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Educational intentions, cognitive skills and earnings expectations of French undergraduates

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Abstract

This paper aims to study the earnings expectations of first-year students at a French university and to compare them with the observed earnings of young people in the labour market for that same year. One of the original features of this research is that it includes, as explanatory variables, several measurements of cognitive capacities which it might be thought would influence individuals' expected earnings. Furthermore, although many surveys have been made in both developed and developing countries, none has so far been conducted in France as far as we are aware. This type of enquiry seems all the more important because the French labour market is highly segmented to the disadvantage of young people. The structuring of internal markets relegates young people to the position of outsiders on the labour market, an effect that is further accentuated in times of economic crisis.

The results, even if a slight overestimation is observed (about 7%), point to a certain proximity between expected earnings of young people at the start of their careers and actual earnings on the labour market. However, the overestimation strongly increases 10 years later (about 41%). Our findings also highlight the importance of the environment in which students make their choices about education. Expected earnings are proportionally higher when their parents seem to be involved in the careers guidance, even controlling for the effect of parental socio-economic status. The positive opinion of parents about the orientation or the connection between the discipline and the father's occupation are generally associated with higher earnings. In addition, our results show a strong impact of cognitive variables which are far more significant than variables relating to past educational performances.

Keywords: Wage expectations, cognitive skills, first year students

JEL Classification codes: J30, J24

Introduction

The future level of earnings that young people still in education expect to attain is central to decision-making in the theory of human capital investment. It determines their choices as to their fields of study and so their individual levels of human capital. When attempting to analyse interactions between educational supply and demand for certain occupations, as proposed for example by Freeman in cobweb models, the way in which the earnings expectations of pupils and students are formed is decisive in the demand for education, even if their forecasts suffer from some degree of short-sightedness. Underestimating actual wages may mean students do not pursue their studies as far as they might otherwise do or that they do not opt for certain fields of study although they are remunerative on the labour market. Students may also devote less time to their education by opting to take up a paid activity that competes for their study time. As Jerrim (2011) points out, the implications of overestimating earnings may be less detrimental to investment in education. For one thing, students put more effort into their studies insofar as they expect higher returns, thereby reducing the probability of failure and of drop-out. For another thing, if students continue to overestimate wages through to the end of their education, their wage demands may lead to better matching on the labour market, in accordance with job-search theory. A higher reserve wage would arguably prompt job-seekers to be more alert to the employment offered to them. Conversely, an overestimation may also lead young people in some disciplines to continue studies that may fail to prove profitable. When young people are approaching the end of their studies or when their educational choices are irreversible, the costs related to changing their investment in human capital may be too high. And the difficulties in finding work may come across as a greater likelihood of being overeducated for the labour market.

In the economic literature, student surveys are often used to investigate how wage expectations are constructed (Dominitz and Manski,1996; Betts, 1996; Brunello et al., 2004). The purpose is to compare students' expected earnings on the labour market with their career plans or with existing jobs in accordance with certain characteristics of the young people: their cognitive and non-cognitive abilities during their education, their socio-economic background and the careers guidance they receive. From this perspective, the aim here is to study the earnings expectations of first-year students at a French university and to compare them with the observed earnings of young people in the labour market for that same year. In both instances, the intended final qualification and the field of study are taken into account. One of the original features of this research is that it includes, as explanatory variables, several measurements of cognitive capacities which it might be thought would influence individuals' expected earnings. Furthermore, although many surveys have been made in both developed and developing countries, none has so far been conducted in France as far as we are aware. This type of enquiry seems all the more important because the French labour market is highly segmented to the disadvantage of young people. The structuring of internal markets relegates young people to the position of outsiders on the labour market, an effect that is further accentuated in times of economic crisis. It should be asked how young people in the course of their education perceive these difficulties and how the difficulties might affect their choices in terms of investment in human capital? These questions are all the more telling for young people from more modest social backgrounds or from less-favoured areas, who often tend to underestimate their future earnings and so cut back on their investment in education.

The first section of this paper proposes a survey of the empirical literature on the determinants of expected earnings. The second section presents the data and the way the survey was conducted. The third section explains the method with respect to earnings functions and inaccurate estimations. The main empirical results are then set out and discussed in the fourth section. The final section states the main conclusions and suggests some implications and limitations.

