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Self-Selection and Selection Transition from Secondary to Tertiary Education in Hungary*

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Abstract: By law, students in Hungary, if they wish to study at the tertiary level, must submit a formal application (every year in February) and then must take an entrance exam (in June/July). When they pass this exam they are eligible to begin their studies (in September). This procedure divides the transition to tertiary education into two stages: self-selection (applying) and selection (passing the exam). Some of the recent literature in educational mobility claims that students make calculations before they deciding on whether to continue their studies, and this decision is affected by their social origin. This paper investigates the two stages of educational selection, with the assumption that the act of applying is more strongly determined by social origin than success, among those students who have applied, in passing the exam is. In the study, about 60 000 secondary school students were interviewed in a self-administered questionnaire in the spring of 1998, inquiring into whether they had submitted an application or not. The applicants were then identified in the autumn of 1998 in terms of whether they met the requirements of the exam and accepted into the tertiary level of education or not. The data contain basic information on the parents' occupation and education and the school performance of the students. These variables are used for predicting two dependent variables: application, and a successful exam among those who applied. The models were fitted by taking gender differences into consideration and were controlled for two types of secondary school: gymnasium and technical secondary school. The results show that self-selection is more strongly affected by social origin; the effect of the parents' characteristics drops if success in the exam is predicted among self-selected students.

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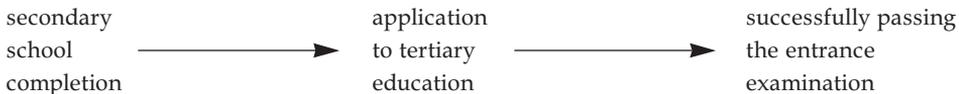
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The research subject

School progression and educational opportunities lie at the heart of sociological research on the reproduction of social inequalities. Educational expansion is a typical feature of modern societies; younger generations tend to attain a higher level of education than their parents. However, this general trend does not automatically lead to a decline in educational inequalities. The rising level of educational attainment raises the question how social origin affects the likelihood of school progression and the continuation of studies at the secondary or tertiary level.

In modern society, a growing proportion of jobs require a post-secondary school diploma. Consequently, the investigation into access to tertiary education forms a core issue in status attainment research. Research on school transition from secondary to tertiary education is also developing into a subject of relevance for policy decisions. This paper approaches the subject as a two-step selection procedure experienced by secondary school students. By law, students in Hungary, if they wish to study at the tertiary level, must submit a formal application (every year in February) and must then take an entrance exam (in June/July). Once they pass this exam they are eligible to begin their studies at the tertiary level (in September). This procedure divides the transition to tertiary education into two stages: self-selection (applying) and selection (passing the exam). Figure 1 presents a diagram that illustrates this process.

Figure 1. The two-step procedure of transition from secondary to tertiary education



The paper investigates the factors that influence both self-selection among students at gymnasiums and secondary technical schools, and success at the entrance examination for the (self-selected) applicants for tertiary education. We will first outline the theoretical background of the study and then present the data and variables employed. We will then turn to the empirical evidence based on the statistical analysis. The paper concludes with a discussion of the results.

Theories, previous research, and hypotheses

The title of the book *Persistent Inequalities*, edited by Shavit and Blossfeld [1993], is highly expressive. Indeed, various sociological, economic and psychological determinants seem to have a continuing impact on educational opportunities and choices. The classic Blau and Duncan [1967] model sought to investigate the influence that the father's occupation and education have on the highest level of education attained by

an individual. The analysis focused on the men's status attainment and included the father's occupation and education as measures of social origin. Later, Mare [1981], assessing the decisions for continuing at school, added the mother's education and parental income to the set of predictors. It is widely accepted that the father's characteristics represent the economic features of the family background, while the mother's characteristics represent the cultural features. This goes back to a traditional division of labour within families based on gender-specific differences between husband and wife [Parsons 1942]. In contemporary societies, however, women's participation in the labour force has increased, and the mother's occupational status is also expected to affect children's educational attainment [Dronkers 1995].

These days, the level of one's education is considered one of the main predictors of occupational success. According to the industrialisation hypothesis [Treiman 1970], the meritocratic principle is an essential driving force in the process of status attainment. The hypothesis of Increased Merit Selection (IMS) [Jonsson 1992] claims that merit becomes the key determinant of an individual's access to education and social position. However, as Goldthorpe [1996a: 263] shows, there is quite some discrepancy in the findings concerning the expected changes over time in the relations among origin, education and destination. Though several sociological investigations have confirmed the assumption of a trend towards the increasing effect of education and the decreasing effect of social origin on social status, empirical analyses indicate much less agreement on the impact social origin has on education. The industrialisation hypothesis also predicts a trend towards the declining effect of social origin on education. But several researchers report the effect not as decreasing but rather as stable or even increasing over time. At first glance, this is much more in line with the theory of cultural and educational reproduction, one of the concepts we intend to apply in this paper. However, the persistence or even the return of the effect of social origin on education does not necessarily result in the rejection of the industrialisation hypothesis. Luijkx et al. [1998; 2002] performed refined analyses on the status attainment process in Hungary using large-scale and long-term data and found definite non-linear effects and a return of the trend towards the declining impact of social origin on education. This result was interpreted as a confirmation of the modernisation theory, on the grounds of the declining economic performance in Hungary at the end of the 1980s and the beginning of the 1990s.

Shavit and Blossfeld [1993] found that secondary education had in most societies become more general and widespread while the transition to tertiary education was still selective and dependent on social characteristics. However, predictions have not been uniform in this respect either. Boudon's assumption [1974] is that the impact of social origin becomes larger as one moves up the hierarchy of the educational system. Conversely, Mare [1981] has argued that students constitute a more selective group at higher levels of the educational structure, and consequently social origin matters less at the higher than the lower level of the system. If this is true, educational expansion could even increase the influence of family background on school progressions.

Ascription affects educational attainment with respect to at least two other aspects – region and gender. Simkus and Andorka [1982: 749] reached the conclusion that “place of residence had significant effects on educational progression even net of the effects of father’s occupation”. Regional differences in Hungary are partly expressed in the Budapest versus the-rest-of-the-country division, which provides unequal chances for both educational attainment and a person’s career in the labour market. In addition, smaller settlements offer only few possibilities for continuation in education, e.g. there is only one secondary school in the town and daily commuting is still not well developed and organised. Thus, the continuation of studies is definitely a more difficult decision for students (families) in smaller settlements.

