

Economic analysis of continued education by holders of short-cycle technical diplomas in French higher education ⁽¹⁾

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Key words

Human capital,
signal theory,
higher education,
vocational guidance,
vocational education
and training

SUMMARY

In a context of fierce competition in the labour market and employment system, the decision to continue studying after completing French short-cycle higher vocational education must be distinguished from the simple individual decision for optimum allocation of resources postulated by standard human-resource theory. It has much more to do with a sequential strategic choice and illustrates behaviour by players facing reality, knowing how to act and react to their evolving environment and the difficulties of dealing with uncertainty, relying more on cognitive than calculated reasoning. This article demonstrates that continued education varies according to students' profiles (according to qualifications, specialisation and gender). It may involve a combination of training strategy and/or employability strategy, and of minimising risks (of failure at university) and maximising competitive advantages.

(¹) This article is extracted from a work entitled *Les diplômés d'un BTS et d'un DUT et la poursuite d'études. Une analyse économique* (Gendron, 2004), which present the results of a thesis which was awarded a prize by the Scientific Council of L'université de Paris I Panthéon-Sorbonne and was a finalist for the thesis prize of the National Association of Doctors in Economic and Management Science (ANDESE).

Introduction

Continued education into higher education is becoming a massive and complex phenomenon in France, to the extent that it affects even the 'final' types of training such as higher education courses leading to the general or technological upper-secondary school-leaving certificate (BTS) and the university-level technology diploma (DUT). Continued education after these courses is taking on a singular character in relation to the peculiarity of the French higher education system (Annex 1) ⁽²⁾. Indeed, in many European countries, entry to short vocational training courses in higher education is open while university entrance is selective. In France, the opposite is true. Short vocational courses leading to the BTS and DUT among others are subject to entrance selection, while long university courses are freely accessible to all students with a baccalaureate qualification. While France may be an exceptional case, it is nevertheless paradoxical since a growing number of students are continuing their studies after obtaining these qualifications and, at the same time, a substantial number of students who would have like to follow short courses end up registering by default at university and failing (Beaud 2002) ⁽³⁾.

According to surveys by the Centre for Studies and Research on Qualifications (Céreq), in 1992 almost 40% of BTS holders and over 60% of DUT holders continued their studies in this way. Today, in 2005 the figure has risen to almost 70% of DUT holders, according to the assembly of directors of university technology institutes (ADIUT) and the directorate for higher education (DES). Alongside the logic of 'final' vocational training, a logic is developing of continued education to convert BTS and DUT qualifications into university foundation courses or a sequence of courses leading to higher education. So what is behind these decisions to continue studying? Why are these diploma holders who voluntarily opted for short 'final' courses in French higher education changing their initial decision? Furthermore, are they changing their initial choice, or had they already considered continuing before beginning their training? Since a large number of students are interested in these courses, should we regard this behaviour as a strategic approach?

⁽²⁾ We recommend that readers unfamiliar with the French education system do not continue reading this article before reading Annex I. Additional information on the French education system can be found at the following sources:

http://www.eurydice.org/ressources/eurydice/pdf/047DN/047_FR_FR.pdf

http://www.eurydice.org/ressources/eurydice/pdf/047DN/047_FR_EN.pdf

⁽³⁾ The democratisation of schools has led many students from working class backgrounds into the least legitimate courses of higher education, where those who succeed in obtaining an educational certificate will end up discovering that it is of little use on the labour market. These certificates are in competition with more selective training courses for access to both private- and public-sector jobs. The result is a process of devaluation of hope and bitter disappointment which, on a large scale, according to Beaud, may be socially damaging.