1. Survey of the literature

A good deal of research has been done in education economics on the question of how realistic earnings expectations are. While different empirical methods have been used to measure young people's earnings expectations, most research argues that expected wages are overestimated compared with actual wages observed on the labour market. This is particularly so when students begin their first year in higher education, even if the gap between the real wage and the expected wage narrows during their time at university. Jerrim (2011) reports, for example, that full time students in Britain overestimate their starting wage by about 15% compared with wages observed on the labour market. Betts (1997) looks at another option by questioning students at the University of California about starting payfor several occupations, disciplines and levels of qualification. He concludes that expected average earnings are quite close to actual wages, with mean errors of about 6% when overestimates and underestimates for certain occupations are offset. In a rare example of research pointing to underestimations, Menon et al. (2012), questioning young Cypriot students and graduates in a context of economic crisis, report young people in the course of their studies underestimate their future earnings. These different studies raise the question of the short-sightedness of expectations: comparing expected earnings against actual earnings at the same date presupposes that the individual fails to anticipate any change in terms of employment and earnings over the medium term. Overestimating or underestimating earnings in the short term is not necessarily overestimating or underestimating them in the long term because of changes in the labour market and changes in wages, even if students might overlook phenomena like inflation (Manski, 1993). On the basis of a longitudinal study, Weddink and Hartog (2004) circumvent the question of short-sightedness by comparing expected earnings and actual earnings after four years in the labour market for a sample of Dutch students. They conclude, even so, as in most earlier studies, that earnings are overestimated: young people's expected earnings are about 10% higher than their actual earnings. Other studies compare the level of actual and expected earnings of graduates and students from the same university so as to allow for bias related to the quality of the institution, the characteristics of the students and their career plans. After correction for these biases, Carjaval et al. (2000) also report that earnings are slightly overestimated, with students not being fully informed about the returns to certain characteristics on the labour market.

One of the main points of interest in the literature is the analyse of the factors that lead young people to over- or underestimate expected earnings, either on the basis of comparisons among young people with different characteristics or by comparing expected and actual earnings for given characteristics. According to the canonical model of human capital theory, those characteristics depend largely on factors that will also influence the choice of field of study. So the individual characteristics of young people and the conditions in which they form their expectations are decisive. Williams and Gordon (1981), interviewing a sample of 16-year old English schoolchildren, report that the intention of continuing into higher education is associated with higher expected earnings. However, those earnings must be proportionately

higher when the young people are from modest social backgrounds or have lower cognitive abilities.

Whatever the intended level of education, certain factors explain the expected differences structurally. The earliest work emphasizes the different expectations of girls and boys (Smith and Powell, 1990; Blau and Farber, 1991) with young men generally expecting higher wages than young women, which is consistent with observed differences in earnings. Those differences may nonetheless increase over the course of a career. Brunello et al. (2004) report that girls expect their earnings to be about 9% lower at the end of their studies, but the expected difference is twice as large 10 years after completing their education. In comparing Swiss and US cases about expectations by gender, Wolter (2000) emphasizes that students rationally make allowance for structural rigidities in the labour market.

Knowledge of the labour market is also an important differentiating factor. Expectations are proportionally more specific as students approach the end of their education. For Jerrim (2011), overestimations are twice as large for first-year students as for final-year students. He points out, though, that students with paid part-time work hardly ever overestimate earnings: the difference with actual earnings is of the order of 3%. Brunello et al. (2004) show that older students expect lower earnings at the start of their careers. The same is also true for students intending to undertake longer studies before graduating, which is consistent with signal theory. However, those differences fade for expected earnings 10 years after entry into the labour market.

The family socio-economic background is another factor explaining differences in expectations (Smith and Powell, 1990). This may arise in the first place from family social capital and better information about available employment on the labour market through their parents. Streufert (2000), in a theoretical model, underscores the importance of genuine diversity in the immediate social environment on educational choices: young people must be able to observe all of the returns to education. Next, children from more favoured backgrounds may also hope to benefit directly from those networks in their search for future employment and so expect to be in the top part of the earnings distribution. Brunello et al. (2004) thus show that the mother's level of education has a positive influence on the expected earnings of their children whereas the father's level of education increases their expectation of finding employment quickly. By contrast, what their parents studied in higher education does not seem to influence expected earnings. The same is observed when the explanatory variable is the parents' occupation (Webbink and Hartog, 2004) or family income. Betts (1997) reports, for example, that children whose parents are on modest incomes tend to make lower estimates about their expected earnings. The study by Alonso-Borrego and Romero-Medina (2010) of university students in Madrid points likewise to the young people with the higher parental incomes expecting the highest remuneration. As Brunello et al. (2004) claim, this access to information may also be had through formal informational channels about employment in universities: students benefitting from such information generally expect higher earnings. These social differences are compounded by differences relating to membership of different minority groups, such as young people born abroad. Sometimes their lack of information about the labour market in the host country may lead them to expect higher earnings.

