

Varga, Julia

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**BUDAPEST WORKING PAPERS
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Enrolment Decisions in Hungary**

JÚLIA VARGA

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Labour Research Department, Institute of Economics, Hungarian Academy of Sciences
Department of Human Resources, Budapest University of Economics and Public
Administration

Earnings Expectations and Higher Education Enrolment Decisions in Hungary

Author: Júlia VARGA, Department of Human Resources Budapest University of
Economics and Public Administration, Fővám tér 9. H-1093 Budapest,
Hungary; E-mail: vargajulia@hotmail.com

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EARNINGS EXPECTATIONS AND HIGHER EDUCATION ENROLMENT DECISIONS IN HUNGARY

JÚLIA VARGA

Abstract

This paper is based on a survey carried out among Hungarian secondary school students to examine (i) what students know about wages and relative wages when they are in their senior year of secondary school and are about to make decisions on their further studies (ii) how they form expectations regarding their future earnings and employment probabilities at different levels of schooling and (iii) whether their expectations of the labour market outcome of higher education have an impact on the probability of applying for higher educational studies. The results show that students on the average, have quite an accurate knowledge of current wages by educational levels and occupations. Their expected earnings are higher than their estimations of current earnings and their labour market return expectations have an impact on the probability of applying for further studies.

Összefoglaló

A tanulmány az érettségi előtt álló középiskolások körében végzett felmérésre támaszkodva azt a kérdést vizsgálja, hogy továbbtanulási döntésük meghozatalakor milyen ismereteik vannak az érettségizőknek az iskolázottság szerinti kereseti különbségekről, hogy milyen kereseti várakozásokat fogalmazznak meg középiskolai és felsőfokú végzettséggel történő munkába állásuk esetére, illetve milyen egyéb munkaerő-piaci előnyöket várnak a felsőfokú tanulmányoktól, valamint, azt hogy ezek a várakozások mennyiben befolyásolják annak valószínűségét, hogy jelentkeznek-e felsőfokú tanulmányokra. Az eredmények azt mutatják, hogy az érettségizők mind az iskolázottság szerinti kereseti különbségek, mind az egyes diplomás foglalkozások kereseteit tekintve meglepően pontos ismeretekkel rendelkeznek. Saját kereseteiket az átlagos kereseteknek tartott keresetknél magasabbra, bármely tudományterületre jelentkezzenek is, a jelenlegi kereseti megoszlás felső negyedébe várják. Az érettségizők kereseti várakozásai alapján kiszámítható életkereseti többlet hatással van annak valószínűségére, hogy a végzést követően jelentkeznek-e valaki azonnal felsőfokú tanulmányokra, és milyen szintű képzésre jelentkeznek, vagyis a középiskolások – legalább részben – haszonmaximálóként viselkednek pályaválasztási döntésük meghozatalakor.

1. INTRODUCTION

According to human capital theory, expected earnings and returns are the major determinants of educational attainment and occupational choice. People choose the optimal level and type of schooling based partly on the expected market returns on education. Although the expected returns on schooling is a key factor in economic thinking towards schooling behaviour, most studies analysing the role of return expectations in enrolment decisions are based on assumptions about expectations as expected lifetime earnings are usually statistically not observed.

There are two schools of thought in the economic literature regarding student expectations. The first presumes, that students base their expectations entirely on the present labour market situation. *Freeman* (1971, 1976) in a series of studies analysing field decisions of college undergraduates assumed that students believed they would obtain the average starting salary realised by the members of an earlier age cohort with the same field specialisation and furthermore their enrolment decisions were based on these expectations. *Freeman* believes that enrolment decisions can fluctuate according to a cobweb model due to the time lag needed for the adjustment of the supply side of certain high level jobs. Most of the recent studies also accept this assumption. *Lauer* (2000) analysing the factors that influence participation in higher education, assumed that people observed the current labour market situation of “comparable” persons of the previous generation – persons with the same characteristics – and expect that their own situation would be similar. *Gianelli and Monfardini* (2000) compute expected lifetime earnings in order to analyse the effect of expected earnings and local market conditions on the joint decision of high school graduates whether to remain in the parental home or form a new household, and to invest in further education or work. When computing the expected earnings, they presume that high school graduates form their expectations observing the earnings pattern of people who have just finished their studies.

The rest of the researchers prove that students have rational expectations of the future labour market. *Slow* (1984) points out that students, based on the available information, forecast future earnings well, and *Zarkin* (1985) believes that students (prospective teachers) have accurate knowledge of the current values determining the actual teacher wage and that they can very well predict the future level of earnings, as well. Some studies used

the same data-set for testing both rational expectation, and the cob-web model. *Borghans-de Grip–Heijke* (1996) investigated whether students of Dutch vocational secondary schools can anticipate the future labour market situation. The results show better performance for the cobweb model, but the evidence is not very strong and it also suggests that it is difficult to draw clear conclusions from the comparison.

Recently, a growing number of studies have examined the students' knowledge of salaries by type of education and also their expectations of the income they would earn if they were to complete different levels of schooling. The aim of these studies is to investigate if students really have accurate knowledge of wages and relative wages, what information they have on the current labour market situation and how they form expectations of their future earnings. *Smith and Powell* (1990) asked a sample of university students to forecast their own expected earnings in the first year after graduation and 10 years later, and also to make these forecasts for the average member of their class and at the same time for their high school peers who did not attend college. *Blau and Ferber* (1991) questioned a sample of business school seniors about their career plans and earnings expectations at the beginning of their career, 10 and 20 years after graduation with special regard to the male-female earnings gap. With the help of an interactive computer-assisted survey, *Dominitz and Manski* (1996) interviewed high school students and college undergraduates about their income expectations if they were to complete different levels of schooling and also about their beliefs regarding the current earnings distribution. Their survey focused not only on point estimates of wages and earnings expectations but on the distribution of the average salary and the probability distribution of the expected salary as well. *Betts* (1996) examines the undergraduate students' knowledge of salaries by type of education.

These studies concentrate on expectations and earnings estimates of U.S. students., but recently a few similar studies have also been completed in Europe. *Wolter* (2000) questioned a sample of secondary school and university students in the German speaking part of Switzerland on their earnings expectations and their beliefs about earnings. *Brunello-Lucifora-Ebmer* (2001) studied the determinants of wage expectations and expected employment probabilities based on a survey carried out in 10 European countries questioning more than 6000 college students, and compared students' expectations of college wage gains with actual wage gains. *Hartog and Webbink* (2000) used Dutch panel data in which students have been asked to state their expected starting salary. Individual expectations were compared with realisations for the same individuals four years later.

This paper, relying on the data of a survey carried out among Hungarian secondary school students, investigates (i) students' beliefs about current average earnings by educational attainment and by specialisation in Hungary (ii) students' earnings expectations and (iii) the role of expected returns in making an application decision on further studies. The results are compared –as far as possible- with the findings of the preceding studies.

2. DESCRIPTION OF THE SURVEY

The survey was carried out in December, 2000, two months before students had to make their enrolment decisions on further studies. 60 secondary schools were randomly selected out of the total of 1192 units in Hungary. In the selected schools all senior students were asked to answer the questions of the survey. The total number of observations was 4954. In addition to questions about their personal and family background, their results in secondary school, and their plans about further studies, students were asked to answer questions about current average earnings, and about their labour market expectations in terms of employment probability and earnings.

- *Current average earnings.* The survey asked students to make estimations on (1) average earnings of workers whose highest educational qualification is secondary school; (2) average earnings of people who have at least college level education. They were asked to make the estimations for three different points of time (i) starting salary (ii) earnings at age 30 (iii) earnings at age 40. In other words, they had to mark three points of the age-earnings profiles. The questionnaire explicitly asked for estimations on current average salaries at a national level. Students were also asked to make estimations on the current average salaries of different occupations at age 30.

- *Earnings expectations* under different schooling scenarios. The questionnaire asked students to state their earnings expectations assuming (1) that their school career finished with a secondary school degree and (2) that in their future studies they were enrolled to the field of their first choice and they completed their course successfully. They were asked to state their expectations for both alternatives for the same three points of time as in the case of average salaries.

