her rank of birth into the analysis since these might be significant factors affecting this choice. Both multinomial logit and nested logit models are used to analyze the effects of these factors. We find that children coming from families with a higher parental education or higher income are more likely to attend general high schools. Similarly, children coming from families with lower parental education or lower income are more likely to follow a vocational education track and to decide not to attend any school. Total number of children in the family has negative effect on choosing a general high school while the birth order of children has positive effect on attending any type of high school; that is the later a child is born the more likely is she to attend a high school. As expected, children living in urban areas are more likely to attend school and more likely to attend a general high school rather than a vocational high school. In addition, based on the school supply data provided by TurkStat and Ministry of Education we obtained the numbers of each type of high school (vocational and general) for both nuts1 and nuts2 regions and included them to the choice analysis.[1] It is found that the higher the number of a type of school in a region the higher is the attendance for that type of school. Further, an increase in the number of any type of high school decreases the probability of not attending school.[2] This is a valuable finding in the sense that it shows a positive return on investment of building new schools.

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[1] Nuts1 consists of 12 regions while nuts2 consists of 26 regions.
[2] This is find in nested logit model but not in multinomial logit model.

The study is structured as follows. The next section discusses various studies in the literature where different findings on high school choice from different countries are compared. Section 3 explains the data used in the analysis. Section 4 discusses the methodologies used to assess the high school choice decisions. In section 5 the findings are presented and finally section 6 concludes the study.

2. Literature Review

Research on the choice of high school attainment have mainly focused on external factors such as parents' income, parents' education level, type of residence, family size and distance (supply) of schools. Some of these factors have the same impact on the choice of attending vocational high school in different countries while some differ across countries. As expected parents' income or socioeconomic status has been found to be a significant factor determining this choice in the studies of Dustmann (2004), Siala and Ammar (2014), Suaphan (2015) and Song et al. (2013), that is in Germany, Thailand, Tunisia and China respectively. These studies reveal that children living in high income or high status families are much more likely to attend general high schools which leads them to university education. On the other hand, children living in low income families are more likely to attend vocational school that would provide them a job right after graduation so that they would suffer less from living in a low income family. Parents' education level is also found as a significant factor in Dustmann (2004), Siala and Ammar (2014), and Suaphan (2015), while it is not a significant factor in rural China according to Song, Loyalka and Wei(2013).[3] More educated parents are less likely to register their children to vocational schools. Interestingly mothers' education level is more important than fathers' education level for enrolling both streams

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[3] This indicates that children in China have more intergenerational mobility than other countries mentioned above, that is their success in school is less dependant on parents' education level.

of schools in Tunisia (Siala and Ammar 2014), while mothers' education level is positively associated with only girls' education but not boys in Germany (Dustmann 2014).

Dickerson and McIntosh (2010) aim to find out for the first time in the literature whether the distance has any effect on the choice of going to post-compulsory school (high school). They find that there is no significant effect of distance on attending post-compulsory school. However, interestingly, they find that the distance of the vocational schools significantly affects attending those schools. Indeed, the further the vocational school, the less likely it is that the children attend them. This is a worthwhile finding as one of our interests is whether supply (or distance) of vocational schools in a certain region decreases/increases the probability (opportunity) of continuing education in Turkey. Several studies also investigate the impact of distance on the choice of attending university education (Cloodt et al. 2010, Sá et al. 2004, Frenette 2006). Although the outcome is a choice at a higher education level, they also reach a similar result indicating that being away from schools decreases the probability of enrolling in the university.

In addition to external factors, other studies claim that there are some student traits that impact the choice of a vocational or general education track. Suaphan(2015) and Novak et al. (2004) found that less able students or students with a low academic achievement in previous schools are more likely to follow the vocational education track. Grades, which may be considered as a sign of ability, are find to be the most significant factor affecting the choice of students in China (Song et al. 2013). It seems that students with lower ability consider the difficulties (costs) they would face in the general education track and choose not to follow it. This idea is consistent with the human capital theory which states that people consider the expected costs and benefits of a certain education choice and act accordingly. Moreover, Hawley (2004), Sakellariou(2013) and Srinang (2014) find out that return on a vocational high school degree is greater than that of a general high

school degree. However, as expected, the return on having a university education is greater than that of a vocational high school education. Thus, it can be inferred that students who think that they will not be able to achieve a university degree after general high school choose the vocational education track, which provides a higher return than a general high school education.

A shortcoming of this study is lack of previous grades of students. Since we do not have such information in the existing data we could not include it in the analysis. However, parental education would explain some of the variation that grades would drive as there are studies that report a strong positive correlation between the parental education and performance of students in schools (for instance Sacerdote 2007, Oreopoulos et.al. 2006 and Ermisch and Francesconi 2001).

Above studies investigating the determinants of this choice have used either multinomial logit model (Dickerson and McIntosh 2010, Cloodt et.al 2010, Song et al. 2013) or probit model (Dustmann 2004, Siala and Ammar 2014). They consider the choice as having three alternatives: not attending school, attending a vocational school and attending a general (academic) high school.

To our best knowledge there is no comprehensive study investigating the high school choice in Turkey. Thus, this study will be the first in the literature examining the determinants of this choice in the Turkish context.

3. Data and Descriptive Statistics

Our analysis relies on the combination of two different types of data sets. First one is Household Labor Force Survey data that contains information on individual and family specific characteristics for years 2004-2011. By using this data we include the parents' education level, parents' income, number of children in the family, birth order of the child and residential area in the analysis. We restrict the sample to children who have completed 8-year education and are between ages 13 and 17. We excluded the ones whose parents report no wage earning as we are not able to distinguish earnings for those who run their own business or those who have no job. The sample we have analyzed consists of 89,110 children, 43,368 of them is female and 45,742 is male. The descriptive statistics for this sample are presented in Table 1. It is observed that %80 of the sample resides in urban areas and majority of parents have completed just primary education. Among fathers %20.6 have high school degree, %53 of them completed general high school while %47 of them completed vocational high school. Among mothers %10.2 have high school degree, %40 of them graduated from vocational high school while %60 of them graduated from general high school.

Table 1: Descriptive Statistics by gender

	Females	Males
Variables	Mean	Mean
Father's education level		
Literate	.020	.023
Primary	.474	.477
Secondary	.136	.137
General high school	.110	.113
Vocational high school	.096	.095
College	.148	.137
Mother's education level		

Literate	.060	.059
Primary	.595	.588
Secondary	.065	.063
General high school	.061	.055
Vocational high school	.041	.040
College	.055	.055
Income level		
Income level 2	.271	.275
Income level 3	.232	.226
Income level 4	.204	.199
Income level 5	.045	.045
Urban Residence	.801	.803
Birth ranking of the student	1.584	1.597
Total children in the family	2.854	2.746
Observation	**43,368**	**45,742**

The other data contains school supply information that is constructed from the data provided by the TurkStat and Ministry of National Education covering years 1980-2015 for each nuts1 and nuts2 region.[4] We compile different type of schools into two parts as the number of vocational high schools and the number of other type of high schools (called as the general type of high school). This way of categorizing schools is consistent with the other studies in the literature (Dustman 2014, Dickerson and McIntosh 2010). In addition to school numbers, the data also contains the number of divisions and classrooms. Thus, we have the chance to use not just school numbers but also the number of divisions and classrooms. It is worthwhile to use the number of

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[4] The statistics was gathered by TurkStat until 2005. Starting 2006 Ministry of Education is responsible for education statistics in Turkey.

classrooms in the sense that it is a better parameter for indicating the capacity more properly for that particular school type.