Educational abilities, whether self-assessed or measured by their past school performances, are also decisive. Generally, young people who were the highest achievers in secondary education or those with the highest cognitive abilities expect higher earnings for the same

intended level of education. This may be explained by their confidence in achieving their study aims compared with others or by the fact that their cognitive capacities will enable them, for an equal qualification, to more readily find employment in the top of the earnings distribution. Brunello et al. (2004) show that students with better access to selective fields are more likely to declare higher expected wages. The effect of field of study on expected earnings is generally more contrasted. While it seems that students in the humanities do not expect such high earnings, since it is often more complicated to find any occupational opening, the results vary in different research work (Need and de Jong, 2008; Alonso-Borrego and Romero-Medina, 2010).

Less readily observable variables like attitude towards risk or preference for the present, which are decisive variables in human capital choices, may also explain differences in expected earnings. Schweri et al. (2011) report that earnings expectations for a sample of Swiss students are higher when wage variances in certain occupations are greater. This is consistent with the findings of Williams and Gordon (1981), who also report that the students willing to take more risks declare higher expected earnings. Results about preference for the present are less clear-cut. In keeping with human capital theory, Williams and Gordon (1981) report that young people who prefer to postpone rewards generally have higher earnings expectations, and especially girls. Conversely, Brunello et al. (2004) observe, surprisingly, that young people with a preference for the present expect higher wages. The study by Need and de Jong (2008) of first-year Dutch students also emphasizes the importance of allowing for other variables that can readily be observed such as character traits. Emotionally unstable young people are those who predict, all else being equal, lower earnings, whereas those who look to put their career first in future decisions between career and family hope for higher earnings.

2. Data

The survey was conducted in 2010 among first-year students at the University of Burgundy in three fields of study: social and economic administration, psychology and law. It was conducted in two stages. The first phase was designed to evaluate the abilities of students before they began university. The survey, including tests to measure cognitive abilities, was carried out in the week before the start of the 2010–2011 academic year, during which students were called at random for a mandatory initiation week. The cognitive tests comprised three speed processing tasks (Serial Reaction Time (SRT) and two Posner tasks), three working memory tests (reading span, operation span and Time Based Resources Sharing (TBRS)), and one reasoning task (the abridged form of Raven's matrices). Academic ability of high school students was measured by a written comprehension test. Lastly socio-demographic and economic data were collected at the start of the research. Some 220 students took the various tests in the first phase. The second phase was in February 2011. Some 510 students completed a questionnaire during a lecture at which attendance was mandatory, some of whom had already been questioned in phase 1. The questionnaire addressed their working methods, any difficulties encountered in the course of the academic year, their past educational record and their future educational plans. Information covering the two survey phases was available for 169 students. In the second phase, students were asked two questions about their expected earnings and their intended level of higher education. The questions were:[1]

[1]Unlike in other studies, such as Dominitz and Manski (1993), we were unable to ask students about different possible earnings distributions, as such information requires computer processing, which was not possible for the second phase of the

- What is the highest level of education you plan to achieve by the end of your higher education?

- In your opinion, what will your net monthly earnings be one year after completing higher education…, and 10 years after completing higher education?

The survey also included information about the students' socio-demographic characteristics, their career choices, their living conditions and their academic achievements. Socio-demographic characteristics were measured by social category and the father's level of education. Two other variables were constructed from the survey to try to determine how much students knew about employment opportunities and the labour market.[2] One variable measured the geographical distance between the student's high school and the university and the other the closeness between the father's occupation and the academic discipline chosen by the student.

The students were also asked about their choice of orientation and more especially the reasons for their choice of field of study, whether they had a career plan connected with their studies, the opinions of their parents and the people who had influenced their choice of orientation. The conditions in which students lived and studied were ascertained through the type of halls of residence, financial resources, and difficulties encountered while studying. Lastly, the survey provided an objective measure of students' academic achievement (examination marks) and a subjective measure with students being asked to assess their own academic level. Table 2B in Appendix B sets out the descriptive statistics for all of the variables. Because of the way the survey was processed, information about certain variables was not available for all students. The appended table specifies the frequencies for each variable.

survey.

[2]A large proportion of students not from high schools close to the university were from rural areas where there is little skilled employment.