In this research work (Gendron 1997, 2004) we have attempted to understand the phenomenon using an approach in terms of sequential decisions. From the practical viewpoint, that work endeavours to explain the decision to continue studying after obtaining a BTS or DUT and to assess the consequence of that decision on their career. This article has the more modest aim of determining whether the demand for education has more to do with a simple choice of optimum allocation of resources or with a strategic choice ⁽⁴⁾ based, in a context of job rationing or the inaccessibility of certain positions in the employment system, on fierce competition on the labour market. Specifically, we take stock of the factors behind the decision to continue studying. In order to achieve that, after describing the data used and the specific methods used to process them, we will look briefly at the hypotheses tested, the analysis method used and the estimated logistic regression models. From that starting point, we identify the main factors behind the decision to continue studying by IUT and STS graduates in general and on the basis of the course chosen.

Factors behind the decision to continue studying: data, hypotheses, tests and econometric models

Data used and hypotheses tested

The data used are taken from national surveys by the centre for studies and research on employment and qualifications (Céreq) relating to IUT and STS qualifications obtained in 1988, and conducted in March 1991 ⁽⁵⁾. These data (see Table 1, Annex 2) show for each qualified person, their demographic and socioeconomic characteristics, schooling and whether they went on to higher education or into the employment system. Using these data, we attempt to answer the question: What are the factors behind the decision to continue studying? In order to do so, among the factors influencing the decision to continue studying after the BTS or DUT, besides financial reasons, we have assumed that certain factors are linked to the student's socio-economic characteristics and schooling, others to

⁽⁴⁾ The theoretical justification for a 'strategy-based' approach will not be discussed here. For that, the reader is referred to the following references in the bibliography: Gendron (1997, 1998, 2004).

⁽⁵⁾ These old databases are a valuable resource when exploited at a detailed level. Until 1991 the Céreq databases were compiled from in-depth surveys that enable detailed analysis by course, diploma specialisation and gender. The exploitation of these databases for the purpose of this work are the original feature and value of this paper, as it allowed a more detailed analysis of continued education than is possible with the new generations of surveys such as those used by Cahuzac and Plassard (1996). In this article, we show that the analyses by Cahuzac and Plassard may be challenged (a trend towards general courses in continued education) given the chance to work on more detailed data. For instance, in our analysis we can distinguish vocational university courses such as the 'science and

the student's expectations in terms of employment and characteristics of the job other than the salary, but also a good and by no means insignificant number are linked to tensions on the labour market.

In order to analyse the factors behind the decision to continue studying, logistic regression models have been used in order to distinguish the specific direct effects from the various variables that can influence the student's decision. The factors behind the decision to continue studying were also modelled using a function of the decision to continue studying in which the parameters related to the students' socio-economic and schooling characteristics (social origin, schooling, age, etc.), the characteristics of their current job and tensions on the labour market.

Model types: dichotomic models

Specifications of the models adopted

The first dichotomic model is tested on the occurrence of the event 'continue studies' in relation to non-continuation (see Tables 2 and 3). Moreover, a second test related to the various types of continued education in relation to non-continuation (see Tables 4 and 5); among others, short post-BTS/DUT vocational courses⁽⁶⁾ and long vocational courses (science and technology college and master's degree types, etc.) and long general courses (e.g. disciplinary bachelor's and master's degrees). We also studied the effect of gender on the way in which studies were continued after the BTS or DUT.

Specific statistical processing on the population under review

For the variables of tensions on the labour market and job characteristics, we assumed that the student, in deciding whether to continue studying, was taking account of the available information from graduates of pre-

management maîtrise' or 'science and technology maîtrise' courses from general university courses, which Cahuzac and Plassard were unable to do since in their work all university courses are grouped together for statistical reasons under 'university courses' and therefore regarded as general ones. Thus, the use of the detailed Céreq surveys enabled us to work at a more detailed level statistically and so to consider 'general' university courses separately from vocational ones, such as the MST or MSG. It is this level of detail that explains why our analysis reaches the opposite conclusion: students are tending to continue their education in vocational rather than general courses, as the statistical groupings of Cahuzac and Plassard seem to indicate.