Using this school supply information we investigate how the number of vocational and general high schools evolved over time in different regions of Turkey. We also have the same information about the number of students over time. There are some noteworthy observations. The relative ratio of classrooms and divisions in vocational high schools are consistently increasing over years as seen in Figure 1 in the Appendix. The only exception appears as the decreasing relative ratio of divisions between years 1997-2001. One can interpret this as a result of low demand that is likely to be due to the new system used in the calculation of the university entrance exam score. The method used in the calculation of the exam score was altered in 1997, reducing the coefficient for students from vocational high schools relative to those that graduated from general high schools. The reduced coefficient is eliminated in 2009. Following 2001 the ratio of vocational school students starts rising. The rise is more prominent after 2012 which is the year when compulsory school has increased from 8 to 12 years. The increase following 2001 coincides with new system introduced in 2002 that allows students from vocational schools to directly enter related 2-years universities without any exam and the extra credit given to vocational school students in the case they choose a related university with their field. The rise is also more prominent in the east regions of Turkey as seen in the Figure 2. The ratios of the number of vocational high schools, classrooms, divisions over general high schools, classrooms and divisions are persistently rising over last 12 years. This shows that the government has made more investment to build new vocational schools than general high schools.[5]

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[5] The ratio of students in religious schools is about 10-15 percent within vocational schools in years 2001-2011. In 2015 the ratio reaches to %30 percent.

When we look at the evolution of the number of students enrolled in different type of high schools we see an interesting pattern. The ratio of the number of students in vocational high schools over the number of students in general high schools is decreasing dramatically over the period 1997-2002. While the ratio was 0.84 in 1996, it decreased to 0.48 in 2002. This is likely to be due to the new score calculation method that is introduced in 1997 for university entrance exams. From 2003 to 2014 the ratio consistently has risen up to 0.96. For instance, in the Central East Anatolia the ratio was 0.56 in 1996, it persistently decreased over years and reached about 0.28 in 2001. In 2014 it reached 0.84. The noteworthy finding is while the ratio in Central East Anatolia was always below the ratios observed in other regions, it almost caught up with the national average as a result of radical increases in recent years. This pattern is true for both male and female students. While the ratio was 0.93 in 1996 in overall Turkey, it decreased to 0.53 in 2002. From 2002 to 2014 it kept rising till reaching 1.00. These rises indicate that students (parents) tendency to enroll in vocational high schools has increased. This result is consistent with the strategy plan prepared by the Ministry of Education in 2010. One of the strategic goals was set as to equate the number of students in vocational high schools to the number of students in general high schools. Thus, it seems like the goal has been achieved.

4. Methodology

Since there are more than two categorical alternatives it is almost standard in the literature to model the high school choice via Multinomial Logit (MNL). Thus, we have also used it in this study. However, forcing errors to be independent MNL leads to an assumption called independence of irrelevant alternatives (IIA). This assumption requires that the choice probability of an alternative relative to another one is independent from adding (dropping) of a third alternative (Hensher et.al,

2005). In school choice case, it requires that if a student is somehow prevented to choose for instance to go to a vocational high school than the ratio between probability of choosing a general high school and not attending school must remain the same. This is obviously a strong assumption. In fact, surely every student has the right to choose among three alternatives, that is all three alternatives are possible for students. However, some external factors like staying far away from a vocational high school may automatically eliminate the option of attending that school. Thus, in such cases IIA assumption may lead to biased results. To avoid this problem one may use Multinomial probit (MNP) but this model also has some shortcomings. It is computationally intensive and difficult to interpret outcomes. Kropko (2008) has also showed that even when IIA assumption is violated MNL provides better results than MNP. Hence, we prefer to use MNL and also nested logit model which relaxes the IIA assumption to some extent.

4.1. Multinomial Logit Model

In this model the utility each individual (student) obtains from choosing one of three alternatives is denoted using the following form:

$$U_{ij} = X_i\beta_{ij} + \varepsilon_{ij} \qquad (1)$$

where i denotes students, j=1,2,3 denotes the three alternatives following the completion of secondary schooling respectively: not attending, attending a general high school, or attending a vocational high school. X vector represents the observed characteristics (constraints) student has, namely parental education, family income, region of residence, total number of children in the family, birth rank of the student, nuts1 regions, high school attendance ratio for each region, number of vocational and general high schools, total student in high school age and ε is the

unobserved component of the utility expression. If for instance it is observed that student i chooses alternative 3 than we infer that $U_{i3}>U_{i2}$ and $U_{i3}>U_{i1}$.

It is assumed that the log odds of each alternative follow a linear model as the following form.

$$Y_{ij} = \log\left(\frac{\pi_j}{\pi_J}\right) = \beta_{0j} + X_i\beta_j \qquad (2)$$

J-1 equations (in this case just 2 as J equals 3) are needed to describe the dependent variable (Y_{ij}) with J alternatives and one of the categories is taken as the reference. In our case we compare 1 (not attending) versus 2 (general HS) and 3 (vocational HS) versus 2 (general HS). The missing comparison between 1 and 3 is acquired using the other two comparisons: $\log(\pi_{i1}/\pi_{i3}) = \log(\pi_{i1}/\pi_{i2}) - \log(\pi_{i3}/\pi_{i2})$.

4.2. Nested Logit Model

Fundamentally, nested logit model relaxes the IIA and IID assumptions which are inherent in multinomial logit model by grouping similar options into nests. As there are only three options in high school choice case it is not hard to group them. High school choice is modelled using nested logit as in the following tree structure.

Figure 1: Tree structure for high school choice
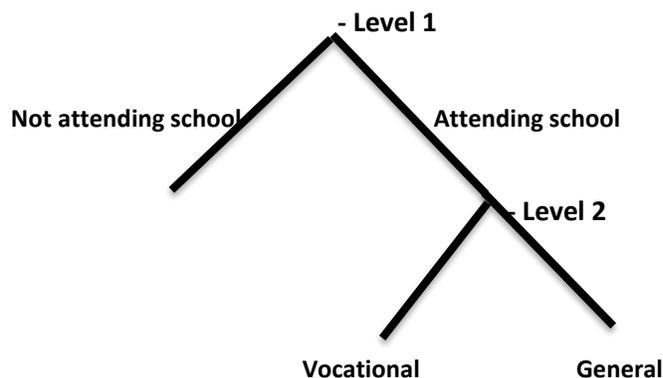
According to Train (2007) nested logit is an appropriate model if the options faced by decision maker can be divided into sub-sets with the following properties. "(1) For any two alternatives that are in the same nest, the ratio of probabilities is independent of the attributes or existence of all other alternatives. That is, IIA holds within each nest. (2) For any two alternatives in different nests, the ratio of probabilities can depend on the attributes of other alternatives in the two nests. IIA does not hold in general for alternatives in different nests." In school choice case both properties are valid. As there is just one alternative in one nest and two in the other, IIA assumption holds anyway in nests. The ratio of the probability of choosing not attending school and attending general high school would change if the option of attending vocational high school is somehow eliminated, consistent with the second property listed above.

It is important to note that although the decision tree is generally interpreted as that first a decision is made in the first level than a decision made in the second level, nested logit does not assume such an ordered decision procedure. It simply assumes that students choose one of the three alternatives. Main goal of the nested logit model is to accommodate violation of IIA and IID. It has nothing to do with explaining the behavioral procedure of decision makers (Greene, 2000).