Table 1: Descriptive statistics of earnings and number of years' in higher education

		Expected earnings		**Years in higher education**	
		Mean	*SD*	*Mean*	*SD*
All		1613	543	4.8	1.3
Men		1837	658	4.8	1.3
Women		1511	454	4.5	1.2
Raven's matrices	$Q_{0.25}$	1534	425	4.7	1.2
	$Q_{0.5}$	1588	538	4.8	1.2
	$Q_{0.75}$	1507	311	5.1	1.5
Posner	$Q_{0.25}$	1446	256	4.7	1.1
	$Q_{0.5}$	1592	4611	4.9	1.4
	$Q_{0.75}$	1639	475	5	1.3
Father had higher education		1699	623	5.2	1.1
Father had secondary education		1527	403	4.7	1.5

Table 1 provides a first look at the differences in educational levels and expected earnings of first-year students. So as to be able to reason in terms of the rate of return to education, we constructed a continuous variable of the student's intended level of education.[3] The average number of years of university education is approximately 4.8, corresponding to mean earnings one year after entering the labour market of €1613. Expected earnings vary markedly with individuals' characteristics. The mean wage and intended number of years' education seem to be lower for women than for men. Students whose fathers entered higher education expect a mean remuneration of €1699 and 5.2 years in higher education versus €1527 and 4.7 years for the others. Table 1 also reveals different expectations of undergraduates depending on their cognitive abilities. Students who scored well on the processing speed test (Posner) expected proportionately higher earnings, which does not seem to be the case for reasoning capacity (Raven's matrices). However, students with higher scores for these two tests contemplate longer university education on average.

A national survey by Céreq in 2010 was used to compare actual earnings with expected earnings of undergraduates at Burgundy University. The survey covered some 25,000 young people having left the education system at all levels of qualification and questioned in 2010 about their insertion in the world of work, for their first three years of their working lives. The survey can be used to ascertain the mean earnings of young people one year after leaving the education system (in 2008) by sex, CITE level and discipline. In all, there is a sample of some 350 young graduates for the three disciplines and the different levels of qualification covered by our survey.

[3] 17% of students planned to obtain a first degree, 68% a master's degree, 8% a doctoral degree and 7% some other level of higher education (BTS, IUT, etc.).

3. Method

First, we looked to measure the different determinants of expected earnings one year after entering the labour market. Second, we measured the divergences in young people's expectations and tried to identify the various factors that might explain those divergences.

Earnings after one year

To analyse the characteristics explaining expected earnings, standard Mincer equation were estimated. They were of the form:

$$\ln(w^{est}) = \beta_0 + \beta_1 Educ_i + \beta X_i + \varepsilon_i$$

where, $\ln(w^{est})$ was the logarithm of the estimated wage after one year, $Educ_i$ the number of years in higher education and X_i a set of explanatory variables.

Now, it could be assumed that students anticipated the number of years in higher education and the wage level together, which might entail endogeneity and simultaneity biases. To allow for these biases, we also estimated simultaneous regressions by three-stage least squares. This method allowed for simultaneity and was justified when the residuals of the two equations might be correlated, which was probably the case here.

We estimated the equations:

$$\begin{cases} \ln(w^{est})_i = \beta_0 + \beta_1 Educ_i + \beta X_i + \delta W_i + \varepsilon_i \\ Educ_i = \gamma_0 + \beta_2 \ln(w^{est})_i + \beta X_i + \gamma Z_i + u_i \end{cases}$$

where W_i and Z_i were variables that were assumed to affect expected earnings and the intended number of years in higher education, respectively.[4]

Given the survey structure, the estimations were performed first on the full sample (510 students) and then on the subsample (169 students) comprising the information on cognitive abilities.[5] Because there were no instruments in the full sample, the simultaneous equations were for the subsample alone.

Accuracy

In order to determine the divergence in estimations, we initially studied the earnings observed from the Génération national survey. Mean observed earnings were calculated by sex, discipline (administration, psychology, law) and level of education (first degree, master's degree, doctoral degree). The divergence in estimation could then be calculated from:

$$e = \frac{w^{est} - \bar{w}^{true}}{\bar{w}^{true}}$$

where w^{est} was the earnings the student expected and $\bar{w}^{true}$ the mean observed earnings depending on the student's characteristics (sex, discipline, intended level of education).

[4] The instrumental variables for earnings are choice of orientation and geographical distance whereas, for the number of years in higher education, they are type of accommodation and student's financial resources.

[5] To control possible selection bias we estimated a probitto control non responses between two samples (cf. annex C), which enabled us to calculate a Mills inverse ratio. As this was not significant in the gains function, it seems there was no selection bias.

The determinants of the misestimations were calculated by the same method as for earnings one year after entry into the labour market, either by OLS or 3SLS.