⁽⁶⁾ Post-BTS/DUT training generally takes the form of short-cycle one-year sandwich courses (six months in college, six months in industry) and in partnership with businesses, sometimes known as supplementary local-initiative training (FCIL). It may lead to a diploma (specialist national technology diploma, DNTS) or a local certificate. They are gradually being converted into vocational degree courses. For a development, see Gendron (1995).

vious years regarding the difficulties of finding jobs and of advancing their career. To achieve this, we made an assumption about information and used for that purpose the previous Céreq survey on the 1984 Céreq higher education graduates conducted in 1987. On this population, we calculated indicators of tension on the labour market and of career development, by course, specialisation, gender and regional education authority, which we then assigned to 1988 graduates with the same profile, as 'student knowledge'. Using these models, we attempted to understand the fac-

Table 2: Model explaining the probability of a man who has obtained a BTS or DUT continuing his studies

Reference de referencia	active	BTS		DUT	
		coeff.	sign	coeff.	sign
constant		-0,75		1,3	
Identifying particulars					
Ile de France	South	-0.24	-	-0.54	--
	Centre	0.11	non-significant	-0.28	-
	North	-0.16	ns	-0.08	ns
	West	-0.19	-	-0.65	--
Behind at school	Standard age	0.93	++	0.72	++
Married, divorced	Unmarried	0.64	++	0.55	++
Father not managerial	Father managerial	0.54	++	0.22	+
Mother not in employment	Mother in employment	0.14	+	-0.04	ns
Discharged, exempted	Deferred military service	3.48	++++	4.07	++++
Vocational baccalaureate	General baccalaureate	0.25	+	0.73	++
Services specialisation	Industrial specialisation	0.69	++	0.73	++
Tension on labour market					
Proportion of unemployed low	- average	0.22	+	0.24	+
*	- high	0.11	ns	-0.50	--
Average total duration of unemployment low	- average	-0.19	-	-0.43	-
*	- high	-0.68	--	-0.22	-
Proportion out of work for more than 6 months before first job low	- average	-0.07	ns	0.21	+
*	- high	-0.31	-	0.09	ns
Characteristics of job					
Salary>median salary*	Salary<=median salary	-0.16	-	0.13	+
Proportion of insecure job low	- average	0.48	+	0.33	+
*	- high	0.72	++	0.20	+
Proportion of managerial high *	- low	-0.02	ns	0.39	+
Proportion hired on indefinite contract high	- low	0.17	ns	0.40	+
	- average	-0.14	-	0.53	++

Source: Céreq data, Processing by Cereq-Laboratoire d'Économie Sociale.

* in March 1987; ns: non-significant at 5% threshold. Concordant pairs BTS and DUT: 75.7% and 82.3%. [How to read this table:](#) In table 2, the coefficients above zero mean that the propensity to continue studying is greater where the variable in the second column applies rather than the first. Also, this result is significant only if it has + signs next to it ('ns' being 'non-significant' and <0 meaning 'less marked'). [Example reading:](#) For all male students, the propensity to continue studying is greater where they are not behind at school. This result is significant for IUT and BTS graduates (++) . In particular, the propensity to continue studying is greater for a male student with a BTS of a 'standard age' (0.93) in relation to a student who has been behind at school. The same applies to male IUT students (0.72) but to a lesser extent than for BTS holders.

tors determining the decision to continue studying, taking account not only of the students' identifying particulars but also the socio-economic context of their environment.

Table 3: Model explaining the probability of a woman who has obtained a BTS or DUT continuing her studies