We next discuss details of this model. First, let the set of alternatives allocated to n subsets/nests symbolized as B_1, B_2,..B_n, where n = 2 in our case. The utility expression for students is denoted the same as in (1). It is assumed that vector of ε_{ij} has the following cumulative distribution.

$$\exp\left(- \sum_{n=1}^{N}\left(\sum_{j\in\beta_n} e^{-\varepsilon_{ij}/\tau_n}\right)^{\tau_n}\right) \qquad (3)$$

τ_n measures the degree of independence of alternatives in the same nests in terms of unobserved factors. In other words, it tells us how similar are the alternatives allocated to same nests. If $\tau_n = 1$ then the alternatives are completely different from each other (as in our first nest that has just

one alternative). The above distribution of ε_{ij} leads to the following probability of alternatives to

be chosen (adapted from Train 2007).

$$\pi_{ik} = \frac{e^{x_{ik}/\tau_n}\left(\sum_{j\in\beta_n} e^{X_{ij}/\tau_n}\right)^{\tau_n-1}}{\sum_{s=1}^{N}(\sum_{j\in\beta_s} e^{X_{ij}/\tau_n})^{\tau_s}} \qquad (4)$$

We can also see by this equation that IIA holds in nests but not among different nests. Let's define

another nest as B_1, B_2,…B_s and let alternatives $k \in B_n$, $m \in B_s$. Notice that the denominator of

above equation is the same for all alternatives. So, the ratio of probabilities will be the following:

$$\frac{\pi_{ik}}{\pi_{im}} = \frac{e^{x_{ik}/\tau_n}\left(\sum_{j\in\beta_n} e^{X_{ij}/\tau_n}\right)^{\tau_n-1}}{e^{X_{im}/\tau_s}\left(\sum_{j\in\beta_s} e^{X_{ij}/\tau_s}\right)^{\tau_s-1}} \qquad (5)$$

If n=s, that is for the alternatives in the same nest the equation becomes simpler:

$$\frac{\pi_{ik}}{\pi_{im}} = \frac{e^{X_{ik}/\tau_n}}{e^{X_{im}/\tau_s}} \qquad (6)$$

The last ratio is independent from all other alternatives, IIA holds in nests. However, if $n \neq s$ than

the ratio of probabilities depends on characteristics of other alternatives.

5. Results

5.1. *Results from multinomial logit model*

By using MNL model we estimated the marginal effects at the means of explanatory variables. Main findings are reported in Table 2 by the gender of the child. Both father's and mother's education level significantly affect the enrollment of the child to a particular high school. Higher the parental education higher the probability that the child continues to high school after 8-years education. For instance, if a mother has a general high school degree than the probability that her daughter will not enroll to school decreases by 0.14. Moreover, if the parents have high school or college degree it is more likely that their child attends a general high school. It is observed that mother's education level is more effective than the father's education level on this choice. Particularly, fathers' education almost has no effect on the probability of attending a vocational high school for females, while mothers' education has significant negative effect on it. Another noteworthy finding is that fathers' education level has more impact on the choice of males than females while mothers' education level has more impact on the choice of females than males. If a father has college degree then the probability of his son to attend a general high school increases by 19.4%, while the increase is 11.3% for the girls. In addition, children having parents graduated from vocational high schools are more likely to attend a vocational high school than those having parents graduated from general high school.

It is useful to note here that the effects mentioned above do not say anything like children coming from highly educated families attend general/academic high schools due to the academic ability they have or due to their parents tendency to enroll their child to those schools or for any other unobserved reason. As we do not have any instrument to distinguish them the observed effects capture all of them.

When we look at the impact of the family income on the choice we clearly see that as income level increases the probability of quitting education decreases. Children coming from high income families are more likely to attend a general high school. The reason behind this observation might be that those children are academically more successful or their parents push them to that track as they believe that they can afford it and children do not need to enter the labor market early due to financial constraints. The effect we present here includes both of them as we cannot distinguish their effects.

The estimated year effects show that, relative to year 2004, the probability of attendance to vocational high schools has increased dramatically while the probability of attendance to general high schools has decreased. Vocational school attendance increased by 32.2% for females and 28.3% for males. This is consistent with the observed increase in the number of students enrolled to vocational schools in school supply data.

Residing in urban areas decreases the probability of not continuing to high school for females much more than males, 0.0915 versus 0.0118. For males residing in an urban area is not a significant factor for choosing to attend a general high school but it increases the probability of attending a general high school for females. One can interpret this as that females suffer more than males from being away from schools. Families may be trying to avoid from transportation cost. Thus, to increase the attendance of children (especially girls) to high schools one effective policy might be to cover the transportation costs.

Total number of children significantly decreases the probability of attending school. One more child in the family decreases the probability of attending a high school by 0.036 for females. It also increases the probability of choosing vocational schools for males but it has no effect on

females' vocational school choice. In other words, males are more sensitive to number of children in their family while choosing between two education tracks. These results show us that decreasing family size helps to improve the high school attendance.

Another interesting observation is that birth rank of the student has small but significant impact on the attendance probability to the schools. One order increase in the birth rank (being born later) increases the probability of attending a school by %3.6 for males and %1.18 for females.

Table 2: Multinomial Logit estimates

Variables	Females			Males		
	Not attending	General	Vocational	Not attending	General	Vocational
Father's education level						
Illiterate (base)						
Literate	-0.00193	-0.0393	0.0412	0.00930	-0.0275	0.0182
	(0.0152)	(0.0322)	(0.0317)	(0.0143)	(0.0293)	(0.0302)
Primary school	-0.0272**	-0.0215	0.0486**	-0.0224**	-0.0427*	0.0651***
	(0.0126)	(0.0251)	(0.0237)	(0.0110)	(0.0233)	(0.0236)
Secondary school	-0.0705***	0.0341	0.0364	-0.0813***	0.0291	0.0522**
	(0.00972)	(0.0269)	(0.0264)	(0.00821)	(0.0259)	(0.0266)
General high school	-0.109***	0.107***	0.00284	-0.119***	0.107***	0.0125
	(0.00754)	(0.0257)	(0.0251)	(0.00650)	(0.0254)	(0.0256)
Vocational high school	-0.111***	0.0629**	0.0479*	-0.121***	0.0511*	0.0695**
	(0.00745)	(0.0283)	(0.0281)	(0.00629)	(0.0278)	(0.0283)
College	-0.136***	0.113***	0.0237	-0.144***	0.194***	-0.0497**
	(0.00749)	(0.0269)	(0.0265)	(0.00639)	(0.0231)	(0.0228)
Mother's education level						
Illiterate (base)						
Literate	-0.0422***	-0.00445	0.0467***	-0.0202***	-0.0511***	0.0713***
	(0.00581)	(0.0134)	(0.0129)	(0.00665)	(0.0137)	(0.0136)
Primary school	-0.103***	0.0447***	0.0588***	-0.0733***	-0.000255	0.0736***
	(0.00580)	(0.00923)	(0.00802)	(0.00558)	(0.00917)	(0.00832)
Secondary school	-0.116***	0.106***	0.0102	-0.0772***	-0.00334	0.0805***
	(0.00455)	(0.0125)	(0.0120)	(0.00602)	(0.0140)	(0.0137)
General high school	-0.140***	0.175***	-0.0353***	-0.121***	0.176***	-0.0545***
	(0.00439)	(0.0120)	(0.0115)	(0.00557)	(0.0130)	(0.0123)
Vocational high school	-0.117***	0.0852***	0.0316**	-0.0924***	0.0709***	0.0215
	(0.00585)	(0.0154)	(0.0148)	(0.00758)	(0.0161)	(0.0153)
College	-0.130***	0.234***	-0.104***	-0.113***	0.194***	-0.0815***