Gender inequalities are an important viewpoint for consideration when investigating educational chances and choices. Studies on educational attainment or progression agree that gender differences in the education level of men and women have strongly declined in recent decades [cf. Blossfeld and Shavit 1993: 13. Table 1.1]. This phenomenon is connected to the increasing participation of women in the labour force in post-industrial (service) societies [Esping-Andersen 1993]. However, this trend has not led automatically to the elimination of gender differences in access to higher education, just as educational expansion did not eliminate educational inequalities. In a review of this topic, Jacobs [1996: 177] reached the conclusion that “gender inequality in the United States is now less a matter of inequality in access, and more matter of gender differentiation in educational experiences and outcome”. He also called for more attention to be devoted to gender differences in the educational decision-making process. In Hungary, results from related research have indicated the presence of a gender-specific pattern of school continuation: after completing the primary level of education, girls are more likely to go to gymnasiums and boys are more likely to go to secondary technical schools [Róbert 1991]. Heyns and Bialecki [1993] reported a similar tendency in educational choices in Poland. On the average, there is a surplus of women in secondary schools who are eligible for tertiary education upon completion of their secondary education. However, previous research has revealed that nonetheless men have better relative chances for entry into tertiary education than women [Róbert 1991].

Tracking in secondary schooling has an impact on the chances of entry into tertiary education, too. Gymnasiums featuring a curriculum that is stronger academically provide students with a higher level of knowledge for passing the entrance examination in comparison with secondary technical schools, where there is more emphasis on practical skills and information in the curriculum.

Recent literature on educational mobility distinguishes between two theoretical explanations for the reproduction of educational inequalities: the cultural reproduction thesis and the rational action theory. The former argues that parental cultural differences have a strong impact on success at school; the offspring of high status families have the very skills and abilities – in fact transmitted to them through the family – which are rewarded by schools. Consequently, these students will be less likely to leave the educational system at lower stages and will also be more suc-

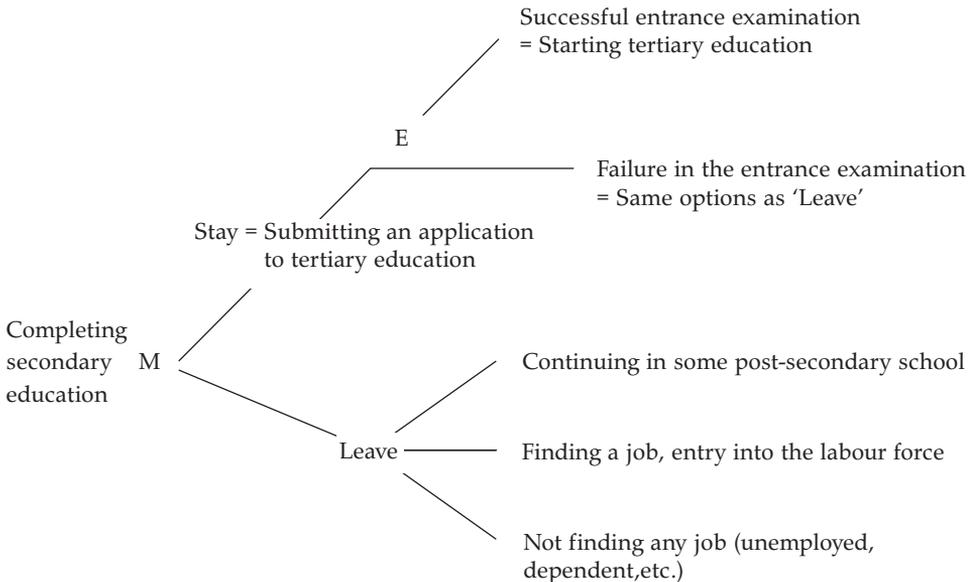
cessful in the school transition to higher levels of education [Bourdieu and Passeron 1977]. While functionalists claim that in modern societies selection in the labour market is based on educational credentials, the cultural reproduction theory follows the argumentation of conflict theories. Educational credentials, based on the cultural capital of the parental family, are actually the means employed by privileged and dominating social groups to maintain their advantages and to legitimate social differentiation and unequal social opportunities [Collins 1971].

Previous studies on educational inequalities using a larger set of predictor variables found that the effect of material circumstances tends to decline over time in Western countries [De Graaf 1986; 1988] and that cultural resources influence educational attainment more strongly than material ones in socialist societies [Mateju 1990; Ganzeboom, Graaf and Róbert 1990; Róbert 1992]. In the analysis of more recent data from Hungary, however, it is possible to argue that, owing to the general increase in social inequalities, the role of the family's financial situation has now started to play a stronger role in educational choices than it did before the collapse of communism [Bukodi 1999].

The other theoretical explanation of educational inequalities – the rational action theory – is frequently labelled as an economic theory in contrast to the former, culturally based theory. The concept was introduced by Boudon [1974] in his distinction between the primary and the secondary effects that influence educational attainment and produce inequality in educational opportunities (IEO). Primary effects include social origin, and the influence of family background and the cultural climate on abilities and school achievement. This is more or less in line with the approach of the cultural reproduction theory. Secondary effects refer to the decisions made concerning the continuation of education on a higher level. The educational system is a hierarchical one, and at certain points during their educational career students must make decisions on whether to leave the system or to stay and continue their studies. Furthermore, if the educational system provides the students with options and includes tracking at the same level, the decision contains another choice as to where or in what kind of institution pupils want to continue their studies. According to Boudon, these decisions are based on an estimation of costs and benefits that parents and children engage in before making a choice, and these secondary effects are stronger determinants of educational attainment than the primary effects are.

In order to explain IEO in the Irish case, Raftery and Hout suggested a rational choice explanation of a kind stating, “students and their families base decisions about continuing their education on ... evaluations of the associated costs and benefits”. “When the benefits exceed the costs, the individual chooses to continue, if possible” [Raftery and Hout 1993: 57]. They assumed that the higher the father's education, the larger the perceived benefits of education at a higher level, and, consequently, that children from better educated families will be less likely to leave the educational system. Similarly, the better the financial situation of the family the smaller the perceived costs of school progression, because any kind of cost is usually higher for families with lower income.

Figure 2. Decision tree for students completing secondary education



Source: Adapted on the basis of the figure from Breen and Goldthorpe [1997: 280].

Boudon's concept of rationality in educational decisions was used by Goldthorpe [1996b] and Breen and Goldthorpe [1997] for explaining persisting differences in educational attainment on a more abstract, generalised and formalised level. In line with the human capital investment theory [Becker 1975], Goldthorpe considers education as an investment that serves several possible goals. By investing in education, one can obtain necessary qualifications, which are sufficient for the purpose of (1) maintaining an advantageous class position, or (2) providing good access to high status jobs and realising inter-generational upward mobility, or (3) avoiding downward mobility within society. However, families in a privileged or less privileged class position differ with respect to their evaluation about (1) which level of education best serves any of the above goals, and (2) what costs they are ready or able to pay for in return for the benefits that any of the above goals can offer them. Breen and Goldthorpe [1997: 280. Figure 1] developed a decision tree for modelling educational choices. The options stemming from the application of this model to our research problem are shown in Figure 2.