- *Probability of employment* under different schooling scenarios. Students were asked to estimate the probability of finding a job (1) with a secondary school diploma and (2) after finishing their studies at a tertiary level in the selected field. They were also asked to value how much their secondary school diploma and their expected degree would help them to find an appropriate job.

Two other data sources were used for comparing students' estimates of average salaries and earnings expectations with current earnings. These are the National Labour Centre's Wage Survey, wave 1999 and for gathering data on starting salaries, the Survey on Labour Market Trajectories of Higher Education graduates (FIDÉV) which was carried out in 1999.¹

3. STUDENTS' BELIEFS ON AVERAGE EARNINGS BY EDUCATIONAL ATTAINMENT

The aim of asking questions about current average earnings by educational attainment was to investigate whether students have a good perception of the role that education plays in determining earnings, and to find out whether they have accurate information on current earnings when they form earnings expectations. Students had to mark three points on the age-earnings profile for the average worker with a secondary school and at least a college qualification. This information made it possible to construct a crude age-earnings profile.

Figure 1.(see on page 32.) shows the mean estimated wage profile and the true wage profile both for workers with secondary school and higher educational qualifications. The Figure demonstrates that on the average, students made very good estimates of current salaries. They realise that earnings are higher for people who have attained a higher educational qualification than for those who have a secondary school qualification only at any point of the profile. The respondents assumed that earnings increase with age, the mean earnings of workers with at least a college degree rise faster than earnings of workers with a high school diploma, and that earnings increase faster from the start of the career to age 30 than from age 30 to age 40. These assumptions all correspond to the main characteristics

¹ It was a postal survey conducted among graduates from full-time, public higher education possessing a bachelor's or master's degree. Everybody who graduated in 1998 was asked, the response rate was 33,5 per cent.

of age-earnings profiles common to most economies. (See for example *Cippolone 1995*.)

Table 1. (see on page 19.) shows the distribution of students' estimates of current average earnings by educational levels for different age groups. It displays the average, the 10th, 50th and 90th percentile wage belief, the standard deviation, and the standard deviation divided by the mean. The table also displays average and median wage beliefs as a percentage of actual wages. The mean error of beliefs on current mean earnings is around 10 percent, the median belief of the respondents is even closer to real average earnings. It seems that in general students have quite an accurate perception of the average current earnings by educational levels. The only exception is the average earnings estimation of workers with a higher educational degree at age 40. The mean estimated earnings were 30 per cent higher than the actual mean earnings, the average respondent overestimated average earnings of 40 year old workers with a degree by 20 per cent. As estimate errors for earnings with a secondary school diploma do not increase as we are moving to the upper end of the experience profile, it would be irrational to think that the cause of the relatively high estimate error is due to the fact that students have less knowledge on earnings of older age-groups in general. A more likely explanation is that students do not have information on the revaluation of experience after the beginning of the transition, and that they do not know that in those years the rise in the return on formal education was accompanied by a strong devaluation of market experience acquired during the socialist era, especially for workers with at least a college education. The value of experience decreased until 1996. During this period wages rose fast for young and educated workers but stayed constant for formerly educated ones. (See *Kertesi-Köllő 2001*.)

Although the mean and median estimates are quite close to the actual average earnings, students' beliefs are far from being uniform. On the average, the standard deviation of the estimates is about 40 per cent of the mean value. The ratio of the 90th to the 10th percentile earnings estimates is typically around 2,5. The great variety in students' beliefs on earnings seems to support the assumption that students form their earnings estimates by observing their neighbours or their acquaintances.

To test whether there is any systematic link between the students' error in perception and students' observed characteristics, a series of regressions for the absolute value of errors were performed. The dependent variable is the log of the absolute value of the percentage estimate error based on the

same argument as in Betts and Wolter². The explanatory variables include: 1) dummy variable for sex; 2) application decision (yes/no); 3) type of secondary school; 4) type of settlement where the student lives; 5) three dummy variables for per capita family income with a reference group including those students whose per capita family income is above 100 thousand HUF per month; and 6) dummy variables indicating whether the student's mother or father has secondary or tertiary level of education. *Table 2* (see on page 20.) displays the regression results. The results with low R^2 values show that the selected variables together can explain the absolute errors of the estimate error only to a small extent. Some of the variables proved to be significant and it also seems likely that some characteristics of students may have an effect on their errors. In all wage estimates men made significantly larger errors than women. Application for further studies had a significant effect on the wage estimates of workers with a higher educational qualification, while on the wage estimates of those who have a secondary school qualification it was insignificant. Students who intend to apply for further studies made significantly greater errors in all three wage estimates of workers with a higher educational qualification, while in the estimate errors related to earnings of workers with a secondary school qualification there was no significant difference between those who intend to continue and those who wish to give up studying after graduation. Students, whose family has less than 60 000 HUF per capita income a month, had a tendency to make significantly smaller errors in all wage estimates than students in the reference group. None of the other variables proved to be significant.

The effect of family income and type of settlement can be interpreted as an argument for the notion that students form beliefs about wages by observing their acquaintances, but the results show that the variation in beliefs about earnings is larger within groups with the same observable characteristics than between groups. The other interesting result is that students who are planning to continue their studies in higher education expect the average current wage-gain of higher educational studies to be higher than students who are not planning to continue their studies at a higher level and more than the currently observed wage gain.

² As *Betts* (1996) points out it is not useful to make the signed error the dependent variable, since a positive coefficient on regressor x could indicate that the higher value of x is associated with a higher positive error, a smaller negative error or both.

3.1. Beliefs about wages by specialisation

The average salaries of workers with a higher educational qualification differ substantially by fields of study. The Hungarian higher educational system is rigid in the sense that students accepted to a program in a certain field of study follow an established course structure, mobility is very low between the different courses and it is very hard to change fields of study. When students make their choice on further studies they have to choose specialisation. If their earnings expectations are based on their knowledge of current earnings, their beliefs about earnings prospects by fields of study might be determining.

In order to examine what students know about the differences in earnings of highly qualified workers by specialization they were asked to make estimations of average earnings at age 30 in typical occupations of different fields. *Figure 2.* and *Table 3.* (see on page 32. and 21.) display earnings estimations and current actual earnings in these occupations.

Students in general, have fairly accurate perceptions of average salaries by occupations, the estimate error of the median was less than 10 per cent for most professions. Nevertheless, the spread of the estimates was larger than the spread of estimates related to average salaries by educational attainment. Standard deviation was between 50-60 per cent of the median estimate for most occupations and the ratio of the 90th to 10th percentile earnings estimate was around 3. The greater variety in wage beliefs by fields may be the consequence of students having different information depending on the field they intend to apply for. If there is a difference in wage beliefs between those who apply for the given field and those who don't then two alternatives can be considered. On the one hand students who apply for studies in a given field may have better information on wages in the selected field or on the contrary they might have chosen a field as a consequence of overestimating earnings possibilities there.

To examine the effect of students' choice of field specialisation on their ideas of the average earnings of different occupations, a series of regressions for wage beliefs by occupations were performed. Each wage estimate regression includes a dummy variable indicating whether the student wants to apply for the same field specialisation as shown in the wage question. *Table 4.* (see on page 22.) presents the results for those occupations where application to the same field of study has a significant effect on wage estimates. Students who want to apply for a course in business or economics believe the average earnings of economists to be 4

per cent higher than students who want to have a career elsewhere. Those who intend to apply for a course in informatics estimated the average earnings of an informatics engineer to be 10 per cent higher than the rest of the students, whereas students applying for medical school were inclined to estimate the average earnings of a doctor to be 10 per cent lower than the remaining students. It means that students applying for courses in business, economics and informatics are likely to overestimate current average earnings of these fields, while future doctors have better information on current average earnings in their own field.

4. EARNINGS EXPECTATIONS OF STUDENTS

Earnings expectations may differ from wage beliefs for several reasons. First, there is a great variation in earnings by fields of study and students' may take into consideration these differences in their expectations. In addition, students' expectations reflect the assumptions of the value of their schooling when they enter the labour market. Students may think that future relative earnings would differ from current ones, for example as a consequence of a shift in supply and demand for the differently educated labour. Furthermore, they may think that because of their personal characteristics they have better labour market prospects than the average college graduate, for example by having better abilities, or by finding an appropriate job in a better region, etc.