4. Results

Earnings one year after completing higher education

Table 2 shows the results of OLS and 3SLS estimations for the two samples of students. First, the effect of the number of years in higher education on expected earnings at labour market entryis positive and significant, which is consistent with human capital theory. Returns on education nonetheless vary from 3 to 4% for the OLS estimation to 10% for simultaneous equation regressions. The unobserved characteristics increase both earnings and the number of years in higher education, which leads to an underestimation of the net effect of the number of years in higher education if it is not endogenized. However, expected earnings do not seem to influence the intended number of years in higher education once earnings are endogenized. No variable for secondary school performance turns out to be significant when the scores in certain cognitive tests and the student's self-assessment relative to school level are introduced. Reasoning ability measured by Raven's matrices and the perception of skills positively impact the intended number of years in higher education. Conversely, only the information processing speed,[6] measured by the Posner test, seems to have a positive and significant impact on expected earnings, which is consistent with a study by Heinek and Anger (2010) highlighting a marked impact of cognitive speed on observed earnings.

[6] *Note:* The indicators from these tests are response times in milliseconds, the best performances are therefore the lowest values. The other tests were not included in the model as they were not significant.

Table 2: Determinants of earnings at 1 year, estimated by OLS and 2SLS

	Full sample	**Sub-sample**			
	Log of earnings	Log of earnings		Years in higher education	
	OLS	*OLS*	*3SLS*	*OLS*	*3 SLS*
Log of earnings				0.86*	0.2
Number of years in higher education	0.03***	0.04**	0.10**		
Male	0.14***	0.14***	0.15***	-0.10	0.01
Fields of study *ref. Psychology* Law Administration	 0.18*** 0.13***	 0.11** 0.17**	 0.095** 0.19***	 0.43 0.39	 0.13 -0.33
Help with orientation in higher education *ref. No help* from parents from friends from others (careers guidance centre. etc.)	 0.06* -0.08** -0.03	 0.04 -0.11 -0.08	 0.046 -0.11* -0.09		
Self-assessed school performance *Ref. average or below* Above average	 0.02		 0.02	 0.51**	 0.61**
Ref. High school to university from 50 to 150 km Distance <50 Distance >150	 0.05* 0.11***	 0.05 0.12***	 0.07* 0.11**		
Cognitive tests Raven's matrices Speed processing		 -0.02 -0.04***	 -0.03 -0.04***	 0.05*	 0.17*
Father's social category Father in managerial position (ref. other)	 0.04				
Link between father's occupation and higher education *ref. father not in management and job unrelated to studies* Father in management and job related to studies Father in management and job unrelated to studies Father not in management and job related to studies		 0 .15** -0.03 0.08	 0.15** -0.04 0.07		 -0.25 0.20 0.03
Career plan *ref. No career plan* Plan related to higher education Plan unrelated to higher education	 0.09*** 0.02	 0.07* -0.03	 0.06 0	 0.10 -0.24	 0.14 -0.28
Parents' opinion on orientation *Ref. Unfavourable or no opinion* Favourable opinion		 0.11***	 0.10***	 0.08	 0.16
Ground for university orientation *Ref. Other grounds* Choice by interest for subject		 -0.06	 -0.08**	 0.39**	 0.37**
Extracurricular difficulties with effect on schooling Family difficulty Financial difficulty Difficulty with daily travel time Relational difficulties Other difficulties	 -0.00 -0.01 -0.03 -0.01 -0.12**	 -0.01 0.05 -0.16*** 0.07 0.15	 0.02 0.05 -0.14*** 0.06 0.11	 -0.51* -0.15 -0.11 0.11 0.34	 -0.51** -0.13 -0.21 0.16 0.51
Residence (ref. not living with parents) Living with parents				 -0.31	 -0.42**
Main financial resources *ref. Financial resources related to paid activity* Grant student Direct help from parents				 0.58** 0.14	 0.5** 0.05
Father's level of education Father had higher education Left blank				 0.44* -0.24	 0.39*
R^2	0.25	0.41	0.30	0.31	0.30
Generalized Hausman test[7]					
N	510	169			

[7] The Hausman test leads to accepting the endogeneity assumption.