This study does not intend to investigate all the possible transitions displayed on this figure but with rather focus on two decisions. The first decision (M in the fig-

ure) is made by the student ('maturandus') and represents the self-selection part of the entire procedure. Those who decide not to try to enter tertiary education can either go to some other post-secondary school or can start to work, if they are able to find a job with their secondary-level qualifications. If they cannot find a job they will be unemployed or will stay at home as a dependent. But this path, following the first decision, is unfortunately not covered by the present data. The second decision (E in the figure) is made by the Entrance Examination Committee of the given university or college where the applicant has sat his/her entrance examination. This is the selection part of the process, when the achievement of the applicant is measured¹ and it is determined whether he/she can start to study at the tertiary level. Our data covers the outcome of this second step, too.

The main hypothesis of the analysis is that self-selection is a stronger determinant than selection. Following the logic of rational action theory, secondary school students (and their families) calculate the costs and benefits of school progression to the tertiary level and decide whether to submit an application to any university or college (stay) or not (leave). Applicants to tertiary education who come to the entrance examination are a selected group of students. This hypothesis claims that – if using the same set of predictors for modelling the transition from secondary to tertiary education – the social determination of the decision based on individual calculation will be stronger than the determination of the selection of applicants in the entrance examination procedure.

The independent variables involved in the model contain three groups of measures:

- ascription (different measures of social origin, place of residence, gender);
- achievement (school performance);
- institution (type of secondary school).

With respect to the variables referring to the ascription criteria, other hypotheses of the analysis claim that the father's and the mother's characteristics are significant predictors and that the parents' education has a stronger impact than the parents' occupation. This is a persistent phenomenon, observed in most of the previous studies on the intergenerational transmission of educational inequalities. Family income matters, but plays a smaller role than the parents' occupation or education. The assumption is that this is because, on the one hand, income is a consequence of educational and occupational credentials, and, on the other hand, we are analysing only a selected group of students who have already undergone a se-

¹ For a successful entrance examination, applicants must obtain the necessary scores. Entrance examinations vary at different institutions. On the one hand, results from the secondary school diploma contribute to the scores the student can collect. On the other hand, there is a written and/or an oral entrance examination where applicants can gain additional scores. The main variation in the procedure stems from the fact that certain institutions (mostly colleges) skip the written part of the examination. They invite the students to an oral examination on the basis of their results from the final examination at the secondary school ('maturita').

lection procedure in the transition from primary to secondary education. Gender differences operate in favour of men because men represent a more select group among the students at secondary schools who are eligible to continue their studies at the tertiary level. Another gender-specific assumption is that the mother's characteristics have a stronger influence on school progression, especially for female students. Regional differences matter but play a smaller role in determining the transition from secondary to tertiary education in comparison to other social and economic characteristics of the family. The place of residence may have a stronger impact on the educational transition of women because they may be more dependent on the circumstances of the local educational market if their parents are more reluctant to send them to universities or colleges far from their place of residence.

Hypotheses about the role of achievement point to a strong positive relationship between school performance and the transition from the secondary to the tertiary level of education. This effect is expected to be bigger for students from families of lower status or from smaller and less urbanised settlements because they tend to overestimate the costs of school continuation and require stronger proof of the cognitive abilities of the student in order to reach a positive decision on the application. The same holds true for male students, in comparison with female students, and for pupils from secondary technical schools, in comparison with gymnasiums, as for them too the calculation of the costs and benefits is influenced more by stronger evidence of their learning abilities.

The institutional hypothesis says that students from a gymnasium have a better chance of entering tertiary education compared to students from secondary technical schools owing to the academically stronger curriculum at the former institution. Men and students from lower-status families have a better chance of entering tertiary education if they come from a gymnasium. Both of these groups represent more select groups of students, as there are fewer men and fewer students from low-status families at gymnasiums.

The main effects of the independent variables can test a part of these hypotheses. But other parts of the hypotheses can be confirmed or rejected only by introducing the appropriate interaction terms between the independent variables. This practice will be applied in the analysis.

Data, measures, and methods

The data applied in this analysis is from a self-administered survey among fourth-year secondary school students. The survey was carried out in the spring of 1998.² The initial plan was to interview all Hungarian students who were to obtain their secondary school diploma in 1998 and were eligible to continue their studies at the

² The questionnaire for the survey was prepared by a group of sociologists at the Institute of Sociology, Eötvös Lóránd University in Budapest and the fieldwork was also carried out by Institute. The research was financed by the Soros Foundation in Budapest.

tertiary level. In Hungary, this means students who had completed gymnasium (ISCED3A); students who obtained their secondary school diploma from a secondary technical school (ISCED3B). Those students who decided to attend vocational training (apprenticeship) (ISCED3C) after their primary education were not considered because this option does not make anyone eligible for tertiary education. Official statistics show that the gender distribution differs markedly in these three types of secondary schools. In 1999/2000 the share of women at gymnasiums was 60%. At secondary technical schools the male-female ratio was roughly equal, while at vocational schools men made up a nearly two-thirds (64%) majority of the student body [Halász and Lannert 2000: 135]. Consequently, as far as the gender composition of the eligible 'input population' for tertiary education is concerned, the process is more selective for men than women.

The questionnaire focused on the fact of whether these students had submitted an application to tertiary education or not. Students were also asked about their family background as well as school achievement. Some months later, in the autumn, the register of the Ministry of Education was used to identify the successful applicants who had managed to pass the entrance examination to tertiary education. As far as the number (N) of cases is concerned, about 60 000 students filled in the questionnaire, about 30 000 students submitted an application to tertiary education, and about 15 000 students were identified as freshmen in a school at the tertiary level in the autumn of 1998.³

There are two dependent variables, coded as 1 and 0: the first variable refers to the act of applying to tertiary education or not, and the second refers to success or failure in the entrance examination.

The independent variables consist of measures for the parental family:

- occupation of the father and mother (manager, professional, clerical worker, self-employed with employees, self-employed without employees, skilled worker, unskilled worker);
- education of the father and mother (university, college, gymnasium, technical secondary, apprenticeship + secondary, apprenticeship, primary);
- a self-ranking five-point scale for per capita family income based on the student's statement, which did not contain a precise sum of money but a placement on the scale.