In addition to estimates of current average wages students were asked to state their earnings expectations for the same three points of time as for the above, supposing that they finish studying after secondary school and also assuming that they are accepted for further studies. *Table 5.* (see on page 23.) displays the distribution of students' earnings expectations as well as the distribution of their expectations as a percentage of their estimates regarding the average current earnings of workers with secondary school and higher educational qualifications. On the average, students earnings expectations were about 5 per cent higher in the case of finishing their studies with a secondary school diploma than their estimates for current average earnings of workers with the same qualification. Their expectations based on a higher educational qualification were about 20 per cent higher than their estimates for current earnings. Students expect greater wage gain from higher educational studies for themselves than what they estimate for the average professional.

The variety in students' earnings expectations was greater than in their earnings estimates of the average worker, and was also larger in estimated earnings with higher educational qualifications than in earnings with a secondary school diploma, and in earnings at the upper end of the experience profile than in starting salaries. *Figure 3.* (see on page 33.) shows the mean estimated wage profile for the average worker with a secondary school qualification and the students' expected wage profile with the same qualification by their planned fields of study. *Figure 4.* (see on page 33.) displays the students' mean estimated wage profile for the average worker and their earnings expectations with a higher educational qualification. The figures illustrate the difference between the two groups regarding the expectations of costs (foregone earnings) and benefits of further studies. As far as wage profiles with a secondary school qualification are concerned, students who want to continue their studies after finishing secondary school, as well as students who plan to look for a job expect their own earnings to be higher than their estimates for average current earnings. On the other hand, wage expectations of students who intend to apply for further studies are close to the average earnings estimates of those who do not want to continue their education, and the expected wage profile of the first group is lower. In contrast, wage profiles with higher educational qualifications illustrate that students who plan to finish their studies after graduating at secondary level expect their own earnings, in case of their further studies³, to be close to the estimates of average current earnings of students who intend to apply for a tertiary level and their expected wage profile is lower than that of the continuing students.

Earnings prospects for highly educated workers differ substantially by field of specialisation. The greater variety in students' earnings expectations, compared with their estimates for current average earnings of highly educated workers, is partly due to the composition of students' intended field specialisation, but in all fields of study students expect to earn higher salaries than the current level. Earlier we found that students in general had fairly accurate perceptions of current average earnings of highly educated professionals. *Table 6.* (see on page 23.) summarizes students' earnings expectations at labour market entry with a higher educational qualification and also as a percentage of average, and shows p90 current starting salaries by fields.

³ Students, who plan to finish their studies after graduation were also asked for their earnings expectations with a higher educational degree.

The data source for current starting salaries is the FIDÉV survey which is the only accurate Hungarian source of earnings by field specialisation, although based on the currently available data it is possible to compare earnings expectations with actual salaries only at labour market entry. The average expected earnings of students with higher educational qualifications was higher than the average current starting salary at all fields of study. Men expect earnings to be close to current starting salaries of men at 90th percentile in most fields of study, while women await earnings to be close to current starting salaries of women at 80th percentile.

In order to examine the determinants of students' earnings expectations with secondary school and higher educational qualifications, and to find out whether their beliefs about current average salaries are in connection with their expectations, a multivariate regression was performed for students' earnings expectations and estimates for earnings both with secondary school and higher educational qualifications. Independent variables include the same variables as used in regressions for students' estimate errors of average salaries but in addition they comprise dummy variables for the fields of study (business and economics as a reference category) Furthermore, as a rough proxy for ability, the so-called "accumulated score" of each respondent was computed, which is a part of the score that is used for admissions in higher educational institutions and is based on the students' achievements in secondary school (grade point averages and achievements in foreign languages).

Results regarding wage expectations and estimates with a secondary school qualification are reported in *Table 7*. (see on page 24., 25.), while findings related to expectations and estimates with a higher educational qualification are shown in *Table 9*. (See on page 27., 28.) Men expect significantly higher earnings both with secondary school and higher educational qualifications. With secondary school qualification the gender difference in expectations increases with labour market experience from 17 to 27 per cent, whereas the difference in expectations at a tertiary level rises from 17 to 29 per cent. Namely, women foresee a flatter age-earnings profile for themselves than men. Students who want to apply for further studies expect significantly lower earnings with a secondary school qualification, and in their case there is a significant difference in the expectations by type of school, as well. Students attending gymnasiums⁴ with 8 or 4 grades expect lower earnings with a secondary school

⁴ Gymnasiums in the Hungarian school system are general secondary schools where students can study alternatively from 5-12th, 7-12th or 9-12th grade.

qualification than students who are attending vocational secondary schools. Regarding the effect of family background, the coefficients of the indicators describing the parental level of education are not significant, but the family income has an effect on students' expectations. Students from lower income families expect significantly lower earnings both with secondary school and higher educational qualifications. The less the per capita family income is, the lower the expected earnings are. There is no significant difference in students' earnings expectations with a secondary school qualification by their "accumulated score" (ability), though "more able" students expect higher earnings with higher qualifications. Expected earnings with a tertiary level of education turned out to be significantly different by fields of study. Students who want to apply for further studies in humanities, natural or medical sciences or elementary and pre-school level teacher training expect considerably lower earnings, whereas respondents applying for courses in law or informatics expect higher earnings than the reference category which includes students who are interested in studying economics and business. It is worth mentioning that some field specialisations have a significant effect on students' earnings expectations even with a secondary school qualification. Students who are planning to choose natural sciences, elementary or pre-school level teacher training, medical sciences or fine arts as their field specialisation, expect significantly lower earnings if they were to start working right after finishing secondary school. As it comes clear from the ranking of earnings showing current starting salaries with higher educational qualifications by field specialisation (*Galasi-Tímár-Varga, 2000*) these are the very fields, which are at the bottom of the list. It seems, that students who expect low earnings with a secondary school qualification, i.e. whose estimated foregone earnings are low in case of further studies, are likely to choose a field specialisation with relatively low wages.

Earnings expectations were jointly regressed with students' beliefs about current average earnings to test whether students form their earnings expectations on the basis of their beliefs about current earnings. If we compare regression results for earnings estimates and earnings expectations we find that most variables which proved to be significant for earnings estimates are also significant for earnings expectations. Although the trend is identical, it seems that the impact of a certain variable is stronger in the case of earnings expectation than in earnings estimates. For instance men estimate average earnings of workers with a secondary school qualification at labour market entry to be 10 per cent higher than women, at the same time they expect their own earnings to be 17 per cent

higher than women. Students from families with less than 30 000 HUF per capita income estimate average earnings at labour market entry with a higher educational qualification to be 9,5 per cent lower than students from higher income families, and they expect their own earnings to be 13,7 per cent less at labour market entry than the rest of the students do, etc. The correlation matrix of the residuals of equations is displayed in *Table 8.* and *Table 10* (see on page 26. and 29). The Breusch-Pagan test is significant, so the residuals are not independent from each other, which is true for equations about earnings beliefs and earnings expectations with a secondary school qualification, and for equations about estimates and expectations with a higher educational qualification, as well. It seems that the same observed and unobserved characteristics determine students' estimates of current average earnings and their earnings expectations. Respondents who believe current mean earnings to be high (low), expect their own earnings also to be high (low).

5. STUDENTS' PERCEPTIONS ABOUT EMPLOYMENT PROBABILITY

Unemployment rates have been persistently high since the beginning of the transition. The lower the educational level of an individual is, the higher his probability is to become unemployed. Differences in unemployment probability by educational attainment may effect both the returns and the costs of further studies. A part of the expected returns on higher education is the reduction of the unemployment risk. On the other hand, the higher probability of being unemployed with a secondary school qualification reduces the costs (foregone earnings) of further studies. Students were asked to evaluate their own chances to get an appropriate job if they were to finish studying after graduating from secondary school and also in the case they were admitted to college or university and they received their degree.