Surprisingly, the father's level of higher education and occupation have a fairly limited influence on expected earnings, even if students whose fathers entered higher education intended to undertake longer university studies. Having a father in a managerial position had no direct effect on expected earnings. However, the connection between the father's occupation and the discipline chosen by young people whose parents were in managerial positions had a 12% positive impact on expected earnings. This connection had no significant effect for children from more modest social backgrounds. Furthermore, children of parents in managerial positions but whose occupation is unrelated to their studies do not expect higher earnings. These results show that the choice of orientation and the information students have quite strongly structure their expectations about earnings. Students with a career plan related to their higher education expect higher earnings. Similarly, students whose parents are in favour of the higher education pursued also expect about 10% higher earnings. Contrariwise, students whose choice of orientation depends essentially on their friends generally expect lower earnings. In other words, the involvement of the families in the choice of higher education leads young people to aim for higher levels of earnings, most certainly because of better knowledge of the labour market. The distance between the student's former high school and the university has a significant effect, but is more ambiguous because it is not linear. When the distance is less than 50 km, students expect slightly higher earnings perhaps because of better knowledge of the skilled labour market in the largest city of the local region or because it is possible to mobilize certain networks. Expected earnings are also higher for students who did their secondary education in high schools far from the university (more than 150 km), which may be explained by them wanting to offset the greater cost of higher education by higher earnings.
More classically, other variables like sex or field of study have pretty much expected effects on the expected earnings. Women expect significantly lower earnings than men (about -14%), which is consistent with earnings differentials observed on the labour market. The field of study effect is important too. Students in law and administration expect significantly higher earnings than those in psychology, a field in which it is reputedly more difficult to find employment.

Lastly, students' living conditions determine the intended number of years in higher education but have no effect on earnings. Students whose main financial resource is their grant intend to continue for longer in higher education. However, the contrary is found for students living with their parents or having daily difficulties with travelling, certainly because of an adverse effect on the hedonic preferences associated with their educational choice.

Accuracy of expectations

Table 3 shows that generally first-year students overestimate their earnings upon entering the labour market. The deviation is of about + 9% and is significant at the 1% level. This deviation is similar to that observed in various studies of other countries: 6% in the United States by Betts (1996) or 5.3% in the United States and in Switzerland by Wolter (2000). The misestimate differs by sex, field of study and intended diploma. Men tend to overestimate their starting salaries more than women (14.8% versus 5.9%). While the estimated error is not significant for psychology students, law and administration students overestimate their salaries by 18.5% and 10.3%, respectively. It seems that the misestimation is greater for students intending to complete a master's degree (11.9%) while it is relatively small for those intending to do a first degree (2.5% significant at 5%) and not significant for those intending to do a doctoral degree.

Table 3: Mean expected and observed salary one year after completing higher education

	Expected salary	**Actual salary**	**Difference test**
All	**1612.8**	**1474.7**	**9.4*** **
Men	1808.0	1575.0	14.8***
Women	1512.8	1429.1	5.9***
Law	1781.9	1503.2	18.5***
Psychology	1380.8	1434.5	-3.7
Administration	1581.7	1433.7	10.3***
First degree	1365.0	1332.0	2.5**
Master's	1679.0	1500.0	11.9***
Doctorate	1772.0	1860.0	-4.7

Note: ***, **, * are for 1, 5 and 10%, respectively. Wilcoxom rank test.

Determinants of mistaken expectations

Table 4 shows the determinants of deviations in expectations for each sample by the OLS and 3SLS methods.

Table 4: Determinants of misestimations

	Full sample	**Sub-sample**		
	Misestimation	Misestimation		Years of study
	OLS	*OLS*	*3SLS*	*3 SLS*
Misestimation				0.22
Number of years of study	-0.03**	-0.02	0.07	
Male	0.09***	0.07	0.08	-0.04
ref. Psychology	0.21***	0.11**	0.09*	0.21
Law				
Administration	0.10**	0.15*	0.17**	-0.31
ref. Orientation by self				
By parents	0.07*	0.02	0.02	
By friends	-0.06	-0.11	-0.11	
Others	-0.04	-0.10	-0.10	
Assessment above average	0.02	0.08*	0.03	0.51**
ref. No career plan				
Plan related to higher education	0.13***	0.10**	0.07	0.24
Plan unrelated to higher education	0.02	-0.02	0.01	-0.17
Father in managerial position	0.04	0.01	-0.01	0.09
ref. Distance from 50 to 150 km				
Distance < 50 km	0.06*	0.07	0.09*	
Distance > 150 km	0.13***	0.13**	0.13**	
Parents' opinion favourable		0.11**	0.11***	0.02
Raven's matrices		-0.01	-0.01*	0.05*
Processing speed in seconds (*100)		-0.05***	-0.05***	
Connection between father's occupation and higher education				
ref. father not in managerial position and unrelated to studies				
Father in managerial position and related to studies		0.19**	0.19**	-0.18
Father in managerial position and unrelated to studies		-0.02	-0.04	0.18
Father not in managerial position and related to studies		0.12*	0.11	-0.01
Choice by interest in subject		-0.06	-0.09*	0.35*
Family difficulty	-0.01	-0.01	0.04	-0.61*
Financial difficulty	0.01	0.06	0.07	-0.11
Difficulty related to daily transport time	0.01	-0.16**	-0.14**	-0.17
Relational difficulty	-0.04	0.08	0.07	0.16
Other difficulty	-0.13*	0.20*	0.16	0.39
Living with parents				-0.35*
ref. financial resources from work				
main resources grant				0.45**
main resources parents				0.06
Father had higher education				0.31
Left blank				-0.08
R^2	0.18	0.32	0.20	0.24