Reference de referencia	active	BTS		DUT	
		coeff.	sign	coeff.	sign
constant		-0,75		1,3	
Identifying particulars					
Ile de France	South	0.63	++	-0.4	-
	Centre	0.09	ns	-0.43	-
	North	0.24	+	-0.73	--
	West	-0.41	-	-0.36	-
Behind at school	Standard age	0.72	++	0.82	++
Married, divorced	Unmarried	1.23	+++	1.24	+++
Father not managerial	Father managerial	0.57	++	0.48	+
Mother not in employment	Mother in employment	0.13	+	-0.03	ns
Vocational baccalaureate	General baccalaureate	0.62	++	0.67	++
Industrial specialisation	Services specialisation	0.17	+	0.40	+
Tension on labour market					
Proportion of unemployed low	- average	-1.13	---	0.61	++
*	- high	-0.39	-	0.16	ns
Average total duration of unemployment low	- average	0.81	++	0.32	+
*	- high	1.64	+++	-0.49	-
Proportion out of work for more than 6 months before first job low	- average	-0.83	--	0.12	ns
*	- high	-0.73	--	-0.17	ns
Characteristics of job					
Salary>median salary*	Salary<=median salary	0.15	+	0.29	+
Proportion of insecure job low	- average	-0.43	-	0.32	+
*	- high	-0.18	ns	0.71	++
Proportion of managerial high *	- low	-0.18	-	-0.27	-
Proportion hired on indefinite contract high	- low	0.18	+	0.004	ns
	- average	0.54	++	-0.16	ns

Source: Céreq data, Processing by Céreq-Laboratoire d'Économie Sociale.

* in March 1987; ns: non-significant at 5% threshold. Concordant pairs BTS and DUT: 71.1% and 70.9%. How to read this table: In table 3, the coefficients above zero mean that the propensity to continue studying is greater where the variable in the second column applies rather than the first. Also, this result is significant only if it has + signs next to it ('ns' being 'non significant' and <0 meaning 'less marked'). Example reading: For all female students, the propensity to continue studying is greater where they are not behind at school. This result is significant for IUT and BTS graduates (++) . In particular, the propensity to continue studying is greater for a female student with a BTS of a 'standard age' (0.72) in relation to a student who has been behind at school. The same applies to female IUT students (0.82) but to a greater extent than for BTS holders; this is the opposite trend observed for their male counterparts (table 2).

Results of the models: factors behind IUT and STS graduates' decision to continue studying

Basic models: general trends towards continued education

Based on these logistic models (see Tables 2¹ and 3) on continued education in general, the factors determining whether students continued their studies from the point of view of their identifying particulars relate to the general trends traditionally found in career guidance works^(?) (Ertul et al., 2000, HCEEE, 2003).

The influence of the student's identifying particulars on continued education

Young graduates who have not failed any previous stage of their school career are the most likely to continue their studies. Indeed, they are more likely to continue their studies if they did not fall behind at school before qualifying.

This effect is slightly more marked for young men with a BTS than those with a DUT, and the other way round for young women IUT graduates compared with their STS counterparts. Continued education therefore appears to be a logical extension of studies in the educational system that can make up for their reluctance to enter the labour market since they '*feel too young and insufficiently prepared to face up to it*'^(⁸) by delaying their exit from the educational system and enabling them to add 'new strings to their bow'^(⁹) (Gendron, 1995, 2005).

The propensity to continue studies is greater among those with a general baccalaureate than those with a vocational baccalaureate. General baccalaureate holders are more likely to continue studying than vocational baccalaureate holders, and the same distinction applies at the end of BTS and DUT. The trend is nevertheless less marked for men with a BTS. Studies are continued uninterrupted and any interruption is likely to limit the tendency to continue studies. Indeed, whatever the course, there is a greater propensity to continue studying if the student's military service is deferred. On the contrary, military service interrupts the training process.

(¹) One part of the choice of whether to continue studying is determined by the descriptive variables which already governed guidance in higher education after obtaining the baccalaureate, including the choice of BTS or DUT. We will not develop this point any further in this article. For further details, see Ertul (dir. 2000) and the minutes of the plenary session of 9 January 2003 of the High Committee for Education-Economy-Employment, DPD, Ministry of National Education (HCEEE, 2003).

(⁸) The view of a headmaster recorded during surveys conducted on the supplementary local-initiative training (Gendron, 1995).

(⁹) *Ditto*. The view of a professional.