Student achievement is measured by performance in mathematics, literature, history and a foreign language. In Hungary, student performance is measured on a

³ There was no formal sample in this survey; interviewers attempted to visit all secondary schools in Hungary. However, a few of them did not allow their students to fill in the questionnaire, and some students also did not want to answer the questionnaire, as it was, of course, not compulsory to do. Some other students were not present when the interviewers visited the school. These missing cases are considered random; the data set contains roughly 90% of the 'sampling frame'. I am indebted to Mihály Csákó, leader of the project, who made this data available to me.

five-point scale, in which '5' is the best and '1' is the worst mark. The arithmetic mean has been calculated from these four scales as an aggregate index for educational performance.

Further controls included in the models in line with the theoretical considerations and hypotheses are place of residence (Budapest, county seat, town, village), gender (male=1) and type of secondary education (gymnasium=1).

Since the dependent variables measure an event (submitting an application to tertiary education, passing the entrance examination), logistic regression was applied as the statistical method of analysis. Most of the independent variables are coded as indicator variables or dummy variables, except for the level of school performance. In order to test the related hypotheses, interactions between gender, type of secondary school, educational performance and the other predictor variables were added to the model with the main effects. The models were estimated in two steps: the first contains the coefficients for the main effects and the second includes the coefficients for the significant interaction terms.⁴

Findings

The socio-demographic composition of groups of students by gender and type of institution

In this section, the socio-demographic composition of the various sub-groups of the investigated population is described. Table 1 presents the distribution of fourth-year secondary school students in Hungary according to the independent variables involved in the analysis.

Social characteristics differ considerably according to the type of school. The parental social status of students is higher at gymnasiums. The proportion of manager or professional fathers is roughly twice as much at gymnasiums as at secondary technical schools. At secondary technical schools one-half of the fathers are skilled workers, while the corresponding figure at gymnasiums is one-third. At the gymnasiums one-half of the mothers are professionals, while the corresponding proportion at secondary technical schools is one-third. At the gymnasiums about 40% of the fathers and mothers have attained tertiary education, while at secondary technical schools the corresponding percentage is about 15%. The proportion of those

⁴ The level of significance and the application of the test of significance represent another problematic point of the analysis in a strict statistical sense. Formally, the values on the significance of the estimates provided by the logistic regression method could be considered only if we analysed a sample drawn from the population. The former footnote explained the situation in this respect. But under any circumstances, we could perhaps argue that the population that was interviewed in 1998 could be regarded as a 'sample' representative of Hungarian fourth-year secondary school students from the second half of the 1990s.

Table 1. Characteristics of the sub-groups of secondary school students, Hungary, 1998
Part 1

Category	Students at a gymnasium	Students at a technical secondary	Boys at a gymnasium	Girls at a gymnasium	Boys at a technical secondary	Girls at a technical secondary
Gender						
– Male	37.5	49.0	–	–	–	–
– Female	62.5	51.0	–	–	–	–
Father's occupation						
– Manager	9.4	5.1	12.1	7.7	6.9	3.5
– Professional	28.2	13.3	30.9	26.5	14.6	12.0
– Clerical	2.4	2.0	2.5	2.4	2.1	1.9
– Self-empl. with empl.	5.4	4.0	5.5	5.3	4.6	4.3
– Self-empl. without empl.	18.0	15.3	18.4	17.8	15.8	14.9
– Skilled worker	32.2	52.5	27.0	35.4	50.3	54.8
– Unskilled worker	4.3	7.2	3.5	4.8	5.8	8.6
Mother's occupation						
– Manager	7.8	4.7	9.3	6.9	5.8	3.8
– Professional	49.1	33.5	52.2	47.2	36.9	30.3
– Clerical	7.9	8.3	7.6	8.0	8.3	8.2
– Self-empl. with empl.	3.4	2.4	3.4	3.4	2.4	2.4
– Self-empl. without empl.	9.2	7.7	9.4	9.0	8.0	7.4
– Skilled worker	16.3	29.5	13.5	18.0	27.7	31.3
– Unskilled worker	6.4	13.8	4.6	7.5	10.9	16.6
Father's education						
– University	22.0	5.7	27.4	18.8	7.0	4.4
– College	18.6	9.9	21.3	17.0	11.7	8.1
– Gymnasium	7.8	5.5	7.5	8.0	5.6	5.4
– Technical secondary	16.9	17.5	16.2	17.4	19.0	16.0
– Apprenticeship + secondary	7.4	10.3	6.5	7.9	10.7	10.0
– Apprenticeship	23.8	44.7	18.4	27.2	40.9	48.3
– Primary level	3.4	6.5	2.8	3.7	5.2	7.9
Mother's education						
– University	14.5	3.1	18.5	12.1	4.2	2.0
– College	26.1	11.9	29.1	24.3	14.1	9.9
– Gymnasium	20.0	18.7	19.5	20.4	20.6	16.9
– Technical secondary	15.4	16.8	14.2	16.0	16.1	17.5
– Apprenticeship + secondary	5.2	9.5	5.1	5.3	10.4	8.6
– Apprenticeship	11.9	25.8	8.6	13.8	23.8	27.6
– Primary level	6.9	14.2	5.0	8.0	10.8	17.4
Family income per capita						
– upper	10.9	5.8	15.4	8.1	7.5	4.2
– upper-medium	21.0	15.2	24.3	19.0	17.7	12.7
– medium	32.2	32.1	31.1	33.0	33.3	31.0
– lower-medium	30.3	39.2	34.6	33.7	35.1	43.3
– lower	5.6	7.7	4.5	6.3	6.4	8.9
Place of residence						
– Budapest	20.5	14.8	23.5	18.6	15.5	14.2
– County seat	25.0	23.3	25.1	24.8	23.7	22.8
– Town	28.5	26.6	28.1	28.8	27.2	26.0
– Village	26.0	35.3	23.3	27.8	33.5	37.0
Mean of educ. performance	3.9	3.4	3.8	4.0	3.2	3.5
N of cases	24802	36006	9295	15507	17660	18346

belonging to the upper group of family per capita income is also twice as much at gymnasiums as at secondary technical schools. These figures show a strong selection effect from the previous transition from primary to secondary education. In fact, previous research on educational inequalities in Hungary reveals that, for continuing in study at the secondary level (but not in the case of vocational training), it matters very much if someone goes to a gymnasium or to a secondary technical school [Simkus and Andorka 1982; Róbert 1991; Szelényi and Aschaffenburg 1993; Bukodi 1999]. This choice between the academic and non-academic track (ISCED3A or 3B) does not affect eligibility to tertiary education, but has an influence on the odds of achieving a successful entrance examination. It also means that we must consider this fact when interpreting our institutional effects.