First of all, the number of years' in higher education has a negative impact on divergences in expectations in the OLS estimates, which may be thought surprising. It may be because undergraduates intending to obtain a doctoral degree tend to underestimate their earnings. The result is not significant, though, in 3SLS estimates. More classically, men tend to overestimate their earnings compared with women. Similarly, compared with other disciplines, law students quite markedly overestimate their earnings (+21% compared with psychology students), which may be because of the career prospects of law students who intend to take up prestigious and well-paid occupations (attorneys, judiciary).

Career choices and careers information also have an impact on divergences in expectations. Students whose parents approve their choice of higher education and whose studies are related to their father's occupation expect higher earnings than the observed means, by 11% and 16%, respectively. A similar result is observed for students whose career choice is connected with the chosen course of study, although the coefficient becomes insignificant for 3SLS methods. Conversely, it seems that students whose choice offield of study depends on their

liking or interest for the subject tend to underestimate their earnings (-9%). As in the previous estimate, distance has a significant and non-linear impact on deviations. Students who went to secondary school less than 50 km away and more than 150 km from the university tend to overestimate their earnings. Lastly, students with the highest cognitive abilities in terms of processing speed expect higher earnings than the average observed earnings. It may be that they perceive themselves as having above average skills, which they will try to signal on the labour market.

Expected earnings 10 years after completing higher education.

The survey also questioned undergraduates at the University of Burgundy about their expected earnings 10 years after completing their higher education. These expected earnings can be compared with actual earnings 10 years after labour market entry by the Céreq national survey of people leaving higher education in 2008. As already observed in other research, the misestimates compared with actual earnings increase when undergraduates are asked about a more distant future occupation. The deviation in earnings 10 years on is 41%. Moreover, the result is particularly striking for women: while it is just 29% for men, it exceeds 47% for women. The results are also very variable by discipline and intended degree: divergences for law students reach 69%. These results show that students have a much more approximate knowledge of the labour market over the long term and of the yields of experience in work.

Conclusion

This work has sought to understand how first-year university students form expectations about earnings as a function of their intended degree. The results, even if a slight overestimation is observed, point to a certain proximity between expected earnings of young people at the start of their careers and actual earnings on the labour market. Some categories of young people, however, have higher expectations. We show the importance of the environment in which students make their choices about education. Expected earnings are proportionally higher when their parents seem to be involved in the careers guidance, even controlling for the effect of the socio-economic background or the father's level of education. The positive opinion of parents about the orientation or the connection between the discipline and the father's occupation are generally associated with higher earnings. Conversely, having chosen a course of studies out of a liking for it or further to peer advice seem to have an adverse effect on expected earnings. The results point to a contrast between choices of higher education made in the family context where the continuation in education is an investment and a choice of field of study out of a liking for it where the educational consumption value seems more important. Another point of interest has been to show the impact of cognitive variables are far more significant than variables relating to past educational performances. Young people seem attuned to the idea that having greater cognitive abilities, for the same diplomas, will enable them to command higher earnings in their future occupational activity.

This research has several limitations. First, the size of the full sample, for which we have data about cognitive abilities, is small and limited to three academic disciplines that are relatively specific. Moreover, the deviations between expected earnings and actual earnings on the labour market correspond to samples of students who are not necessarily graduates of the same university even if they relate to the same diplomas and same disciplines. Lastly, because of the form of survey, it was not possible to introduce variables such as attitude to risk which generally have an effect on expected earnings. However, this research does underscore the

importance of allowing for background and the way young people construct their choices about higher education. Those factors largely determine their educational ambitions.

References

ALONSO-BORREGO, C., ROMERO-MEDINA A. (2010), Wage expectations for higher education students in Spain, Economics Working Papers, Universidad Carlos III, Departamento de Economía.

BLAU, F D., FERBER M A. (1991), Career plans and expectations of young men and women, *Journal of Human Resources*, vol. 26, n°4, pp. 58 l -607.