Most graduates who continue studying are unmarried. Being married (or having been married, or living together) implies that students have to be able to bear certain financial constraints associated with living as a couple, especially when there are children involved. In these circumstances, it is comparatively more difficult for a single student to continue studying where they take place in the same context as for previous years. This factor has greater weight for women.

Continued education is affected by the region in which the BTS or DUT is obtained. Women with a BTS are more likely to continue studying in the south or north of France than in the Ile-de-France. Conversely, other graduates are less likely to continue studying wherever they obtain their diploma than in the Ile-de-France. This may be explained by the fact that the Ile-de-France region, used as a reference variable, is characterised by a high level of BTS training possibilities, accounting for over a quarter of all higher education diplomas alone. Therefore, there are more likely to be routes to further training at the end of these courses if the region in question has a highly developed range of BTS courses on offer.

Studies tend to be continued in the same specialisation as previous studies, as this has more impact than the course followed. Indeed, this effect is more pronounced for men who have had training with an industrial specialisation, on any course. The effect also applies to women training with a services specialisation, albeit to a lesser extent.

Social origin plays a more important role with BTS holders than with their university counterparts. Indeed, there is a greater propensity for continued education for students holding a BTS where the father has a managerial job and the mother is working. It seems as if social origin has an effect equivalent to the 'baccalaureate' effect observed among IUT graduates. In cases where the baccalaureate has a significant effect on continued education for IUT graduates, social origin has that effect with STS graduates. Should we deduce from this that continued education applies to the better off BTS graduates rather than the academically stronger IUT graduates? In fact, STS graduates would only be able to continue their education if they have the financial means to do so.

Impact of information on labour market tensions and the characteristics of the job held on the decision to continue education

Overall, the conditions for entering the labour market and the characteristics of jobs on the labour market for BTS and DUT graduates influence the decision to continue their education. Described by Lojkin (1992) in negative terms as 'neither a manual worker nor an executive', the identity of these graduates is split (Kirsch, 1991); BTS and DUT graduates have to handle a dual intermediate position, in the education system and on the labour market. On the labour market, the tendency towards ever higher requirements in terms of training and qualifications to get a job in France has

the effect of raising the level of graduates on the labour market. Students are well aware of their 'potential' employability in relation to the future of their peers who have left earlier, and the employability 'differential' in comparison with graduates of a higher level – the level at which the crucial change takes place of the status from the 'intermediate profession category' to the 'managerial' level, where the risk of unemployment is a necessary condition but not sufficient to justify continuing education for BTS or DUT graduates; the trend towards continued education, which is growing constantly, was in fact triggered well before their difficulties in gaining employment began after 1990 (Martinelli and Vergnies, 1995). Competition between intermediate graduates does therefore have an impact on the relative and absolute socio-professional position of BTS and DUT graduates, and on their uncertainty as to their academic and career prospects; it influences the continued education phenomenon. Nevertheless, the climate on the labour market has an impact on continued education, though to a varied extent according to the profiles.

The propensity to continue education regardless of course or gender (with the exception of women BTS graduates) is higher where there is a high proportion of unemployed among the graduates of previous years, 30 months after leaving the education system. Women, however, whether IUT or STS graduates, seem to be more sensitive to the overall duration of unemployment than to the risk of unemployment itself. Thus, the longer unemployment lasts, the more women are inclined to continue their education. The differences between men and women in the variables characterising the tensions on the labour market and in the employment system may indicate differing sensitivities to the variables relating to the short- or long-term outlook. Before finding a stable position (Vernières, 1996) in the employment system, women seem to pay special attention to the indicators associated with the conditions for finding a job rather than the characteristics of the actual job concerned. Conversely, men's priority concerns relate to job stability and the possibilities of career development, especially towards managerial jobs for IUT graduates. In addition to these sensitivities, we observe specific trends according to course. Thus, STS graduates appear to be particularly sensitive to fast access to the first job when deciding whether to continue their education, while for IUT graduates job stability would appear to be more important.