The types of secondary schools differ with respect to regional distribution; students in gymnasiums are over-represented in Budapest, as this institution is a much more available option at the secondary level of education in the Hungarian capital.

There are considerable differences in the social composition of men and women at both types of secondary schools; men tend to come from families with a higher status. The men's parents have a higher occupational position and educational level than the women's parents. The financial circumstances of the men are better than that of the women, too, both at gymnasiums and at secondary technical schools.

In terms of achievement, the bottom line of Table 1 indicates that the students at gymnasiums perform better than the students at secondary technical schools. Furthermore, women perform somewhat better than men at both types of secondary schools.

The socio-demographic composition of sub-groups of students: leavers, and unsuccessful and successful applicants

Table 2 compares the sub-groups of the fourth-year secondary school students based on the dependent variable of the analysis; this means distinguishing among the groups of those who did not apply for school progression, those who applied, those who did not successfully pass the entrance examination, and those who passed the examination successfully and are able to begin their studies at the tertiary level.

Students in the group of applicants tend to have a much better social background than those students who have decided to leave the educational system. The proportion of fathers in managerial or professional positions is twice as high for the former group as for the latter. Among more than one-half of the dropouts the father is employed in the position of a skilled-worker, while among the group of applicants the corresponding proportion is one-third. The proportion of mothers in managerial positions is also twice as high among the applicants as among the leavers.

The difference between the two groups is even sharper from the viewpoint of parental education: among the applicants, four times as many fathers and six times as many mothers have a university degree. With regard to a college degree, the dif-

Table 2. Characteristics of the sub-groups of secondary school students, Hungary, 1998
Part 2

Category	All students	Non-applicants to the tertiary level	Applicants to the tertiary level	Un-successful applicants	Successful applicants
Gender					
– Male	44.3	46.6	42.3	42.3	42.2
– Female	55.7	53.4	57.7	57.7	57.8
Father's occupation					
– Manager	6.9	4.1	9.2	8.2	10.3
– Professional	19.5	11.7	25.9	23.9	28.1
– Clerical	2.2	2.0	2.3	2.2	2.5
– Self-employed with employees	4.9	4.0	5.6	5.9	5.2
– Self-employed without empl.	16.5	15.3	17.4	18.6	15.9
– Skilled worker	44.0	54.7	35.6	36.9	34.1
– Unskilled worker	6.0	8.3	4.1	4.3	3.9
Mother's occupation					
– Manager	6.0	3.8	7.8	7.4	8.2
– Professional	40.0	30.8	47.5	44.5	50.9
– Clerical	8.1	8.0	8.2	8.4	7.9
– Self-employed with employees	2.9	2.3	3.2	3.6	2.8
– Self-employed without empl.	8.3	7.8	8.7	9.5	7.8
– Skilled worker	24.0	31.6	18.0	19.2	16.6
– Unskilled worker	10.7	15.8	6.6	7.3	5.8
Father's education					
– University	12.4	4.4	19.0	17.0	21.3
– College	13.5	8.3	17.8	17.2	18.4
– Gymnasium	6.5	5.8	7.0	7.0	7.0
– Technical secondary	17.3	15.8	18.5	18.3	18.8
– Apprenticeship + secondary	9.1	10.3	8.1	8.5	7.6
– Apprenticeship	36.1	48.0	26.2	28.3	23.8
– Primary level	5.2	7.4	3.4	3.7	3.1
Mother's education					
– University	7.8	2.4	12.3	10.6	14.1
– College	17.8	10.2	24.1	22.7	25.8
– Gymnasium	19.3	17.9	20.4	20.6	20.1
– Technical secondary	16.2	15.4	17.0	16.9	17.1
– Apprenticeship + secondary	7.7	9.5	6.2	7.0	5.4
– Apprenticeship	20.1	28.2	13.3	14.8	11.6
– Primary level	11.2	16.5	6.8	7.4	6.0
Family income per capita					
– upper	7.9	5.3	10.0	10.7	9.2
– upper-medium	17.5	15.0	19.7	19.6	19.8
– medium	32.1	30.5	33.5	31.7	35.5
– lower-medium	17.5	40.3	31.6	32.1	31.1
– lower	7.9	8.8	5.2	5.9	4.3
Place of residence					
– Budapest	17.1	16.2	17.9	19.7	15.7
– County seat	24.1	20.5	26.9	25.2	28.9
– Town	27.3	26.4	28.2	27.6	28.9
– Village	31.5	36.9	27.1	27.6	26.5
Mean of educational performance	3.6	3.1	4.0	3.8	4.3
N of cases	60284	27436	32848	17588	15260

ference is also about twice as much in the case of the father and the mother. As data on family per capita income indicate, the applicants come from families in better financial circumstances than the dropouts do. While regional differences are smaller, those coming from larger and more urbanised settlements are over-represented among the applicants in comparison with leavers.

Achievement also varies among the different sub-groups of the fourth-year secondary school students. In what would seem to be proof of the presence of rational hopes and expectations, the educational performance of the applicants is better by almost one grade (on a five-point scale) as compared to that of the leavers. Students seem to evaluate themselves very critically and perhaps also rationally. If their marks are not good enough, they do not dare to submit an application to tertiary education.

By and large, the other two sub-groups, the successful and the unsuccessful applicants, show much less variation with respect to socio-demographic characteristics than that observed among the applicants and dropouts. Nevertheless, students with parents in managerial and professional positions or with university degrees are over-represented in the group of successful applicants. However, the financial circumstances of the students in these two groups differ surprisingly less. Moreover, successful applicants are even slightly under-represented among those who live in Budapest.

Educational performance also varies in the two sub-groups of applicants; indeed, successful applicants performed better at secondary school than unsuccessful applicants. However, there is a smaller difference in the mean of school performance between successful and unsuccessful applicants than the difference between applicants and leavers. The students' self-assessments seem to reflect their real capabilities more than the outcome of the selection procedure of the entrance examination committees of the universities or colleges.

The socio-determination of self-selection and selection: main effects

Having presented the descriptive statistics of the data and the bivariate relationships between the dependent and independent variables, we turn now to the multivariate analysis, in which the influence of the predictor variables is controlled. We ran one analysis (Model 1) for the application and another analysis (Model 2) for success in the entrance examination. Both models were fitted on the data twice; first we had only the main effects (the a-models) and second we added the interaction terms (the b-models). Table 3 provides information on the fit statistics and makes it possible to highlight the results in a condensed way.