The results presented in *Table 11.* (see on page 30) show, that men expect better job opportunities than women both with secondary school and higher educational qualifications, but the difference is smaller in the latter case. Students who want to apply for further studies expect significantly worse job opportunities for secondary school graduates than students who are planning to enter work after finishing high school. The impact of ability was significant in the case of expected employment possibilities with a secondary school qualification, while it was insignificant with higher educational qualifications. Students with better abilities (higher

accumulated score) expect worse job opportunities with a secondary school qualification. Students from lower income families expect worse job prospects both with secondary and higher educational qualifications. Expected job opportunities with a tertiary degree turn out to be significantly different by fields of study. Students applying for elementary and pre-school teacher training, mathematics, natural sciences and humanities expect considerably worse job prospects after graduation than those who are interested in economics and business. Students who intend to choose informatics and technological sciences expect significantly better job opportunities than the members of the reference group .

If we compare earnings expectations with expectations of employment possibilities a number of similarities and differences can be observed. Men expect significantly higher earnings and better job opportunities than women both with secondary school and higher educational qualifications. Family income appears to be very important in expectations (and in estimates of average earnings, as well). Students from lower income families expect fewer job opportunities and have lower earnings expectations both with secondary school and higher educational qualifications. The difference between their expectations and the expectations of students from higher income families is more significant in the case of higher educational qualifications, students from poorer families expect lower wage-gains and less improvement in job opportunities after graduating from higher education.

6. DETERMINANTS OF THE ENROLMENT DECISION

What role do students' return expectations play in making an application decision? The present section focuses on this question. After graduating from secondary school students face the following opportunities: (1) finish studying with a high school diploma; (2) apply for post-secondary vocational education; (3) apply for college education; (4) apply for university education. The decision might be affected both by students' return expectations and by some characteristics of them influencing the costs or returns of their schooling decision. Analysing the determinants of students' application decisions an ordered logit model was applied.

The explanatory variables were the following:

Labour market return expectations:

- Expected wage return to higher education. The net present value of expected additional lifetime earnings with a higher educational degree was computed for each student on the basis of his/her expected earnings with a secondary school diploma and higher educational degree in the first year of full time work, at age 30 and 40. It was assumed that earnings rise linearly between these points, and that peak earnings occur at age 40, then that level is maintained until retirement. (Costs of higher educational studies were restricted to foregone earnings.) The estimated expected lifetime earnings were discounted with an interest rate of 10 per cent.
- expected probability of getting an appropriate job with a secondary school qualification
- expected probability of getting an appropriate job with a higher educational qualification

Family background

- per capita family income
- educational qualification of father and mother
- a dummy variable indicating whether the student is studying at the same settlement, where his or her family home is.

*Type of secondary school**Ability*

- ability was measured with the accumulative score of students .

Gender

Table 12. reports the estimation results (see on page 31.). *Labour market expectations*, as far as the expected present value of net (additional) lifetime earnings is concerned, have a significant effect on the probability of applying for further studies and on the decision as to which level of higher education to apply for. Results support human capital theory, return expectations do have a role in educational decisions. Expectations of job opportunities on the other hand have no significant effect on the educational decision of secondary school students. Neither the effect of expected employment prospects with a secondary school qualification, nor the impact of expected employment probability with a higher educational diploma proved to be significant.

The results show that only two of the *family background* variables have a significant effect on students' decisions on further studies. Students, whose mother has at least a college degree, apply for further studies with higher probability, furthermore students whose secondary school is on the same settlement where he/she is permanently living are also more likely to try entering a tertiary educational institution. Educational attainment of students' father is not significantly correlated with the probability of students' application decision. This is probably due to the fact that in most Hungarian families mothers pay more attention to the children's school progress and highly educated mothers might attach greater value to education and also more likely to encourage their children to pursue further studies than the members of the reference group (mother without a secondary school qualification). The other significant family background variable indicates regional inequalities. There are secondary schools in all towns and cities of Hungary, therefore the majority of students studying away from their family homes come from villages. These students are less likely to apply for further studies than the members of the reference group which may be the consequence of the considerably higher costs of further studies they have to bear. It is worth mentioning that the per capita family income has no significant correlation with the probability of applying for further studies if expected wage gains from further studies are controlled for. It seems that family income has an indirect effect on the probability of applying for further studies by influencing earnings expectations.

The type of the *secondary school* appears to have a significant impact on the probability of students' decision for application indicating that the stratified Hungarian secondary school system may increase the costs of further studies for students enrolled in vocational secondary schools. As expected, higher ability has significant effect on the probability of applying for further studies, more able students are more likely to continue their studies. Gender also influences the probability of application. Men will apply for further studies with greater probability.

CONCLUSIONS

The aim of this study was to investigate whether secondary school students have a good perception about relative wages by educational attainment and by field specialisation when they make their decisions on higher educational studies, and to examine how they form earnings expectations

and expectations of employment probability, and also to find out whether their labour market return expectations have an impact on the probability of applying for further studies.

We found that students in general have fairly accurate perceptions of current average earnings by educational attainment and field specialisation. If we compare the findings of the Hungarian survey on students' beliefs about current earnings with the results of preceding studies we discover that similarly to the Hungarian conclusions, both *Betts* (1996), and *Wolter* (2000) reported that on the average, students had quite an accurate knowledge of current wages by educational levels. Both surveys found that the mean signed error of students' estimates was less than 10 per cent. The variety of beliefs about current average earnings was higher among Hungarian students than the variety reported by *Betts*. Nevertheless the results seem to support the assumption that on the average, students have adequate information on current relative earnings when they form their earnings expectations.

The most important findings of the study concerning students' earnings expectations were the following:

- Students earnings expectations and expected wage gains on the average are higher than their earnings estimates. This result is similar to the conclusions of the preceding studies. *Dominitz-Manski* (1996), *Wolter* (2000) and *Brunello–Lucifora–Ebmer* (2001) found that expected college wage gains were higher than estimated or actual wage gains. Nevertheless we are not able to tell whether students' expectations are “accurate” or not. Current wages that show up in statistics, and which were also estimated by the students in our survey, may be an indication for future wages but an imperfect one in itself as future wages may differ from current ones. The deviation of students' expectations from current cross-sectional data, and their estimates of average current earnings may reflect that students anticipate further increase in relative wage differences in the future. It may also show that on the average, students assume that their own abilities and/or possibilities are going to be above the average.

The few studies comparing expectations and realisations showed that there was no great divergence between expectations and realisations. *Hartog-Webbink* (2000) found that students are capable to making realistic estimates of future incomes at the individual level as far as starting salaries are concerned.

- Analysing the determinants of students' earnings expectations the results show that expected earnings and wage gains are significantly related to gender, type of school, family income and field of study.
- The other finding in this respect is that the same observed and unobserved characteristics seem to effect both students' earnings expectations, and their estimates of current average earnings.

The results concerning the impact of labour market expectations on the probability of applying for higher educational studies show that the expected net life-cycle wage gain has an effect on educational decisions, while the influence of expected employment probability proved to be insignificant.

Tables

Table 1.

The distribution of students' estimates of current average earnings with secondary school and higher educational qualifications

	Earnings estimates							Current average earnings (000 HUF)	Average estimate as a percentage of current average earnings	p50 estimate as a percentage of current average earnings
	Average (000 HUF)	p10 (000 HUF)	p50 (000 HUF)	P90 (000 HUF)	P90/p10	Standard deviation	Standard deviation/ Mean			
<i>With secondary school qualification</i>										
At labour market entry	43,1	30	40,1	80	2,6	17,7	41,1	38,3	112,5	104,7
At age 30	60,7	40	60,0	80	2,0	23,0	37,8	64,9	93,5	92,4
At age 40	70,8	40	60,0	100	2,5	29,6	41,8	66,7	106,1	90,0
<i>With higher educational qualification</i>										
At labour market entry	74,7	40	70	110	2,5	31,4	42,0	68,2	109,5	102,6
At age 30	102,4	60	100	160	2,7	43,1	42,1	105,2	97,3	95,0
At age 40	127,1	70	110	200	2,8	116,8	91,9	96,3	131,9	119,6

Table 2.