Factors affecting continued education by BTS or DUT graduates on short or long vocational courses or general long courses

Based on the logistic models distinguishing the types of continued education (short or long vocational, and long general), we highlight on the one hand variables determining whether education continues according to the type of course and secondly the similarities and differences between student profiles (see Tables 4 and 5).

Table 4: Model explaining the probability of a man holding a BTS or DUT continuing his education in a variety of course types

Variables		BTS						DUT					
		Post-BTS		Long vocational		Long general		Post-DUT		Long vocational		Long general	
reference	active	coeff.	sign	coeff.	sign	coeff.	sign	coeff.	sign	coeff.	sign	coeff.	sign
constant		-1,94		-1,77		-2,06		-2,67		-4,71		-1,20	
Identifying particulars													
Ile de France	South	0.30	+	-0.40	-	-0.25	-	-0.66	-	-0.90	--	-0.38	-
	Centre	-0.06	ns	0.61	++	-0.09	ns	0.15	ns	-0.90	--	-0.14	ns
	North	-0.19	ns	0.45	+	-0.44	-	0.42	+	-0.62	--	-0.01	ns
	West	0.14	ns	-0.72	--	-0.12	ns	-0.85	--	-1.23	---	-0.26	-
Behind at school	Standard age	0.74	++	1.19	+++	0.72	++	0.75	++	0.93	++	0.63	++
Married, divorced	Unmarried	0.77	++	0.66	++	0.51	++	0.13	ns	0.93	++	0.67	++
Non-father managerial	Father managerial	0.29	+	0.67	++	0.56	++	0.06	ns	0.48	+	0.13	+
Non-working mother	Mother in employment	0.38	+	-0.14	-	0.22	+	-0.03	ns	0.17	ns	-0.04	ns
Discharged, exempted	Deferred military service	2.10	++++	3.07	++++	4.16	++++	0.90	++	4.38	++++	4.43	++++
Vocational baccalaureate	General baccalaureate	0.50	++	0.23	+	0.27	+	0.63	++	0.68	++	0.80	++
Services specialisation	Industrial specialisation	-0.29	-	1.68	+++	0.13	ns	-0.07	ns	1.83	+++	0.67	++
Tension on labour market													
Proportion of unemployed low	- average	0.35	+	-0.20	ns	0.52	++	0.42	+	0.43	+	0.06	ns
	* - high	-0.92	--	0.52	++	-0.07	ns	-0.25	ns	-0.39	-	-0.64	--
Average total duration of unemployment low	- average	-0.50	--	0.44	+	-0.34	-	-0.35	ns	-0.17	ns	-0.70	--
	* - high	-0.65	--	-1.19	---	0.01	ns	-0.62	--	0.40	+	-0.42	-
Proportion out of work for more than 6 months before first job low	- average	0.33	+	-0.52	--	0.07	ns	0.26	ns	0.52	++	0.06	ns
	* - high	0.17	ns	-1.48	---	-0.04	ns	-0.01	ns	0.60	++	-0.05	ns
Characteristics of job													
Salary > median salary*	Salary <= median salary	-0.35	-	-0.14	ns	-0.01	ns	0.29	+	0.04	ns	0.05	ns
Proportion of insecure job low	- average	-0.25	ns	1.20	+++	0.34	+	0.10	ns	0.26	ns	0.70	++
	* - high	-0.16	ns	2.22	++++	0.45	+	0.40	+	-0.54	--	0.52	++
Proportion of managerial high *	- low	0.20	ns	-0.54	--	0.17	ns	0.69	++	0.38	+	0.24	+
Proportion hired on indefinite contract high	- low	0.87	++	-0.45	-	0.19	ns	-0.54	--	1.39	+++	0.32	+
	- average	1.09	++	-1.97	---	0.28	+	0.06	ns	1.25	+++	0.31	+

Source: Céreq data, Processing by Céreq-Laboratoire d'Économie Sociale.