Model 1a and 1b, investigating application and entrance to the tertiary education respectively, are alike and have the same set of independent variables (as the identical degree of freedom = 34 indicates). We have larger χ^2 in the first than in the second model. In addition, the R^2 value is much larger (.528) when predicting application than when predicting success in the examination (.161). It is therefore

Table 3. Fit statistics for the models fitted to the data, Hungary, 1998

Fit statistics	Application to tertiary education		Success in the entrance examination	
	Model 1a. (main effects)	Model 1b. (interactions)	Model 2a. (main effects)	Model 2b. (interactions)
-2 Log Likelihood – initial	54928.023		32185.054	
– model	34819.168	34627.101	29198.448	29134.674
Goodness of fit	38230.374	39143.235	23280.336	23292.077
Negelkerke’s R-Square	.528	.532	.161	.164
Model Chi-Square	20108.855	20300.992	2986.606	3050.380
Df	34	61	34	47
Difference of chi-Square		192.137		63.774
Difference of df		27		13
Pct of correctly classified cases	79.48	79.60	64.96	65.24

possible to say that the decision on application (self-selection) is more strongly affected by the same set of social determinants than entry into a tertiary-level school (selection) is. Obviously, the results of the second model come from an equation of data referring to a (self-)selected group of students.

Unlike the models containing only the main effects, we cannot compare the models with the interaction terms in the same way, as different number of interactions turned out to be significant for Model 1b and 2b (the value of the degree of freedom differs in the two models). Instead, we can compare the model with interaction terms to the corresponding model with the main effects. For application (Model 1a and 1b), there is a small increase in the R^2 value, and there is an acceptable increase of χ^2 for the increase in the value of degree of freedom. Both of these measures indicate much less improvement for entry into tertiary education (Model 2a and 2b). In a strict statistical sense, the interaction terms do not add much to the model. Nonetheless, we will present the models with the interactions because they reveal some meaningful elements of the mechanism as being effective for transition from secondary school to tertiary education in Hungary.

Turning to the estimates, Table 4 displays the main effects of the independent variables on the probability of placing an application to tertiary education (Model 1a) and the probability of passing successfully the entrance examination (Model 2a).⁵

⁵ Models 1a and 2a present the estimations in which independent variables control each other, but there are no controls for interaction terms. Model 1b and 2b includes the complete equations with the significant interaction terms. Table 5 displays the estimates for the interaction terms.

Table 4. Determination of self-selection and selection, Hungary, 1998: main effects

Predictors	Application to tertiary education				Success in the entrance examination			
	Model 1a.		Model 1b.		Model 2a.		Model 2b.	
	B + Sig.	Exp(B)	B + Sig.	Exp(B)	B + Sig.	Exp(B)	B + Sig.	Exp(B)
Educational performance	1.80***	6.06	1.65***	5.22	.99***	2.70	1.00***	2.71
Father's education								
– University	.77***	2.16	.63***	1.87	.00	1.00	.02	1.02
– College	.55***	1.74	.38***	1.47	-.05	.95	-.04	.96
– Gymnasium	.22*	1.25	.02	1.02	.08	1.08	.09	1.10
– Technical secondary	.34***	1.41	.24**	1.27	.04	1.04	.05	1.05
– Apprenticeship + secondary	.10	1.10	-.00	1.00	-.05	.95	-.04	.96
– Apprenticeship	.05	1.05	.02	1.02	-.02	.98	-.01	.99
Mother's education								
– University	.95***	2.59	.92***	2.50	.16	1.17	.16	1.17
– College	.72***	2.06	.70***	2.01	.15	1.16	.15	1.16
– Gymnasium	.47***	1.61	.46***	1.58	.08	1.08	.07	1.08
– Technical secondary	.46***	1.58	.43***	1.54	.09	1.10	.09	1.10
– Apprenticeship + secondary	.35***	1.42	.34***	1.40	-.01	.99	-.02	.98
– Apprenticeship	.08	1.08	.06	1.07	.01	1.01	.01	1.01
Father's occupation								
– Manager	.21*	1.24	.24**	1.27	.01	1.01	-.08	.92
– Professional	.11	1.12	.11	1.12	-.05	.95	-.16	.85
– Clerical	.20	1.22	.20	1.23	.14	1.15	.05	1.05
– Self-employed with employees	.24**	1.27	.26**	1.29	-.10	.91	-.43**	.65
– Self-employed without empl.	.19**	1.21	.20**	1.22	-.16	.85	-.14	.87
– Skilled worker	.05	1.05	.05	1.06	-.04	.96	-.11	.90
Mother's occupation								
– Manager	.47***	1.60	.32	1.38	.07	1.07	.07	1.07
– Professional	.21***	1.24	-.07	.93	.08	1.08	.07	1.08
– Clerical	.27***	1.31	.07	1.07	.02	1.02	.01	1.01
– Self-employed with employees	.24*	1.28	-.04	.96	-.17	.85	-.18	.84
– Self-employed without empl.	.24**	1.27	1.08**	2.94	-.10	.91	-.10	.91
– Skilled worker	.07	1.07	.35	1.41	.02	1.02	.02	1.02
Family income per capita								
– upper	.23*	1.25	.21**	1.24	-.06	.94	-.06	.94
– upper-medium	.02	1.02	.01	1.01	.04	1.04	.03	1.03
– medium	.11	1.11	.10	1.10	.16*	1.18	.16*	1.17
– lower-medium	.05	1.05	.04	1.04	.16*	1.18	.16*	1.17
Place of residence								
– Budapest	-.34***	.72	.45	1.57	-.34***	.71	-.45***	.64
– County seat	.15***	1.17	.25	1.28	.08*	1.08	.19**	1.21
– Town	.15***	1.16	.50*	1.65	.02	1.02	-.06	.94
Institution (Gymnasium=1)	1.39***	4.02	-.22	.80	.34***	1.41	.34*	1.40
Gender (Male=1)	.38***	1.47	-.13	.88	.30***	1.34	.42***	1.52
Constant		-7.7972		-7.1975		-4.5584		-4.5712

Reference categories: occupation: unskilled worker; education: primary level;
family income per capita: lower; region: village.

Significance: *** $p < .001$, ** $p < .01$, * $p < .05$

Note: Model 1b and 2b contains interaction terms between gender, institution, educational performance, and other predictors, estimates are displayed in Table 5.