BRUNELLO, G, LUCIFORA, C. and WINTER-EBMER, R. (2004), The wage expectations of European business and economic students, *Journal of Human Resources*, Vol. 39, n°4, pp. 1116-1142

CARVAJAL M et al. (2000), Inter-gender differentials between college students' earnings expectations and the experience of recent graduates, *Economics of Education Review*, vol.19, n°3, pp.229-243.

DOMINITZ J., MANSKI C.F (1996), Eliciting student expectations of the returns to schooling, *The Journal of Human Resources*, vol.31, n°1, pp.1-26.

FREEMAN R. (1976), A cobweb model of the supply and starting salary of new engineers, *Industrial Labor Relations Review*, pp. 236-248

JERRIM J. (2011), Do UK higher education students overestimate their starting salary, *Fiscal Studies*, vol.32, n°4, pp.483-509.

HEINECK G., ANGER S. (2010), The returns to cognitive abilities and personality traits in Germany, *Labour Economics*, vol.17, pp.535-546.

MANSKI C.F. (1993), Adolescent econometricians: How do youth infer the returns to schooling?, in *Studies of Supply and Demand in higher Education*, pp.43-60.

MENON E.M., PASHOURTIDOU N., POLYCARPOU A., PASHARDES P., (2012), Students' expectations about earnings and employment and the experience of recent university graduates: Evidence from Cyprus, *International Journal of Educational Development*, vol. 32, n°6, pp. 805-813.

NEED A, DE JONG U (2008), Personality traits and gender-specific income expectations in Dutch higher education, *Social Indicators Research*, vol. 86, pp. 113-128

SCHWERI J., HARTOG J., WOLTER S.C. (2011), Do students expect compensation for wage risk?, *Economics of Education Review*, vol. 30, pp.215-227.

SMITH. H., B. POWELL. (1990), Great Expectations: Variations in Income Expectations among College Seniors, *Sociology of Education,* vol. 63, pp. 194- 207.

STREUFERT P. (2000), The effect of underclass social isolation on schooling choice, *Journal of Public Economic Theory*, vol. 2, n°4, pp.461-482.

WEEBINK D., HARTOG J. (2004), Can students predict starting salaries? Yes!, *Economics of Education Review*, vol.23, pp. 103-113.

WILLIAMS G., GORDON A. (1981), Perceived earnings functions and ex ante rates of return to post compulsory education in England, *Higher Education*, vol.10, pp.199-227.

WOLTER S.C (2000), Wage expectations: a comparison of Swiss and US Students, *Kylos*, vol.53, n°1, pp.51-69.

Appendix : Descriptive Statistics

Table 2A: Descriptive statistics of students surveyed

	Statistics	Frequencies
Male	32%	510
Fields of study		
Administration	15,5%	
Law	52,2%	510
Psychology	32,3%	
Socio-economic background		
Father's social category		
Father in managerial position	24,5%	510
Father's level of education		
Father had higher education	25%	169
Left blank	6,5%	
High school to university lower 50 km	33,7%	
From 50 to 150	46,9%	510
Upper 150	19,4%	
Link between father's occupation and higher education	17,7%	169
Self-assessed school performance		
Above average	49,4%	510
Orientation		
Choice by interest for subject	47%	169
Favourable parents' opinion on orientation	56%	169
Help with orientation in higher education		
from friends	8,8%	510
from parents	15%	
from others (careers guidance centre. etc.)	9%	
Career plan		
Plan related to higher education	46%	510
Plan unrelated to higher education	13%	
Conditions in which students lived and studied		
Residence	43%	510
Living with parents		
Main financial resources	29,7%	169
Grant student		
Extracurricular difficulties with effect on schooling	15,1%	510
Family difficulty	15,3%	
Financial difficulty	13,3%	
Difficulty with daily travel time	8,6%	
Relational difficulties	5,5%	
Other difficulties		

Appendix: Probability of being in the first sample

Table 3A: Probit : Probability of being in the first sample

Variables	*Coef*
Constant	-0,15
Male	-0,27**
Baccalauréat	
réf. Baccalauréat of technology	
S	0,02
ES	-0,02
L	-0,04
Baccalauréat with distinction	
With honours	-0,08
Fields of study *ref. Psychology*	
Administration	-0,71***
Law	-0,11
Self-assessed school performance	
Above average	0,04
Father's social category	0,055
Father in managerial position	-0,01
Left blank	
Grant student	0,02
Pseudo R^2	0,033
N	513

Appendix : Distribution of expected and observed wages