	(0.00671)	(0.0123)	(0.0107)	(0.00842)	(0.0151)	(0.0136)
Income level 1 (base)						
Income level 2	-0.0215***	0.0318***	-0.0103*	-0.0115***	0.0139**	-0.00246
	(0.00416)	(0.00670)	(0.00570)	(0.00410)	(0.00689)	(0.00608)
Income level 3	-0.0499***	0.0537***	-0.00382	-0.0516***	0.0552***	-0.00360
	(0.00447)	(0.00720)	(0.00616)	(0.00442)	(0.00751)	(0.00665)
Income level 4	-0.0736***	0.0948***	-0.0212***	-0.0739***	0.0765***	-0.00265
	(0.00503)	(0.00789)	(0.00672)	(0.00504)	(0.00841)	(0.00746)
Income level 5	-0.0550***	0.117***	-0.0618***	-0.0719***	0.152***	-0.0802***
	(0.0134)	(0.0162)	(0.0120)	(0.0118)	(0.0159)	(0.0130)
Years						
2004 (base)						
2005	0.0106	-0.107***	0.0962***	0.0176**	-0.114***	0.0963***
	(0.00771)	(0.0126)	(0.0133)	(0.00782)	(0.0113)	(0.0121)
2006	-0.0141*	-0.141***	0.155***	0.0240***	-0.159***	0.135***
	(0.00729)	(0.0130)	(0.0141)	(0.00804)	(0.0112)	(0.0123)
2007	0.0119	-0.185***	0.173***	0.0501***	-0.197***	0.147***
	(0.00802)	(0.0128)	(0.0143)	(0.00879)	(0.0111)	(0.0126)
2008	0.0107	-0.227***	0.216***	0.0418***	-0.261***	0.219***
	(0.00817)	(0.0128)	(0.0146)	(0.00879)	(0.0108)	(0.0129)
2009	-0.00985	-0.254***	0.264***	0.0406***	-0.280***	0.240***
	(0.00781)	(0.0130)	(0.0149)	(0.00872)	(0.0106)	(0.0128)
2010	-0.0294***	-0.274***	0.304***	0.0239***	-0.293***	0.269***
	(0.00724)	(0.0129)	(0.0148)	(0.00834)	(0.0106)	(0.0127)
2011	-0.0422***	-0.279***	0.322***	0.0155*	-0.298***	0.283***
	(0.00688)	(0.0129)	(0.0146)	(0.00835)	(0.0109)	(0.0130)
Urban Residence	-0.0915***	0.0408***	0.0508***	-0.0118***	0.00238	0.00939***
	(0.00552)	(0.00680)	(0.00501)	(0.00221)	(0.00359)	(0.00332)
Birth ranking of the child	-0.0118***	0.00283	0.00896***	-0.0361***	0.00967	0.0265***
	(0.00228)	(0.00356)	(0.00309)	(0.00486)	(0.00682)	(0.00568)
Total child in the family	0.0360***	-0.0328***	-0.00322	0.0253***	-0.00786***	-0.0174***
	(0.00157)	(0.00248)	(0.00217)	(0.00153)	(0.00259)	(0.00244)
Attendance ratio	-0.0101	0.218***	-0.207***	0.115**	0.0110	-0.126
	(0.0545)	(0.0830)	(0.0735)	(0.0572)	(0.0873)	(0.0833)
Total Student	-3.85e-05***	6.38e-05***	-2.54e-05***	-0.000153***	0.000168***	-1.47e-05
	(6.53e-06)	(9.55e-06)	(8.15e-06)	(2.14e-05)	(3.19e-05)	(2.83e-05)
Observations	42,585	42,585	42,585	44,914	44,914	44,914

Notes: The table shows marginal effects of variables on the probability of choosing one of three alternatives. Standard errors are in parentheses. Region effects are not demonstrated. *** p<0.01, ** p<0.05, * p<0.1.

When we introduce school supply information into the analysis (Table 3) we observe that an increase in the number of a type of high school increases the probability of attending to that type of high school while decreasing the probability of attending other type of high school. In other words, school supply matters on the decision of children while choosing a high school. This is consistent with other research in the literature (Dickerson and McIntosh 2010, Cloodt et al. 2010 and Frenetti 2006). Thus, to reach the goal of increasing number of students in vocational schools, which is stated in the strategy plan 2010 prepared by the Ministry of Education, it would help to build new schools - though it is an another question whether it would be an efficient investment or not. Although we cannot identify through which channels school supply alters decision of students, it is most probably related to the cost of travel to the schools; closer the school lesser the cost (monetary and psychological) student or families would bear. Hence, some students may avoid from going to a school that is far away from their residence, instead choose to go to a closer one. An increase in vocational school supply affects the choice probability of females more than males, while an increase in general school supply affects the choice probability of males more than females. In fact, an increase in general school supply does not have a significant effect on the choice of attending a general high school for females.

Table 3: Multinomial logit estimates with school supply

	Females			Males		
Variables	Not attending	General	Vocational	Not attending	General	Vocational
Father's education level **Illiterate (base)**						
Literate	-0.00221	-0.0411	0.0433	0.00970	-0.0280	0.0183
	(0.0152)	(0.0322)	(0.0319)	(0.0143)	(0.0293)	(0.0302)
Primary school	-0.0269**	-0.0216	0.0485**	-0.0221**	-0.0429*	0.0650***
	(0.0126)	(0.0250)	(0.0237)	(0.0110)	(0.0233)	(0.0236)
Secondary school	-0.0703***	0.0346	0.0357	-0.0811***	0.0289	0.0522**
	(0.00973)	(0.0269)	(0.0264)	(0.00822)	(0.0259)	(0.0266)
General high school	-0.109***	0.107***	0.00258	-0.119***	0.107***	0.0120

	(0.00754)	(0.0256)	(0.0250)	(0.00651)	(0.0254)	(0.0255)
Vocational high school	-0.111***	0.0637**	0.0470*	-0.120***	0.0515*	0.0688**
	(0.00746)	(0.0282)	(0.0280)	(0.00631)	(0.0278)	(0.0283)
College	-0.136***	0.112***	0.0244	-0.144***	0.194***	-0.0498**
	(0.00749)	(0.0269)	(0.0265)	(0.00642)	(0.0231)	(0.0228)

Mother's education level
  Illiterate (base)

Literate	-0.0423***	-0.00464	0.0469***	-0.0201***	-0.0514***	0.0715***
	(0.00581)	(0.0134)	(0.0129)	(0.00666)	(0.0137)	(0.0136)
Primary school	-0.104***	0.0448***	0.0589***	-0.0734***	8.82e-05	0.0733***
	(0.00580)	(0.00924)	(0.00802)	(0.00558)	(0.00917)	(0.00832)
Secondary school	-0.116***	0.106***	0.0102	-0.0774***	-0.00337	0.0808***
	(0.00455)	(0.0125)	(0.0120)	(0.00601)	(0.0140)	(0.0138)
General high school	-0.140***	0.175***	-0.0343***	-0.121***	0.176***	-0.0546***
	(0.00439)	(0.0120)	(0.0115)	(0.00555)	(0.0130)	(0.0123)
Vocational high school	-0.117***	0.0852***	0.0318**	-0.0928***	0.0713***	0.0215
	(0.00584)	(0.0154)	(0.0148)	(0.00754)	(0.0161)	(0.0153)
College	-0.130***	0.234***	-0.104***	-0.113***	0.194***	-0.0813***
	(0.00671)	(0.0123)	(0.0107)	(0.00838)	(0.0151)	(0.0136)

Income level 1 (base)

Income level 2	-0.0214***	0.0324***	-0.0109*	-0.0119***	0.0150**	-0.00307
	(0.00416)	(0.00669)	(0.00569)	(0.00409)	(0.00690)	(0.00608)
Income level 3	-0.0498***	0.0545***	-0.00468	-0.0520***	0.0557***	-0.00376
	(0.00447)	(0.00719)	(0.00615)	(0.00441)	(0.00752)	(0.00665)
Income level 4	-0.0736***	0.0951***	-0.0215***	-0.0746***	0.0774***	-0.00284
	(0.00503)	(0.00789)	(0.00671)	(0.00503)	(0.00842)	(0.00747)
Income level 5	-0.0549***	0.117***	-0.0624***	-0.0732***	0.154***	-0.0804***
	(0.0134)	(0.0162)	(0.0119)	(0.0117)	(0.0159)	(0.0130)