**Models of estimated log absolute percentage errors in students' beliefs
about current average earnings with secondary school and higher
educational qualifications at labour market entry and at age
30 and age 40**

	<i>With secondary school qualification</i>						<i>With higher educational qualification</i>					
	<i>At labour market entry</i>		<i>At age 30</i>		<i>At age 40</i>		<i>At labour market entry</i>		<i>At age 30</i>		<i>At age 40</i>	
	coeff.	t	coeff.	t	coeff.	t	coeff.	t	coeff.	t	coeff.	t
<i>Gender</i>												
Male	8,11	6,96	2,40	3,02	6,74	6,81	7,09	7,07	1,73	2,10	23,0	6,51
Applying for further studies	-0,87	-0,65	-0,44	-0,48	-1,74	-1,52	3,67	3,17	3,71	3,88	7,54	1,82
<i>Type of secondary school</i>												
Gymnasium 8 grades	-2,28	-0,83	0,56	0,30	-1,68	-0,73	0,09	0,03	1,74	0,90	-0,337	-0,40
Gymnasium 6 grades	1,47	0,58	-0,17	-0,09	2,09	0,97	0,62	0,28	2,91	1,62	0,53	0,06
Gymnasium 4 grades	0,97	0,70	2,02	2,14	2,68	2,28	2,65	2,23	2,02	2,06	13,22	3,15
<i>Type of settlement</i>												
Budapest	6,64	4,02	1,93	1,71	6,47	4,60	2,69	1,88	0,52	0,44	21,55	4,28
County seat	-1,07	-0,80	0,12	0,13	0,76	0,67	-1,30	-1,14	-1,91	-2,03	-0,55	-0,13
<i>Per capita family income (000HUF/month)</i>												
-30	-4,76	-3,32	-2,16	-2,21	-6,15	-5,04	-5,18	-4,19	-2,16	-2,13	-13,75	-3,15
31-60	-5,13	-3,11	-3,95	-3,50	-3,64	-2,60	-6,84	-4,82	-5,44	-4,66	-13,97	-2,79
61-100	0,69	0,35	-1,39	-1,04	-1,97	-1,19	-4,02	-2,39	-2,14	-1,55	0,95	0,01
<i>Educational level of parents</i>												
Mother with secondary school qualification	-0,86	-0,59	-0,38	-0,39	-2,68	-2,17	-0,280	-0,22	-0,89	-0,87	-1,52	-0,34
Mother with at least college education	-0,47	-0,26	,510	0,409	-2,34	-1,51	-0,887	-0,56	1,36	1,05	2,41	0,43
Father with secondary school qualification	-0,03	-0,02	-0,06	-0,07	-1,28	-1,06	-0,16	-0,13	0,20	0,20	2,65	0,61
Father with at least college education	-0,01	-0,01	0,18	0,153	0,15	0,101	0,23	0,15	-0,74	-0,59	-1,80	-0,33
Constant	25,70	13,72	25,75	20,11	30,69	19,25	30,9	19,14	29,58	22,27	29,69	5,21
F	8,96		2,74		10,02		8,60		5,83		64,66	
Adjusted R ²	0,025		0,081		0,026		0,022		0,014		0,163	
Number of observations	4743		4721		4717		4699		4688		4688	

Reference category: female; vocational secondary school; other towns and villages; per capita family income per month 101 000 HUF; no intention to apply for further studies; father has less than secondary school qualification; mother has less than secondary school qualification

Table 3.

Distribution of students' estimates of current average earnings of different highly educated professionals at age 30

	Students' estimate of current average salaries at age 30					Standard deviation (000 HUF)	Standard deviation /Mean (per cent)	Current average earnings (000 HUF)	Average of estimates /Current earnings (per cent)	p50 of estimates /Current earnings (per cent)
	p10 (000 HUF)	p50 (000 HUF)	P90 (000 HUF)	ave- rage (000 HUF)	P90/p10					
Agricultural engineer	60	100	180	112,7	3,0	55,6	49,3	100,0	112,3	100
Economist	75	120	210	140,5	2,8	87,0	61,9	138,5	101,4	86,6
Lawyer	90	150	300	177,6	3,3	102,0	57,6	168,9	105,1	88,8
Informatics engineer	80	140	250	157,0	3,1	89,5	57,0	137,0	114,5	102,1
Secondary school teacher	40	55	80	58,4	2,0	26,4	45,2	58,8	99,3	93,5
Doctor	50	80	170	101,2	3,4	65,3	64,5	73,6	137,5	108,7

Table 4.

**Models of students' estimates of current average earnings
of different highly educated professionals at age 30**

Dependent variable: log estimated earnings

	<i>Economist</i>		<i>Informatics engineer</i>		<i>Architect</i>		<i>Doctor</i>	
	coeff.	t	coeff.	t	coeff.	t	coeff.	t
<i>Gender</i>								
Male	0,12	7,39	0,15	7,95	0,11	6,30	0,09	5,23
<i>Type of school</i>								
Gymnasium 8 grades	0,12	3,82	0,06	1,60	-0,11	-3,04	-0,03	-0,85
Gymnasium 6 grades	0,07	2,49	0,04	1,17	-0,07	-2,10	-0,01	-0,05
Gymnasium 4 grades	0,11	6,33	0,03	1,30	0,01	0,40	0,05	2,87
<i>Type of settlement</i>								
Budapest	0,11	4,87	0,13	4,98	0,12	4,86	-0,14	-5,39
County seat	0,01	0,41	-0,04	-1,85	-0,04	-1,90	-0,03	-1,60
<i>Per capita family income</i>								
- 30000 HUF	-0,09	-4,63	-0,05	-2,06	-0,08	-3,86	-0,06	-2,85
31-60000 HUF	-0,06	-2,62	-0,01	-0,23	-0,01	-0,23	-0,02	-0,82
61-100000 HUF	0,02	0,77	0,06	2,21	0,06	2,02	0,03	1,06
<i>Applying for given field</i>	0,04	2,26	0,10	2,15	0,13	4,81	-0,10	-3,13
<i>Educational level of parents</i>								
Father with secondary school qualification	-0,01	-0,64	0,01	0,28	-0,02	-0,77	0,01	0,04
Father with higher educational qualification	0,04	1,60	-0,01	-0,52	-0,04	-1,52	-0,03	-1,13
Mother with secondary school qualification	0,03	1,53	0,01	0,60	0,02	0,69	-0,01	-0,53
Mother with higher educational qualification	0,04	1,56	0,03	1,24	0,02	0,75	-0,04	-1,52
Constant	4,71	169,83	4,856	162,81	4,859	171,01	4,536	154,92
F		21,11		15,39		15,47		7,96
Adjusted R ²		0,084		0,067		0,067		0,0309
Number of observations		3049		3041		3030		3058

Reference category: female; vocational secondary school; other towns and villages; per capita family income per month 101 000 HUF; do not intend to apply for further studies or want to apply for further studies at another field ; father has less than secondary school qualification; mother has less than secondary school qualification

Table 5.

**Distribution of students' earnings expectations
with secondary school and higher educational qualifications**

	Average	p10	p50	p90	p90/ p10 %	Standard Deviation	Standard Deviation / Mean (%)	Average expect- ation as a percentag e of esti- mates of average earnings
With secondary school qualification								
At labour market entry	45,5	28	40	60	2,1	29,1	64,0	105,5
At age 30	64,6	40	60	100	2,5	53,4	82,7	106,4
At age 40	74,6	40	60	110	2,8	62,0	83,1	105,5
With higher educational qualification								
At labour market entry	87,6	40	80	140	3,5	57,1	65,2	117,3
At age 30	118,8	60	100	200	3,3	81,5	68,6	116,0
At age 40	155,5	60	120	260	4,3	178,6	114,8	122,3

Table 6.