The impact of educational performance is the strongest of all independent variables. One unit rise in the mean of educational attainment at the secondary school leads to a sixfold increase in the odds of becoming an applicant instead of leaving the educational system, and a threefold increase in the odds of success in the entrance examination. Educational institution is another powerful predictor in the models. Students coming from a gymnasium are four times as likely to submit an application and nearly one-and-a-half times as likely to meet the requirements of the entrance examination successfully, compared to students from secondary technical schools. Of course, we cannot overlook one fact, which we have already encountered, that students at a gymnasium come from families with a higher social standing. However, our multivariate model controls for this point. Unfortunately, this is not the case of educational performance. We cannot exclude the possibility that students who perform better at the secondary school had better marks at the primary school as well. This is another potential selection effect in our data. Consequently, our results do not allow a proper separation of the impact of personal abilities and that of institutional differences.

Estimates referring to the impact of the parental characteristics indicate moderate influence, but these variables (parental occupation, education, and income) have larger multi-collinearity, too. As expected, education is a stronger predictor than occupational class; especially the tertiary level of schooling – parents with a university or college degree – increases the probability of applying for school continuation. A self-employed father, if he is an employer and has employees, is a relatively important factor in educational decisions. The mother's characteristics have greater influence than the father's have. A mother in a managerial position or with a university degree increases the odds of application by more than the same social characteristics for the father do. If controlled for parental occupation and education, the financial circumstances indicate only a slight effect; only the highest income category increases the probability of submitting an application to tertiary education. Place of residence seems to be a stronger predictor, but living in Budapest has a negative impact if controlled for parental characteristics. Estimates for the main effect of gender show that men have significantly better odds for the transition from secondary to tertiary level than women have.

Comparing Model 1a and Model 2a, the most important finding is that parental characteristics have practically no significant influence on the odds of success in the entrance examination. Furthermore, both school performance and educational institution have less of an effect on success in the entrance examination than they do on the intention to continue school at the tertiary level. The gender effect is also smaller in the model predicting the success of entry into tertiary education.

The social determination of self-selection and selection: interaction terms

Model 1b and Model 2b add the interaction terms to the equations. By consequence, the magnitude of the main effects decreases somewhat, but not in a considerable manner. The estimates for the interaction terms that turned out to be significant appear in Table 5.

The extended model contains the interaction terms of gender, type of secondary school, educational performance, with characteristics of the parental family. The results indicate that the significant interaction terms differ in the two models in many respects.

First, worth mentioning are the findings with respect to gender. We have seen that men have a higher relative probability of continuing in school continuation than women. There is, however, a significant positive interaction between gender and educational performance for the odds of deciding on applying to tertiary education. This shows that men choose to continue into tertiary education particularly when they have good marks at secondary school. When they do not exhibit enough signs of learning abilities, they will probably prefer to leave the educational system and try to enter into the labour force and begin earning money. Women are likely to attempt to continue in school even if their educational performance is weaker. In addition, another significant interaction term between gender and the educational institution reveals that the men with higher odds of submitting an application to tertiary education are mostly from gymnasiums, i.e. from the type of secondary school where they are under-represented.

Another significant (negative) interaction term between gender and the mother's occupation indicates that women benefit from the higher status of their mother much more than men do. Since this applies to Model 1 only, it seems that women need to have a mother with a high social status particularly for making a positive decision about continuing their studies at the tertiary level. Finally, the advantages of men appear to be more pronounced in Budapest, where their odds of deciding to continue their studies at the tertiary level and their likelihood of a successful entrance are both higher than for men from smaller settlements.

Interactions with the type of secondary school and educational performance provide good opportunities for obtaining further interesting observations. The main effects already revealed that coming from a gymnasium and performing well at the secondary level increase the odds of a successful transition to the tertiary level. If these two circumstances interact, the probability of a positive decision on the continuation of studies is even higher. Interactions reveal another sign of cumulative advantages. For students from gymnasiums, the father's education also makes the odds of applying to tertiary education significantly higher than it does in the case of students from secondary technical schools. Finally, it is interesting to note the interaction between school performance and place of residence. It would seem that students in Budapest have a higher level of self-confidence than students from smaller settlements, as they tend to apply to tertiary education even if their educational performance is weaker.

Table 5. Determination of self-selection and selection. Hungary, 1998: interaction terms

Predictors	Application to tertiary education		Success in the entrance examination	
	B + Sig.	Exp(B)	B + Sig.	Exp(B)
<i>Gender (Male=1)</i>				
* Educational performance	.19***	1.21	–	–
* Institution	.31***	1.37	–.28***	.76
* Mother's occupation				
– Manager	–.27	.77	–	–
– Professional	–.38***	.69	–	–
– Clerical	–.15	.86	–	–
– Self-employed with employees	–.22	.81	–	–
– Self-employed without empl.	–.38**	.68	–	–
– Skilled worker	–.21*	.81	–	–
* Place of residence				
– Budapest	.21*	1.23	.26**	1.29
– County seat	.10	1.12	.00	1.00
– Town	–.08	.93	–.01	.99
<i>Institution (Gymnasium=1)</i>				
* Educational performance	.34***	1.40	–	–
* Father's education				
– University	.47**	1.60	–	–
– College	.57***	1.77	–	–
– Gymnasium	.64***	1.89	–	–
– Technical secondary	.42**	1.52	–	–
– Apprenticeship + secondary	.40*	1.49	–	–
– Apprenticeship	.13	1.14	–	–
* Father's occupation				
– Manager	–	–	.17	1.18
– Professional	–	–	.19	1.21
– Clerical	–	–	.17	1.19
– Self-employed with employees	–	–	.53**	1.71
– Self-employed without empl.	–	–	–.01	.99
– Skilled worker	–	–	.12	1.13
* Place of residence				
– Budapest	–	–	–.02	.98
– County seat	–	–	–.19*	.83
– Town	–	–	.14	1.15
<i>Educational performance</i>				
* Mother's occupation				
– Manager	.08	1.08	–	–
– Professional	.13	1.14	–	–
– Clerical	.07	1.08	–	–
– Self-employed with employees	.11	1.11	–	–
– Self-employed without empl.	–.20*	.82	–	–
– Skilled worker	–.06	.95	–	–
* Place of residence				
– Budapest	–.26***	.77	–	–
– County seat	–.04	.96	–	–
– Town	–.09	.91	–	–

Significance: *** p<.001, **p<.01, *p<.05

The results indicate less significant interactions for Model 2, in which the odds of a successful entrance examination are predicted. The most noteworthy finding is that the indicator of the interaction between gender and the type of secondary school changes from positive to negative. Men from a gymnasium were more likely to submit an application to tertiary education. However, in the next step of the process of selection they appeared to be less successful in passing the entrance examination than men from secondary technical schools or women from gymnasia. However, men from Budapest seem to perform better in the entrance examination.