Years
  2004 (base)

2005	0.00550	-0.115***	0.109***	0.0310***	-0.134***	0.103***
	(0.00813)	(0.0135)	(0.0143)	(0.00888)	(0.0121)	(0.0129)
2006	-0.0205**	-0.149***	0.170***	0.0431***	-0.185***	0.142***
	(0.00811)	(0.0148)	(0.0161)	(0.00986)	(0.0127)	(0.0139)
2007	0.00484	-0.188***	0.183***	0.0758***	-0.224***	0.148***
	(0.00945)	(0.0153)	(0.0169)	(0.0113)	(0.0128)	(0.0145)
2008	0.00157	-0.233***	0.232***	0.0696***	-0.292***	0.223***
	(0.0101)	(0.0161)	(0.0181)	(0.0120)	(0.0129)	(0.0156)
2009	-0.0139	-0.253***	0.267***	0.0647***	-0.303***	0.238***
	(0.00853)	(0.0145)	(0.0165)	(0.0111)	(0.0121)	(0.0148)
2010	-0.0296***	-0.262***	0.291***	0.0443***	-0.306***	0.262***
	(0.00800)	(0.0143)	(0.0162)	(0.0102)	(0.0120)	(0.0143)
2011	-0.0399***	-0.257***	0.297***	0.0339***	-0.305***	0.271***
	(0.00786)	(0.0148)	(0.0166)	(0.0100)	(0.0123)	(0.0145)

Urban Residence	-0.0914***	0.0407***	0.0507***	-0.0117***	0.00232	0.00942***
	(0.00552)	(0.00679)	(0.00500)	(0.00221)	(0.00359)	(0.00332)
Birth ranking of the child	-0.0117***	0.00316	0.00858***	-0.0360***	0.00930	0.0267***
	(0.00229)	(0.00356)	(0.00309)	(0.00486)	(0.00683)	(0.00568)
Total child in the family	0.0360***	-0.0329***	-0.00312	0.0253***	-0.00793***	-0.0173***
	(0.00157)	(0.00248)	(0.00217)	(0.00153)	(0.00259)	(0.00244)
Attendance ratio	-0.0385	0.204**	-0.165**	0.165***	-0.107	-0.0582
	(0.0589)	(0.0893)	(0.0792)	(0.0594)	(0.0906)	(0.0867)
Total Student	-4.73e-05***	7.92e-05***	-3.18e-05**	-3.28e-05	7.34e-05	-4.06e-05
	(1.26e-05)	(1.79e-05)	(1.51e-05)	(3.53e-05)	(5.14e-05)	(4.36e-05)
# of general high school	0.000240	0.000298	-0.000538**	-0.000555***	0.000898***	-0.000343**
	(0.000165)	(0.000243)	(0.000213)	(0.000130)	(0.000192)	(0.000174)
# of vocational high school	-0.000116	-0.000472***	0.000588***	3.54e-05	-0.000388***	0.000353***
	(7.44e-05)	(0.000105)	(8.90e-05)	(7.48e-05)	(0.000109)	(9.57e-05)
Observations	42,585	42,585	42,585	44,914	44,914	44,914

Notes: The table shows marginal effects of variables on the probability of choosing one of three alternatives. Standard errors are in parentheses. Region effects are not demonstrated. *** p<0.01, ** p<0.05, * p<0.1.

We also repeated above analysis by replacing number of school by the per capita school numbers, results are in Table 4. Although similar effects are observed they are not as significant as in the previous table. One interesting result is that while an increase in the per capita number of vocational high schools increases the attendance probability of students to that type of school, an increase in the per capita number of general high school decreases that probability.

Table 4: Multinomial logit estimates with per capita school supply

Variables	Females			Males		
	Not attending	General high	Vocational	Not attending	General	Vocational
Father's education level						
Illiterate (base)						
Literate	-0.00259	-0.0402	0.0428	0.00917	-0.0281	0.0189
	(0.0151)	(0.0322)	(0.0318)	(0.0143)	(0.0294)	(0.0303)
Primary school	-0.0275**	-0.0217	0.0492**	-0.0223**	-0.0432*	0.0655***
	(0.0126)	(0.0251)	(0.0237)	(0.0110)	(0.0233)	(0.0236)
Secondary school	-0.0706***	0.0343	0.0363	-0.0810***	0.0289	0.0520*
	(0.00972)	(0.0269)	(0.0264)	(0.00823)	(0.0259)	(0.0266)
General high school	-0.110***	0.106***	0.00322	-0.119***	0.106***	0.0123
	(0.00757)	(0.0257)	(0.0251)	(0.00651)	(0.0254)	(0.0256)
Vocational high school	-0.111***	0.0629**	0.0480*	-0.120***	0.0510*	0.0693**
	(0.00747)	(0.0283)	(0.0281)	(0.00631)	(0.0278)	(0.0283)
College	-0.137***	0.112***	0.0246	-0.144***	0.194***	-0.0498**
	(0.00754)	(0.0270)	(0.0265)	(0.00641)	(0.0231)	(0.0228)
Mother's education level						
Illiterate (base)						
Literate	-0.0424***	-0.00458	0.0470***	-0.0201***	-0.0511***	0.0712***
	(0.00581)	(0.0135)	(0.0129)	(0.00665)	(0.0137)	(0.0136)
Primary school	-0.104***	0.0449***	0.0589***	-0.0731***	-8.48e-05	0.0732***
	(0.00582)	(0.00924)	(0.00803)	(0.00558)	(0.00917)	(0.00832)
Secondary school	-0.116***	0.105***	0.0105	-0.0772***	-0.00340	0.0806***
	(0.00464)	(0.0125)	(0.0120)	(0.00602)	(0.0140)	(0.0137)
General high school	-0.140***	0.175***	-0.0352***	-0.121***	0.176***	-0.0544***
	(0.00455)	(0.0120)	(0.0115)	(0.00556)	(0.0130)	(0.0123)
Vocational high school	-0.117***	0.0848***	0.0322**	-0.0926***	0.0710***	0.0216
	(0.00591)	(0.0154)	(0.0148)	(0.00757)	(0.0161)	(0.0153)
College	-0.130***	0.234***	-0.104***	-0.113***	0.194***	-0.0813***
	(0.00671)	(0.0123)	(0.0107)	(0.00841)	(0.0151)	(0.0136)
Income level 1 (base)						
Income level 2	-0.0213***	0.0320***	-0.0107*	-0.0114***	0.0141**	-0.00271
	(0.00416)	(0.00670)	(0.00570)	(0.00410)	(0.00690)	(0.00608)
Income level 3	-0.0496***	0.0541***	-0.00446	-0.0516***	0.0553***	-0.00368
	(0.00449)	(0.00720)	(0.00616)	(0.00442)	(0.00751)	(0.00665)
Income level 4	-0.0734***	0.0949***	-0.0215***	-0.0741***	0.0764***	-0.00238
	(0.00504)	(0.00789)	(0.00671)	(0.00504)	(0.00841)	(0.00746)
Income level 5	-0.0546***	0.117***	-0.0623***	-0.0724***	0.152***	-0.0796***