**Students' earnings expectation at labour market entry by gender
and field specialisation and current average starting salaries**

Field of study	Men			Women		
	Average earnings expectation	Current average earnings	Current p90 earnings	Average earnings expectation	Current average earnings	Current p90 earnings
Fine arts	86	50	89	61	40	
Languages	137	67	111	65	52	83
Elementary and pre-school educational studies				51	39	50
Medical	82	52	88	62	51	84
Agricultural	87	55	83	86	51	78
Technological Sciences	109	76	112	83	60	89
Economics and business management	115	86	134	85	73	112
Law	121	.	.	84	56	60
Informatics	126	95	112	78	69	162
Mathematics and natural sciences	70	46	78	69	42	56
Humanities	91	55	77	61	50	84
Other	114	62	98	86	52	107

Table 7

Results of a multivariate regression on students' estimates of current average (log)earnings and (log) earnings expectations with a secondary school qualification at labour market entry and at age 30 and age 40

	Estimates of current average earnings						Earnings expectations					
	Starting (CS1)		At age 30 (CS2)		At age 40(CS3)		Starting(ES1)		At age 30(ES2)		At age 40(ES3)	
	coeff.	t	coeff.	t	coeff.	t	coeff.	t	coeff.	t	coeff.	t
<i>Male</i>	0,102	9,25	0,1267	11,29	0,144	11,88	0.171	13,09	0,234	16,76	0,268	17,96
<i>Applying for further studies</i>	0,003	0,28	-0,031	-2,17	-0,042	-2,67	-0,039	-2,33	-0,069	-3,84	-0,069	-3,59
<i>Type of school</i>												
Gymnasium 8 grades	-0,043	-1,85	-0,03	-1,25	-0,036	-1,40	-0,073	-2,63	-0,072	-2,44	-0,110	-3,49
Gymnasium 6 grades	0,010	0,47	-0,006	-0,29	-0,018	-0,74	-0,002	-0,08	0,002	0,08	-0,041	-1,39
Gymnasium 4 grades	-0,023	-1,90	-0,011	-0,93	-0,014	-1,06	-0,04	-2,62	-0,043	-2,78	-0,063	-3,79
<i>Type of settlement</i>												
Budapest	0,011	0,09	-0,012	-0,09	-0,031	-0,21	0,111	0,69	-0,006	-0,04	0,054	0,30
county seat	-0,125	-0,92	-0,161	-1,17	-0,15	-1,05	-1,061	-0,38	-0,185	-1,08	-0,113	-0,62
other town	-0,124	-0,92	-0,175	-1,28	-0,168	-1,13	-0,076	-0,47	-0,22	-1,31	-0,159	-0,87
<i>Educational level of parents</i>												
Father with secondary school qualification	0,012	1,00	0,018	1,39	0,020	1,48	0,033	2,22	0,027	1,70	0,018	1,11
Father with at least college education	0,004	0,32	0,010	0,64	0,016	0,98	0,025	1,39	0,032	1,65	0,032	1,54
Mother with secondary school qualification	-0,018	-1,43	-0,038	-2,84	-0,032	-2,20	-0,006	-0,40	0,007	0,45	0,011	0,80
Mother with at least college education	-0,019	-1,21	-0,032	-1,91	-0,047	-2,67	-0,015		-0,013	-0,66	-0,004	-0,22
<i>Per capita family income</i>												
-30 000 HUF	-0,082	-6,37	-0,104	-8,01	-0,119	-8,52	-0,092	-6,07	-0,128	-7,93	-0,150	-8,70
31- 60 000 HUF	-0,009	-0,67	-0,022	-1,48	-0,028	-1,74	-0,016	-0,96	-0,037	-2,04	-0,04	-2,17
61-100 000 HUF	0,024	1,47	0,035	2,01	0,034	1,87	0,039	1,97	0,034	1,59	0,033	1,48

continue of table

<i>Ability</i>												
Accumulated score	-0,001	-1,47	-0,001	-1,00	0,001	0,40	-0,001	-1,87	-0,001	-1,48	0,000	0,02
<i>Field of study</i>												
fine arts	-0,093	-2,22	-0,114	-2,68	-0,099	-2,17	-0,172	-3,46	-0,192	-3,62	-0,149	-2,62
languages	0,015	0,59	0,032	1,22	0,022	0,78	0,003	0,10	0,024	0,75	0,019	0,55
educational studies	-0,134	-3,58	-0,077	-2,01	-0,043	-1,03	-0,143	-3,21	-0,160	-3,38	-0,182	-3,59
medical	-0,059	-2,65	-0,063	-2,76	-0,058	-2,34	-0,059	-2,24	-0,070	-2,46	-0,069	-2,30
agricultural	-0,025	-0,59	0,004	0,09	0,035	0,76	0,039	0,79	0,096	1,78	0,087	1,52
technical	-0,001	-0,08	0,013	0,66	0,017	0,81	-0,002	-0,09	0,006	0,26	-0,027	-1,04
law	-0,037	-1,66	-0,038	-1,65	-0,038	-1,53	-0,018	-0,67	-0,012	-0,42	-0,035	-1,15
informatics	0,063	1,99	0,052	1,61	0,044	1,28	0,064	1,69	0,058	1,43	0,029	0,69
mathematics and natural sciences	-0,080	-2,24	-0,049	-1,34	-0,069	-1,75	-0,127	-2,98	-0,107	-2,38	-0,128	-2,66
humanities	-0,032	-1,19	-0,012	-0,42	-0,018	-0,61	-0,001	0,04	-0,021	-0,60	-0,015	-0,41
other	0,016	0,65	-0,015	-0,60	-0,016	-0,59	0,033	1,14	0,001	0,02	-0,031	-0,91
Constant	3,849	27,89	4,239	30,34	4,354	28,92	3,808	23,34	4,259	24,52	4,287	23,11
R squared	0,12		0,15		0,13		0,16		0,21		0,21	
Number of observations	3769		3769		3769		3769		3769		3769	

Reference category: female; vocational secondary school; villages; per capita family income per month 101 000 HUF; no intention to apply for further studies; father with less than secondary school qualification; mother with less than secondary school qualification

*Table 8.***Correlation matrix of residuals:**

Results of a multivariate regression on students' estimates of current average (log)earnings and (log) earnings expectations with a secondary school qualification at labour market entry, at age 30 and age 40

	CS1	CS2	CS3	ES1	ES2	ES3
CS1	1.0000					
CS2	0.6749	1.0000				
CS3	0.5459	0.8266	1.0000			
ES1	0.5344	0.4577	0.3855	1.0000		
ES2	0.4119	0.5177	0.5015	0.7084	1.0000	
ES3	0.3385	0.4769	0.5230	0.5971	0.8602	1.0000

Breusch-Pagan test of independence: $\chi^2(15) = 18782.915$, Pr = 0.0000

Table 9.

**Results of a multivariate regression on students' estimates of current average (log)earnings
and (log) earnings expectations with a higher educational qualification at labour market
entry and at age 30 and age 40**

	Estimates of current average earnings						Earnings expectations					
	Starting (CH1)		At age 30 (CH2)		At age 40 (CH3)		Starting (ES1)		At age 30 (ES2)		At age 40 (ES3)	
	coeff.	t	coeff.	t	coeff.	t	coeff.	t	coeff.	t	coeff.	t
<i>Male</i>	0,155	9,77	0,154	9,72	0,177	10,03	0,2340	12,31	0,237	12,69	0,2954	14,07
<i>Applying for further studies</i>	0,053	1,32	0,060	1,49	0,046	1,04	0,083	1,74	0,063	1,34	0,092	1,74
<i>Type of school</i>												
gymnasium 8 grades	-0,058	-1,99	-0,062	-2,14	0,059	-1,82	-0,003	-0,09	0,009	0,27	0,007	0,20
gymnasium 6 grades	-0,006	-0,23	0,017	0,63	0,029	0,97	-0,011	-0,34	0,030	0,95	0,024	0,68
gymnasium 4 grades	-0,005	-0,32	0,010	1,08	0,035	1,97	0,010	0,55	0,035	1,82	0,045	2,11
<i>Type of settlement</i>												
Budapest	0,314	0,87	0,307	0,85	0,356	0,88	0,382	0,88	0,353	0,83	0,361	0,76
County seat	0,181	0,50	0,174	0,48	0,226	0,56	0,272	0,63	0,222	0,52	0,213	0,45
Other town	0,205	0,57	0,181	0,50	0,221	0,55	0,260	0,60	0,197	0,46	0,178	0,37
<i>Educational level of parents</i>												
Father with secondary school qualification	0,003	0,14	0,012	0,64	0,020	0,99	0,040	1,86	0,038	1,75	0,048	1,98
Father with at least college education	-0,010	-0,49	-0,006	-0,29	-0,002	-0,08	0,013	0,53	0,034	1,39	0,043	1,57
Mother with secondary school qualification	0,008	0,40	0,006	0,29	0,017	0,78	0,002	0,09	0,008	0,36	-0,001	-0,06
Mother with at least college education	-0,022	-0,94	-0,046	-1,98	-0,044	-1,70	0,043	1,56	0,037	1,38	0,0324	1,06