* in March 1987; ns: non-significant at 5% threshold. Concordant pairs for BTS: 71.1%, 85.7%, 78.1% and for DUT: 69.2%, 87.1%, 85.2%. How to read this table: In table 4 on men who have obtained a BTS or DUT according to type of continued education, the coefficients above zero mean that the propensity to continue education is greater where the variable in the second column applies rather than the first, depending on the course type. Also, this result is significant only if it has + signs next to it ('ns' being 'non-significant' and <0 meaning 'less marked'). Example reading: For all male students, the propensity to continue education is greater where they are not behind at school, regardless of the type of continued education or original diploma type (DUT or BTS). However, the propensity to continue education on a long vocational course is greater for a male student with a BTS of a 'standard age' (1.19) in relation to a student who has been behind at school relative to other types of continued education.

Table 4: Model explaining the probability of a man holding a BTS or DUT continuing his education in a variety of course types

Variables		BTS						DUT					
		Post-BTS		Long vocational		Long general		Post-DUT		Long vocational		Long general	
reference	active	coeff.	sign	coeff.	sign	coeff.	sign	coeff.	sign	coeff.	sign	coeff.	sign
constant		-2.44		-0.89		-1.65		-4.05		-2.87		0.15	
Identifying particulars													
Ile de France	South	2.08	+++	1.93	+++	-0.66	--	0.30	ns	-0.67	--	-0.49	-
	Centre	0.49	+	0.60	++	-0.23	-	1.30	+++	-1.20	---	-0.39	-
	North	0.07	ns	1.49	+++	-0.60	--	0.48	+	-1.52	---	-0.50	--
	West	0.53	ns	-0.36	-	-0.65	--	-0.04	ns	-0.62	--	-0.39	-
Behind at school	Standard age	0.33	+	0.75	++	0.85	++	1.06	+++	0.75	++	0.89	++
Married, divorced	Unmarried	0.52	++	1.05	+++	1.84	+++	0.86	++	1.16	+++	1.33	+++
Father not managerial	Father managerial	0.68	++	0.74	++	0.42	+	0.35	+	0.83	++	0.26	+
Mother not in employment	Mother in employment	-0.04	ns	0.09	ns	0.21	+	0.32	ns	-0.04	ns	-0.07	ns
Vocational	General	0.50	++	0.92	++	0.66	++	0.26	ns	0.46	+	0.88	++
baccalaureate	baccalaureate												
Industrial specialisation	Services specialisation	2.87	++++	-2.12	---	0.70	++	2.55	++++	0.31	+	0.63	++
Tension on labour market													
Proportion of unemployed low	- average	0.01	ns	-2.50	----	-0.17	ns	-0.46	ns	0.64	++	0.75	++
	* - high	1.39	+++	-0.83	--	-0.03	ns	-0.42	ns	0.24	ns	0.26	+
Average total duration of unemployment low	- average	-3.14	----	2.56	++++	-0.71	--	2.29	++++	1.55	+++	-0.08	ns
	* - high	-2.99	----	3.60	++++	-0.29	ns	0.61	ns	0.28	ns	-0.74	--
Proportion out of work for more than 6 months before first job low	- average	1.56	+++	-2.48	---	0.41	+	-0.02	ns	0.19	ns	0.03	ns
	* - high	1.18	++	-2.24	---	1.29	+++	-0.45	ns	0.07	ns	-0.20	-
Characteristics of job													
Salary > median salary*	Salary <= median salary	1.26	+++	0.07	ns	0.18	ns	0.17	ns	0.47	+	0.32	+
Proportion of insecure job low	- average	-0.50	--	-0.47	-	-0.44	-	0.41	ns	0.54	++	0.32	+
	* - high	-3.17	----	0.99	++	-0.53	--	0.57	ns	0.61	++	0.86	++
Proportion of managerial high *	- low	-0.44	-	-0.87	--	0.39	+	-0.68	--	0.07	ns	-0.51	--
Proportion hired on indefinite contract high	- low	-0.48	ns	-0.42	-	0.85	++	-0.81	--	0.14	ns	-0.18	ns
	- average	-0.78	--	0.85	++	0.38	+	-1.11	---	0.31	+	-0.43	-

Source: Céreq data, Processing by Céreq-Laboratoire d'Économie Sociale.