	(0.0134)	(0.0163)	(0.0119)	(0.0117)	(0.0159)	(0.0130)
Years						
2004 (base)						
2005	0.00582	-0.104***	0.0983***	0.0201**	-0.114***	0.0936***
	(0.00807)	(0.0133)	(0.0140)	(0.00820)	(0.0117)	(0.0125)
2006	-0.0199**	-0.136***	0.156***	0.0298***	-0.158***	0.128***
	(0.00804)	(0.0146)	(0.0157)	(0.00898)	(0.0121)	(0.0132)
2007	0.00579	-0.177***	0.171***	0.0590***	-0.195***	0.136***
	(0.00910)	(0.0147)	(0.0161)	(0.0101)	(0.0122)	(0.0136)
2008	0.00415	-0.219***	0.215***	0.0512***	-0.259***	0.208***
	(0.00948)	(0.0151)	(0.0169)	(0.0103)	(0.0121)	(0.0143)
2009	-0.0131	-0.244***	0.257***	0.0499***	-0.278***	0.228***
	(0.00867)	(0.0147)	(0.0166)	(0.00990)	(0.0115)	(0.0138)
2010	-0.0301***	-0.262***	0.292***	0.0328***	-0.290***	0.257***
	(0.00803)	(0.0144)	(0.0162)	(0.00919)	(0.0113)	(0.0134)
2011	-0.0410***	-0.264***	0.305***	0.0253***	-0.294***	0.269***
	(0.00779)	(0.0146)	(0.0164)	(0.00918)	(0.0116)	(0.0137)
Urban Residence	-0.0914***	0.0403***	0.0511***	-0.0117***	0.00238	0.00933***
	(0.00553)	(0.00680)	(0.00501)	(0.00221)	(0.00359)	(0.00332)
Birth ranking of the child	-0.0118***	0.00307	0.00873***	-0.0366***	0.00939	0.0272***
	(0.00229)	(0.00356)	(0.00309)	(0.00488)	(0.00683)	(0.00568)
Total child in the family	0.0360***	-0.0329***	-0.00313	0.0251***	-0.00789***	-0.0172***
	(0.00160)	(0.00248)	(0.00217)	(0.00153)	(0.00259)	(0.00244)
Attendance ratio	-0.0576	0.260***	-0.202**	0.108*	-0.00492	-0.103
	(0.0619)	(0.0935)	(0.0825)	(0.0598)	(0.0902)	(0.0853)
Total Student	-3.71e-05***	4.74e-05***	-1.03e-05	-0.000196***	0.000151***	4.44e-05
	(8.27e-06)	(1.21e-05)	(1.07e-05)	(2.68e-05)	(3.95e-05)	(3.47e-05)
Per capita general high school	42.85**	-10.93	-31.91	-2.886	0.368	2.518
	(21.86)	(32.78)	(28.85)	(3.690)	(5.533)	(5.105)
Per capita vocational high school	-23.32**	-21.03	44.35***	-3.533	-2.155	5.688*
	(11.29)	(16.42)	(13.89)	(2.313)	(3.380)	(2.956)
Observations	42,585	42,585	42,585	44,914	44,914	44,914

Notes: The table shows marginal effects of variables on the probability of choosing one of three alternatives. Standard errors are in parentheses. Region effects are not demonstrated. *** p<0.01, ** p<0.05, * p<0.1

5.2. Results from Nested Logit Model

By using nested logit model we estimated average marginal effects. The results are presented in Table 5. The results of nested logit model differ somewhat from the results obtained from the MNL model. The probability of attendance to high school is increasing as parental education increases for both genders. However, the observed effects of variables are greater than the MNL model. According to the nested logit model having a mother graduated from a general high school increases his/her probability of attending a high school by %23 while it is estimated as %14 with MNL. Further, contrary to the MNL the probability of attending vocational high school does not go down with increase in mother's education.

The effect of income on the probability of attending a high school is similar to the MNL model. However, nested logit model does not estimate any negative effect of income on attending a vocational high school while MNL model estimates significant negative effects for it.

Residing in an urban area increases the probability of attending a general high school more than attending a vocational high school. This was vice versa in MNL model.

As the number of both school types increases the probability of attending a high school increases. Increase in the number of vocational schools increases their probability of being chosen by both genders while it decreases the probability of choosing a general high school.

Table 5: Nested logit estimates

Variables	Females			Males		
	Not attending	General	Vocational	Not attending	General	Vocational
Father' education level						
Illiterate (base)						
Literate	-.00644	.0047	.00174	.00964	-.00638	-.00324
	.00351	.0026	.00102	.00522	.00371	.00197
Primary	-.0221	.0161	.00597	-.02717	.01804	.00914
	.01206	.0091	.00349	.01472	.01046	.00556
Secondary	-.08058	.0588	.02176	-.1034	.06865	.03479
	.04402	.0334	.01274	.05613	.03989	.02120
General	-.1501	.1096	.04056	-.1728	.11468	.05812
	.08216	.0624	.02378	.09388	.06672	.03545
Vocational	-.1539	.1123	.04157	-.1750	.11615	.05886
	.08422	.0640	.02437	.09508	.06757	.03591
College	-.1985	.1449	.05362	-.2213	.14690	.07444
	.10875	.0826	.03146	.12036	.08554	.04544
Mother's education level						
Illiterate (base)						
Literate	-.0064	.0047	.00174	.00964	-.00639	-.00324
	.00351	.0026	.00101	.00522	.00371	.00197
Primary	-.0964	.0703	.02604	-.0724	.04806	.02436
	.05270	.0400	.01525	.03927	.02791	.01484
Secondary	-.1713	.1250	.04627	-.0981	.06510	.03299
	.09377	.0712	.02713	.05322	.03782	.02010
General	-.2379	.1748	.06315	-.1644	.1091	.05523
	.31631	.23853	.08317	.0919	.0652	.03438
Vocational	-.1977	.1443	.05340	-.1313	.08717	.04418
	.10829	.0823	.03133	.07130	.05067	.02693
College	-.2192	.1602	.0589	-.2783	.18472	.09367
	.15904	.12004	.04407	.97343	.63325	.35983
Income level 1 (base)						
Income level 2	-.0213	.0155	.00575	-.0131	.00869	.00440
	.01161	.0088	.00336	.00709	.00504	.00268
Income level 3	-.0544	.0397	.01471	-.0533	.03543	.01795
	.02970	.0225	.00860	.02891	.02054	.01093
Income level 4	-.0761	.0555	.02056	-.0832	.05527	.02801
	.04151	.0315	.01202	.04510	.03205	.01705
Income level 5	-.0668	.0487	.01804	-.0933	.06197	.03141

	.03643	.0276	.01055	.05057	.03594	.01912
Urban Residence	-.0836	.0610	.02260	-.0421	.02799	.01419
	.04564	.0346	.01322	.02284	.01623	.00863
Birth Ranking of student	-.0139	.0101	.00376	-.0117	.00777	.00393
	.00760	.0057	.00220	.00634	.00450	.00239
Total child in the family	.03757	-.0275	-.0101	.02371	-.01573	-.0079
	.02049	.0155	.00593	.01283	.00912	.00485
Total student	-.00003	.00002	.00001	.00002	.00001	.00006
	.00002	.000018	.00006	.00009	.00007	.00003
# of general high school	-.0008	.0091	-.00836	-.0024	.01369	-.0112
	.00149	.0016	.002583	.00210	.00152	.00318
# of vocational high school	-.0018	-.0092	.010999	-.0013	-.01440	.01571
	.00183	.00294	.003043	.00201	.003261	.00381
Observation	42585	42585	42585	44914	44914	44914

Notes: The table shows marginal effects of variables on the probability of choosing one of three alternatives. Region effects are not demonstrated. Standard deviations are in parentheses. While we have marginal effects at mean (MEM) in MNL model, average marginal effects (AME) are estimated for nested logit model as there is no available command for this model to estimate MEM[6], that is why we report standard deviations instead of standard errors.