continue of table

<i>Per capita family income</i>												
-30 000 HUF	-0,095	-5,29	-0,131	-7,26	-0,153	-7,63	-0,137	-6,33	-0,166	-7,80	-0,198	-8,31
31-60 000 HUF	-0,036	-1,80	-0,056	-2,77	-0,058	-2,57	-0,067	-2,79	-0,074	-3,10	-0,099	-3,71
61-100 000 HUF	-0,003	-0,17	0,008	0,36	0,011	0,43	-0,014	-0,52	-0,015	-0,56	-0,018	-0,60
<i>Ability</i>												
accumulated score	0,001	1,59	0,003	3,19	0,004	3,95	0,002	2,63	0,004	4,62	0,007	6,47
<i>Field of study</i>												
fine arts	-0,130	-2,55	-0,153	-2,99	-0,142	-2,50	-0,2840	-4,64	-0,312	-5,18	-0,309	-4,58
languages	-0,072	-2,30	-0,079	-2,52	-0,085	-2,43	-0,182	-4,87	-0,210	-5,68	-0,238	-5,74
educational sciences	-0,149	-3,34	-0,173	-3,87	-0,0152	-3,05	-0,319	-5,95	-0,358	-6,78	-0,392	-6,61
medical	-0,174	-6,37	-0,124	-4,54	-0,108	-3,53	-0,234	-7,17	-0,206	-6,38	-0,196	-5,43
agricultural	-0,032	-0,65	0,003	0,06	0,005	0,09	0,015	0,25	0,016	0,27	0,010	0,15
technical	0,081	3,42	0,089	3,79	0,089	3,18	0,085	2,99	0,079	2,83	0,062	1,99
law	-0,073	-2,63	-0,056	-2,01	-0,018	-0,61	0,007	0,23	0,104	3,19	0,159	4,34
informatics	0,110	2,88	0,133	3,49	0,128	3,01	0,187	4,10	0,196	4,35	0,224	4,44
mathematics and natural sciences	-0,076	-1,76	-0,110	-2,54	-0,127	-2,63	-0,200	-3,85	-0,231	-4,50	-0,270	-4,70
humanities	-0,116	-3,49	-0,11	-3,54	-0,121	-3,26	-0,227	-5,70	-0,223	-5,66	-0,244	-5,53
other	-0,028	-0,90	-0,006	-0,21	-0,012	-0,35	0,013	0,36	0,043	1,16	0,030	0,73
Constant	3,928	10,75	4,193	11,48	0,283	10,52	3,808	8,70	4,065	9,42	4,130	8,54
R squared	0,15		0,17		0,16		0,22		0,26		0,28	
Number of observations	2748		2748		2748		2748		2748		2748	

Reference category: female; vocational secondary school; villages; per capita family income per month 101 000 HUF; no intention to apply for further studies; father has less than secondary school qualification; mother has less than secondary school qualification

*Table 10.***Correlation matrix of residuals:**

Results of a multivariate regression on students' estimates of current average (log)earnings and (log) earnings expectations with secondary school qualification at labour market entry, at age 30 and age 40

	CH1	CH2	CH3	EH1	EH2	EH3
CH1	1.0000					
CH2	0.8245	1.0000				
CH3	0.6778	0.8720	1.0000			
EH1	0.5559	0.5130	0.4421	1.0000		
EH2	0.4963	0.5453	0.5208	0.8720	1.0000	
EH3	0.4324	0.5103	0.5625	0.7490	0.9028	1.0000

Breusch-Pagan test of independence: $\chi^2(15) = 17538.658$, Pr = 0.0000

Table 11.

**Models of students' expected probability of finding an appropriate job
with secondary school and higher educational qualifications**

	With secondary school qualification		After graduating at higher education	
	coeff.	t	coeff.	t
<i>Gender</i>				
Male	4,805	5,01	2,308	2,09
<i>Applying for further studies</i>	- 6,062	-4,87	1,064	0,35
<i>Type of school</i>				
gymnasium grade 8	- 3,730	-1,85	5,396	2,61
gymnasium grade 6	0,962	0,51	0,247	1,31
gymnasium grade 4	- 4,612	-4,32	-0,017	-0,02
<i>Type of settlement</i>				
<i>Budapest</i>	1,842	0,16	3,207	0,14
County seat	- 7,343	-0,65	1,731	0,07
Other town	- 9,538	-0,84	0,469	0,02
<i>Per capita family income</i>				
-30 000 HUF	- 2,970	-2,64	-4,866	-3,77
30-60 000 HUF	0,734	0,58	-3,945	-2,80
61-100 000 HUF	0,705	0,48	-0,591	-0,38
<i>Educational level of parents</i>				
Father with secondary school qualification	0,915	0,83	0,773	0,60
Father with at least college education	2,451	1,83	1,882	1,28
Mother with secondary school qualification	0,150	0,13	0,408	0,29
Mother with at least college education	- 1,902	-1,34	2,808	1,72
<i>Field of study</i>				
fine arts	- 3,544	-0,98	0,760	0,21
languages	4,065	1,81	- 4,407	-1,97
elementary and pre-school educational sciences	- 2,946	-0,88	- 8,430	-2,63
medical sciences	1,752	0,88	3,417	1,77
agricultural sciences	4,426	1,21	- 1,319	-0,37
engineering	0,647	0,39	5,687	3,55
law	0,460	0,24	1,916	1,02
informatics	-1,367	-0,52	5,974	2,33
mathematics and natural sciences	-6,406	-2,07	-9,295	-3,02
humanities	0,166	0,07	-9,032	-3,95
other	2,415	1,12	5,916	2,85
<i>Ability</i>				
accumulated score	-0,153	-2,93	0,100	1,72
Constant	70,35	6,10	57,45	2,44
R-squared		0,085		0,081
Adjusted R-squared		0,078		0,071
Number of observations		3518		2353

Reference category: female; vocational secondary school; villages; per capita family income per month 101 000 HUF; no intention to apply for further studies; father with less than secondary school qualification; mother with less than secondary school qualification

Table 12.

**Probability of applying for further studies.
Results of ordered-logit estimate**

Dependent variable: 1=not apply for further studies, 2=apply in post-secondary vocational training 3=apply for college education 4=apply for university education

	b	z
<i>Gender</i>		
Male	0,5531323	5,154
<i>Type of school</i>		
vocational secondary school	- 0,7780479	-6,770
gymnasium 8 grades	0,3559067	1,603
gymnasium 6 grades	0,4963812	2,440
<i>Labour market expectations</i>		
Expected wage gain	0,0004774	4,047
Expected probability of finding a job with a secondary school qualification	-0,0000745	-0,034
Expected probability of finding a job with a higher educational qualification	0,0022946	1,147
<i>Family background</i>		
Studying at the same settlement where living	0,2255083	2,149
Father with secondary school qualification	-0,0711259	-0,551
Father with higher educational qualification	0,017274	0,114
Mother with secondary school qualification	0,0967317	0,688
Mother with higher educational qualification	0,5401146	3,300
<i>Per capita family income</i>		
-30 000 HUF	-0,1575022	-1,173
31-50 000 HUF	-0,1733037	-1,172
51-100 000 HUF	-0,0838305	-0,496
<i>Ability</i>		
Accumulated score	0,1186703	17,975
Cut 1	0,195317	
Cut 2	1,893342	
Cut 3	6,238275	
chi-2	802,76	
First log likelihood	1774,2668	
Last log likelihood	-1372,9971	
Pseudo-R2	0,2262	
Number of observations	2141	

Reference category: female; gymnasium 4 grades; studying away from home ; father has less than secondary school qualification; mother has less than secondary school qualification ; per capita family income per month 101 000 HUF

Figures

Figure 1.