Discussion

This paper set out to analyse the transition from secondary school to tertiary education. For this purpose, it took a special approach to the process, with the transition being divided into two stages: (1) the self-selection of students who decide on continuing their studies at the tertiary level and take an administrative step; (2) the selection made by the educational institution at the tertiary level in the form of a formal (written/oral) entrance examination.

Two theories were applied to interpret the findings: the cultural reproduction theory and the rational action theory. Although these are frequently considered to be competing theories, the present analysis indicates that both can be successfully applied.

Empirical multivariate analysis of the odds of self-selection and selection revealed that family background has a significant explanatory role in the process. Both the father's and the mother's social characteristics affect self-selection, and, as assumed, the parents' educational level increases the odds of deciding in favour of school continuation more strongly than the parents' occupational class does. The financial situation of the family matters less, but this could be a consequence of (1) having parental occupation and education in the same equation (multi-collinearity among the independent variables) or (2) analysing a selected population of secondary school students who have already undergone a transition from primary to secondary education, and it was this former transition that was more affected by the financial situation of the family, or (3) having only a very rough and subjective measure of the financial conditions in the family.

With respect to gender differences, men have better odds of continuing their studies at the tertiary level. As expected, the social status of mothers has a larger impact on the choice of women and improves their odds significantly. Assumptions about the role of regional differences received less support.

Although ascription counts, achievement measured by educational performance is the strongest predictor of successful school progression. We know, of course, that educational performance is not independent of social background, but we nonetheless controlled for this fact. It does not hold, however, that better edu-

cational performance improves the chances of students who come from families with a lower social status or from smaller settlements; the interaction terms that aimed to test this hypothesis turned out to be insignificant. But another significant interaction revealed that better educational performance improves the odds for men in particular.

Descriptive statistics showed that the social composition of students at various types of secondary schools differ considerably. Even when controlling for this fact, multivariate analysis revealed that the type of institution (i.e. coming from a gymnasium) improves the odds of successful school progression. There is a higher probability that men from a gymnasium will choose to continue their studies at the tertiary level, but they are less successful at passing the entrance examination. Although having studied at a gymnasium raises the chances of making the transition to tertiary education, surprisingly, this does not signify any special advantage for students who are from lower status families. On the contrary, the interaction terms between the type of secondary school and parental characteristics revealed an accumulation of advantages.

The analysis confirmed the main hypothesis of the research that self-selection plays the basic role in the transition from secondary to tertiary education. Both ascription (family background) and achievement (educational performance) more strongly affect the decision whether to continue education at the tertiary level than the success of the self-selected group of applicants in the entrance examination does. The same holds true for the role of the type of secondary school in the process. This evidence gives strong support to the rational action theory. It appears that, as the theory argues, students at the secondary school level make calculations and consider costs and benefits. A previous analysis indicated that secondary school students are capable of making good estimates of the income Hungarian employees receive in different occupations, and the expected level of income has an impact on their decisions relating to school progression into tertiary education [Varga 2002]. According to our results, this cognitive process, the evaluation of the probability of success, is first of all influenced by the students' educational performance. The high level of school performance, in correlation with an advantageous family background, appears to provide them with self-confidence and it results in an affirmative perception of the costs and benefits in making the decision on continuing in school. It seems that calculation (the rational evaluation of costs and benefits) is, in fact, strongly related to the cultural climate in the family.⁶

⁶ The models included multiple measures for social origin and this fact increases the multicollinearity among the independent variables. However, in a set of alternate models not presented here, four selected variables were used separately to predict the effect of family background (in addition to school performance) without including any other measure for social origin: father's education, mother's education, father's occupation, and financial situation. In all four of these models, one unit rise in the mean of educational performance increased by about six times the odds of becoming an applicant instead of leaving the educational system. In the case of the four measures of family background listed above, the father's university

The type of secondary school is the second best predictor of self-selection. Those students who continued their studies in gymnasiums and not in secondary technical schools after the primary level of education are four times more likely to attempt to continue in school to the tertiary level. This indicates that a large part of the process of calculation and self-selection had probably already occurred following the completion of primary education, when students (and their parents) decided on the type of secondary school to attend and already had some future plans about tertiary education. Therefore, we cannot be sure if the above-mentioned result is a consequence of the better educational climate and stronger academic curriculum provided in the gymnasiums or if it is the outcome of the selection effect that the students in gymnasiums experience. It is most likely that both mechanisms are present.

This analysis offered a general look at the problem of self-selection and selection in the educational transition from the secondary to the tertiary level of education in Hungary, but it has some obvious limitations. Here we studied a selected group of students who were able to make the earlier school progression from the primary to the secondary level. Consequently, the results relating to the determinants in the transition from secondary school to tertiary education may be somewhat biased and probably underestimated.

We could have defined our dependent variable in a more detailed way. No distinction has been made for types of educational institutions at the tertiary level, such as universities and colleges or different branches of these institutions. As mentioned in one of the footnotes above, the way the entrance examination is practised varies among the schools at the tertiary level and we did not consider this part of the calculation. It is possible that students with a lower level of educational background, or coming from families with a less favourable social standing, tend to select institutions where it is 'easier' to get in and which are more accessible.⁷

Similarly, gymnasiums and secondary technical schools provide only a rough manner of differentiating between educational institutions at the secondary level. For example, by separating public and non-public (religious) schools, another analysis on the same data indicated that religious secondary schools are more effective in Hungary than the public schools are [Dronkers and Róbert 2003]. Given the (limited) availability of data, the analysis was restricted to those students who had completed their secondary education in the given year. Though nearly one-half of them

diploma resulted in an increase of the same odds by about four times; the mother's university diploma increased the odds by five times; the father's managerial position indicated an increase in the odds by less than three times; and the upper level of family per capita income showed an increase in the odds by about twice as much.

⁷ Mare [1993] has an important claim on unobserved heterogeneity in measuring the impact of social background on school progression. In the Hungarian context, when students have to pass an entrance examination in order to enter into tertiary education, another kind of unobserved heterogeneity is encountered, specifically, the institutional policies and practices relating to the exam.

did not in 1998 attempt to continue their studies, many of them could decide to make the attempt to enter into tertiary education one or two years later, either in full-time or part-time study. Official statistics indicate that roughly four out of ten applicants at the entrance examination for entry into tertiary education are students who had not applied earlier or failed to pass the entrance examination in the previous year(s). These limitations to the analysis do not necessarily undermine the findings presented here, or the relevance and presence of some rationality with respect to decisions on education being made in Hungarian families. But the picture is far from complete. Further analyses should go into details in these respects, using additional data, more refined classifications, and applying other methodological approaches in order to provide better insight into the process of self-selection and selection and to obtain a better understanding of decisions relating to education.

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