6. Conclusion

This study is an attempt to understand the main determinants of high school choice in Turkey. One of our main findings is that the lower the family income the higher is the probability that the student will continue a vocational high school - rather than a general high school- after completing 8-year education. This makes sense as the students coming from low income families would have more incentive to start working at younger ages than their friends coming from higher income families and vocational education allows them to enter labor market earlier. Similarly, higher the parental education higher the probability that the student will choose a general high school. This result may arise due to the fact that students with highly

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[6] Mfx, margins or margeff is not avaliable after nested logit estimation.

educated parents may be doing better in school and so pursue an academic career or it may be due to highly educated parents' ability to afford a longer education of their children more easily and so that their child do not need to start working early. Residence in urban areas decreases the probability of not attending any type of high school while having more siblings increases it. Number of a type of school has also positive effect on the choice probability of attending a high school. Hence, to increase attendance to high schools policies that involve building new schools could be effective. Giving subsidies to low income families may also help to reduce the inequality in education as income is found to be a significant factor affecting the choice attending a high school or not. Future studies may contribute to the literature by including the grade/ability of students in this analysis or direct measures of distance to the schools as explanatory variables.

Appendix A

Figure 1: Evolution of ratio of vocational over general school, division, classroom and student in Turkey.
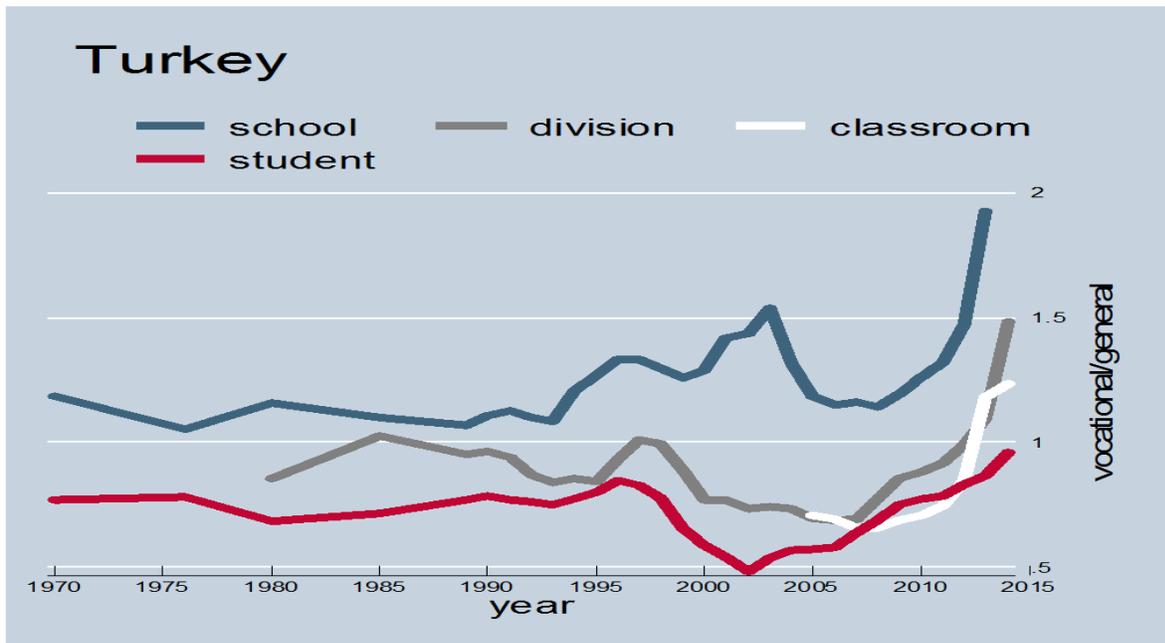

Figure 2: Evolution of ratio of number of vocational high school over number of general high schools according to regions.
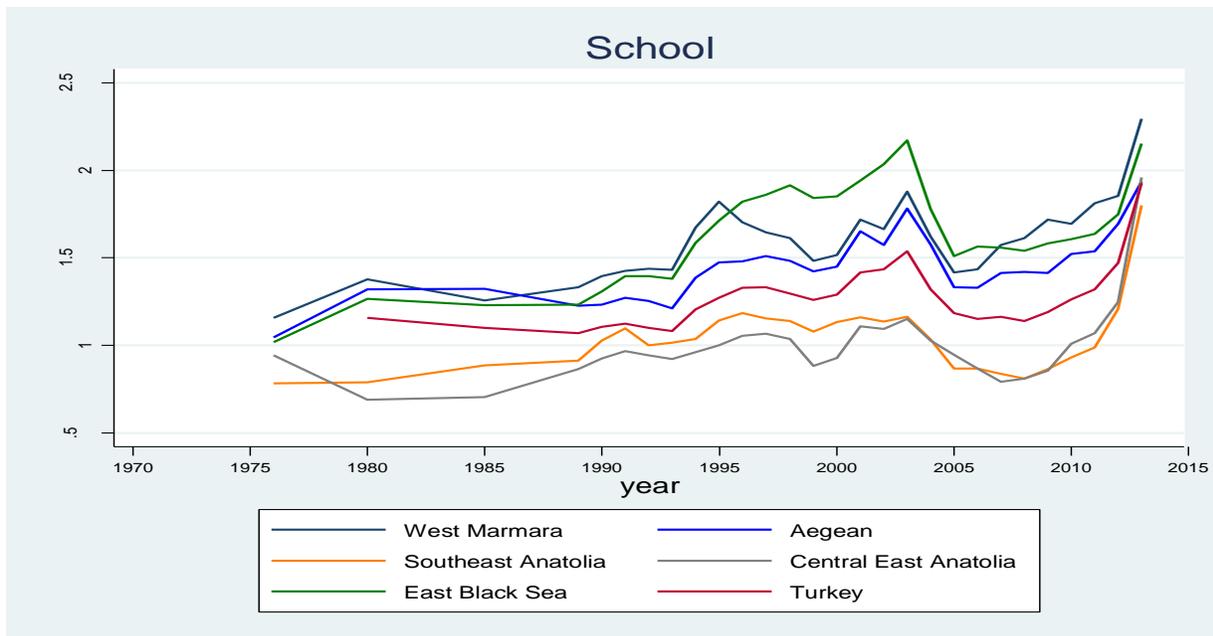
Figure 3: Evolution of ratio of number of students attending vocaional over number of students attending general high schools according to regions.
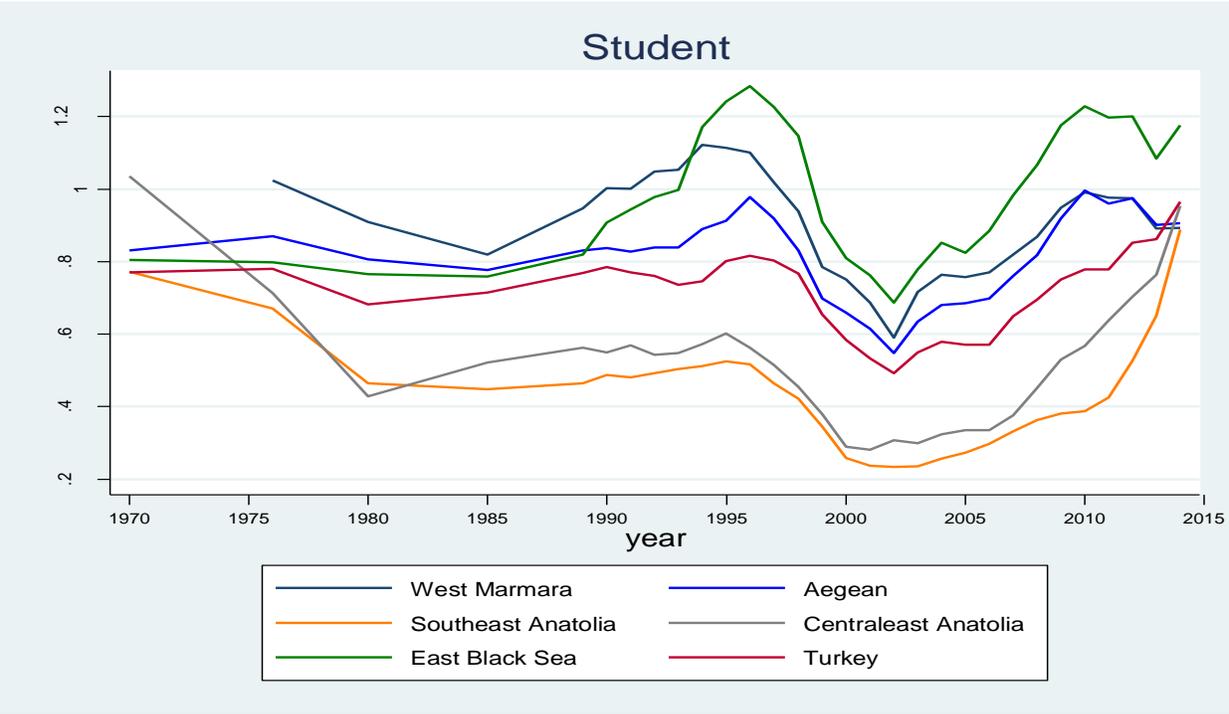
Table 6: Multinomial logit estimates with classroom numbers