Estimated (median) and true wage profiles with secondary school and higher educational qualification

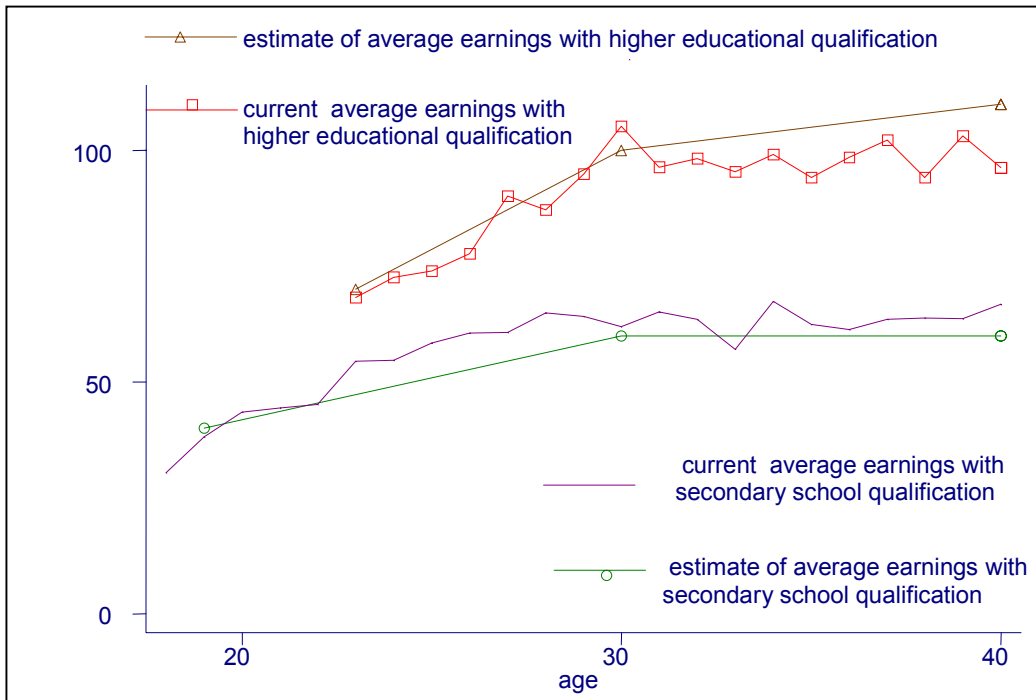


Figure 2.

Estimated and current average earnings of different occupations at age 30 (000 HUF)

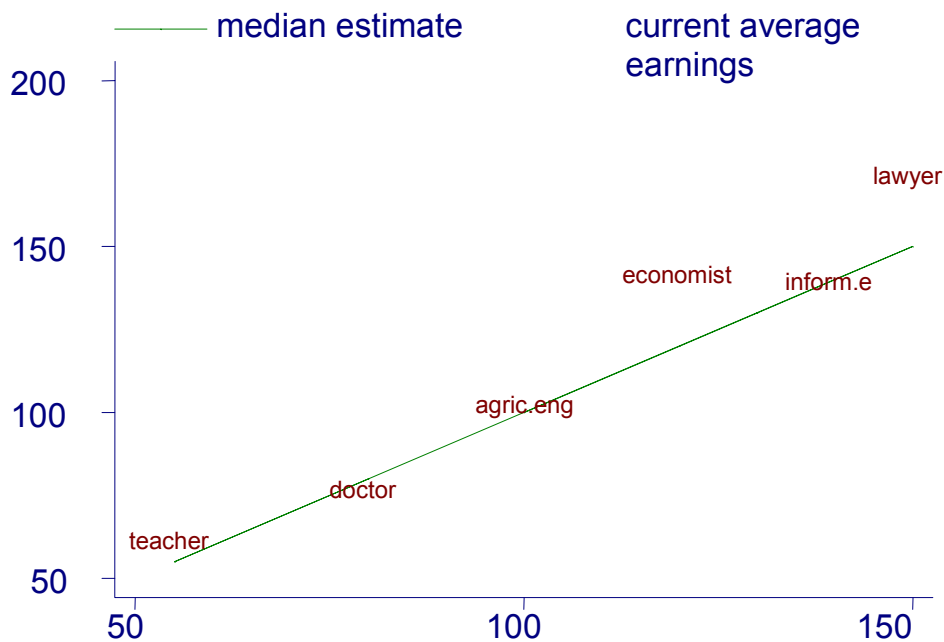


Figure 3.

Estimations of current average earnings and wage expectations with secondary school qualification by intention to apply for further studies

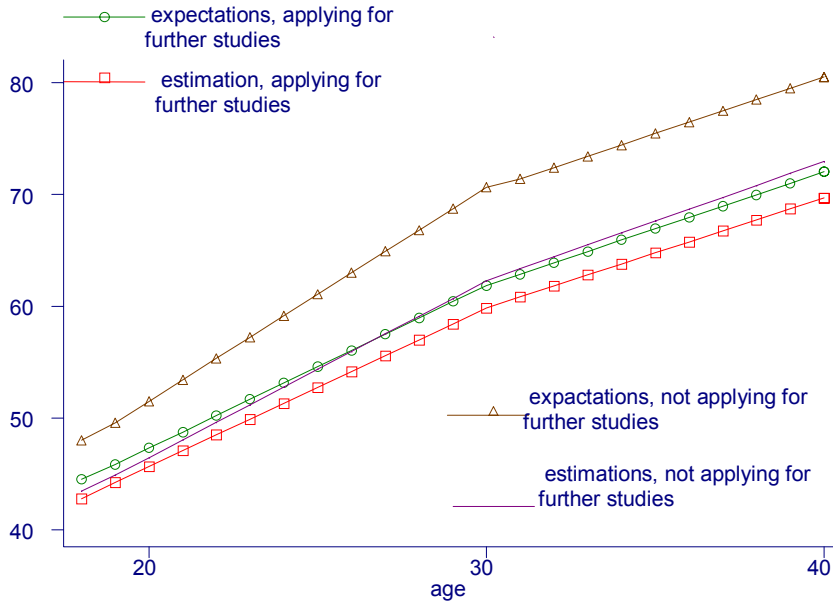
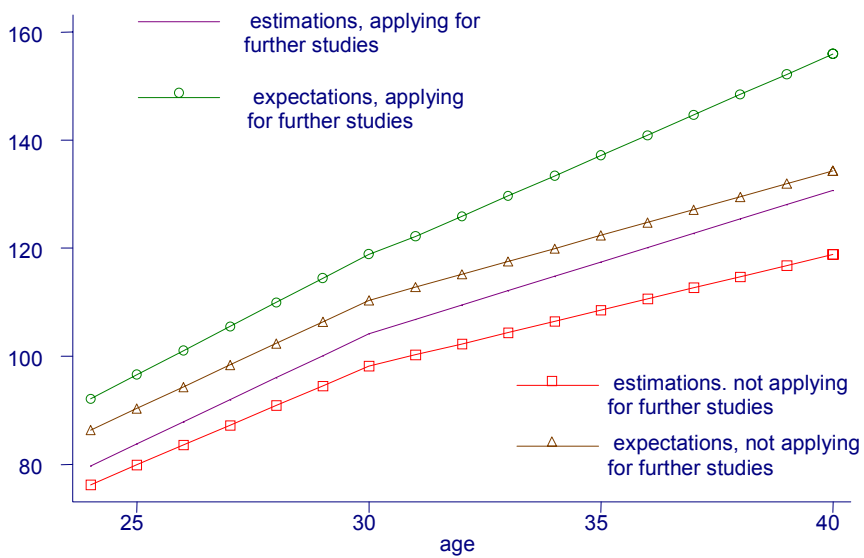


Figure 4.

Estimations of current average earnings and wage expectations with higher educational qualification by intention to apply for further studies



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