Variables	Females			Males		
	Not attending	General	Vocational	Not attending	General	Vocational
Father's education level **Illiterate (base)**						
Literate	-0.0144	-0.0267	0.0411	0.0124	-0.0477	0.0353
	(0.0149)	(0.0343)	(0.0341)	(0.0154)	(0.0318)	(0.0342)
Primary school	-0.0273**	-0.0112	0.0386	-0.0246**	-0.0633**	0.0879***
	(0.0130)	(0.0269)	(0.0258)	(0.0116)	(0.0253)	(0.0264)
Secondary school	-0.0720***	0.0421	0.0299	-0.0851***	0.00457	0.0805***
	(0.00991)	(0.0285)	(0.0280)	(0.00850)	(0.0286)	(0.0299)
General high school	-0.108***	0.115***	-0.00674	-0.119***	0.0815***	0.0377
	(0.00776)	(0.0272)	(0.0266)	(0.00677)	(0.0287)	(0.0294)
Vocational high school	-0.112***	0.0706**	0.0410	-0.120***	0.0217	0.0984***
	(0.00768)	(0.0297)	(0.0295)	(0.00670)	(0.0305)	(0.0315)
College	-0.140***	0.121***	0.0189	-0.146***	0.178***	-0.0323
	(0.00769)	(0.0286)	(0.0281)	(0.00681)	(0.0266)	(0.0267)
Mother's education level **Illiterate (base)**						
Literate	-0.0419***	-0.00820	0.0501***	-0.0196***	-0.0529***	0.0725***
	(0.00609)	(0.0144)	(0.0141)	(0.00694)	(0.0143)	(0.0145)
Primary school	-0.0983***	0.0377***	0.0606***	-0.0723***	-0.00288	0.0752***
	(0.00616)	(0.0101)	(0.00901)	(0.00590)	(0.00993)	(0.00924)
Secondary school	-0.112***	0.0976***	0.0147	-0.0766***	0.00426	0.0723***
	(0.00492)	(0.0140)	(0.0135)	(0.00639)	(0.0149)	(0.0147)
General high school	-0.136***	0.176***	-0.0395***	-0.111***	0.181***	-0.0707***
	(0.00477)	(0.0134)	(0.0129)	(0.00640)	(0.0144)	(0.0135)
Vocational high school	-0.118***	0.0906***	0.0278*	-0.0981***	0.0908***	0.00729
	(0.00602)	(0.0164)	(0.0159)	(0.00746)	(0.0168)	(0.0161)
College	-0.126***	0.239***	-0.113***	-0.110***	0.203***	-0.0925***
	(0.00736)	(0.0138)	(0.0122)	(0.00884)	(0.0164)	(0.0150)
Income level 1 (base)						
Income level 2	-0.0175***	0.0227***	-0.00523	-0.00992**	0.0179**	-0.00794
	(0.00442)	(0.00736)	(0.00645)	(0.00434)	(0.00750)	(0.00674)
Income level 3	-0.0476***	0.0484***	-0.000884	-0.0453***	0.0539***	-0.00864
	(0.00471)	(0.00783)	(0.00690)	(0.00469)	(0.00810)	(0.00730)
Income level 4	-0.0673***	0.0905***	-0.0232***	-0.0745***	0.0842***	-0.00969
	(0.00532)	(0.00851)	(0.00743)	(0.00529)	(0.00896)	(0.00809)
Income level 5	-0.0484***	0.127***	-0.0788***	-0.0694***	0.153***	-0.0832***
	(0.0143)	(0.0172)	(0.0129)	(0.0125)	(0.0173)	(0.0146)

Years						
2005 (base)						
2006	0.0288***	0.109***	-0.137***	0.00969	-0.0453***	0.0356***
	(0.00863)	(0.0103)	(0.00650)	(0.00730)	(0.0107)	(0.0106)
2007	0.0123	0.0913***	-0.104***	0.0389***	-0.0939***	0.0549***
	(0.00816)	(0.0102)	(0.00699)	(0.00830)	(0.0111)	(0.0112)
2008	0.0461***	0.0450***	-0.0911***	0.0333***	-0.158***	0.124***
	(0.00930)	(0.0110)	(0.00738)	(0.00838)	(0.0111)	(0.0117)
2009	0.0472***	0.0144	-0.0617***	0.0290***	-0.179***	0.150***
	(0.00900)	(0.0107)	(0.00762)	(0.00798)	(0.0106)	(0.0113)
2010	0.0285***	-0.00457	-0.0239***	0.0180**	-0.186***	0.168***
	(0.00786)	(0.00991)	(0.00764)	(0.00781)	(0.0107)	(0.0114)
2011	0.0126*	-0.00831	-0.00430	0.0113	-0.187***	0.176***
	(0.00717)	(0.00931)	(0.00739)	(0.00790)	(0.0111)	(0.0117)
Urban Residence	-0.0126***	0.00801**	0.00459	-0.0107***	0.00420	0.00649*
	(0.00238)	(0.00383)	(0.00343)	(0.00232)	(0.00385)	(0.00366)
Birth ranking of the child	-0.0856***	0.0257***	0.0599***	-0.0419***	0.00637	0.0355***
	(0.00528)	(0.00682)	(0.00544)	(0.00485)	(0.00693)	(0.00606)
Total child in the family	0.0363***	-0.0360***	-0.000363	0.0226***	-0.00761***	-0.0149***
	(0.00165)	(0.00267)	(0.00239)	(0.00161)	(0.00277)	(0.00267)
Attendance ratio	0.0785	0.0474	-0.126	0.0923	-0.183**	0.0904
	(0.0602)	(0.0931)	(0.0850)	(0.0613)	(0.0925)	(0.0906)
Total Student	-1.56e-08	6.38e-07***	-6.22e-07***	3.55e-06	1.85e-05	-2.21e-05
	(1.48e-07)	(2.16e-07)	(1.91e-07)	(1.45e-05)	(2.19e-05)	(2.03e-05)
# of general high school	-0.00301***	0.00336**	-0.000357	-0.00140	0.00425***	-0.00285**
	(0.000969)	(0.00144)	(0.00128)	(0.000951)	(0.00145)	(0.00134)
# of vocational high school	0.000947	-0.00489***	0.00394***	-0.00125	-0.00202	0.00327***
	(0.000905)	(0.00128)	(0.00109)	(0.000889)	(0.00132)	(0.00116)
Observations	38,072	38,072	38,072	39,912	39,912	39,912

Notes: The table shows marginal effects of variables on the probability of choosing one of three alternatives. Standard errors are in parentheses. Region effects are not demonstrated. *** p<0.01, ** p<0.05, * p<0.1.

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