* in March 1987; ns: non-significant at 5% threshold.

Concordant pairs for BTS: 75.3%, 81.5%, 74.2% and for DUT: 75.4%, 75.1%, 72.9%. How to read this table: In table 5 on women who holding a BTS or DUT according to type of continued education, the coefficients above zero mean that the propensity to continue education is greater where the variable in the second column applies rather than the first, depending on the type of continued education course. Also, this result is significant only if it has + signs next to it ('ns' being 'non significant' and <0 meaning 'less marked'). Example reading: For all female students, the propensity to continue education is greater where they are not behind at school, regardless of the type of continued education or original diploma type (DUT or BTS). However, the propensity to continue education on a short vocational course (post-DUT) is greater for a female student obtaining a DUT at a 'standard age' (1.06) in relation to a female student who has been behind at school relative to other types of continued education. The propensity for continued education on a long vocational course is similar for holders of a BTS or DUT in relation to the variable 'behind at school' (0.75).

Dichotomic models and factors behind the decision to continue education according to course type

The choice of dichotomic model to understand the factors determining whether education is continued according to course type is justified by the fact that we have assumed that graduates deciding whether to continue their education based on course type were considering it not in the absolute but in a fairly well defined career. The reasons many students, with the exception of those who are undecided, continue their education are special considerations such as specialisation, adding to their skills during post-BTS or post-DUT training, obtaining a higher-level qualification and/or continuing education, combining both a diploma and a vocational specialisation (such as science and technology master's degree courses). Thus, the analysis and tests were carried out on the basis of the choice 'continue education on a particular course or finish education'.

Variable influences of students' identification variables on the type of continued education

The 'age' effect has a greater impact for graduates considering vocational courses. Here again, standard age has an influence on continued education, as already observed in the first models. However, by specifying the types of continued education, the impact of standard age is greater for male STS graduates considering long vocational courses and for female IUT graduates on short courses. Not being behind at school is important for graduates wishing to specialise or train in a trade with a view to getting a job quickly.

The choice of vocational training can be indicative of the desire to enter the labour market quickly or in the near future, while a more general training can correspond to an earlier interest in long-cycle studies regardless of any delay in academic career.

The effect of military service confirms the result of the previous models. Deferred military service has a positive impact on continued education, especially if the student is considering a long course. This result can reveal two types of situation: either the student had not applied for postponement, and on obtaining his diploma will therefore be faced with the decision of doing military service or not. This situation would justify, for example, the choice of taking a short course while waiting to join up. Either the student had previously applied for postponement with a view to deciding whether to join up when the time came, thus enabling him to go ahead, or the student had planned to continue his education (as, for example, in the case of using BTS/DUT training as a *pseudo*-DEUG (diploma of general university studies) or *pseudo*-CPGE (preparatory courses for the major colleges). Thus, postponement often goes hand-in-hand with continuing a long-cycle education. For short-cycle continued education, postponement has less

impact, as many students were able to choose short-cycle education while waiting to join up, as observed in previous research (Gendron, 1995).

The type of continued education varies according to the specialisation of the diploma. The 'industrial' specialisation does not often lead to continued short-cycle education after a DUT or BTS. This can be explained by the fact that most short-cycle courses are in the services sector. This means that women holding a service-sector BTS or DUT are more inclined to continue their education on a short-cycle course. Conversely, the likelihood of continuing education in a long-cycle vocational course is greater for men holding an industrial-type BTS or DUT, and lower for service-sector STS graduates.

The 'region' effect highlights the effects of supply in terms of choice of course subject. Women are more likely to continue their education if their chosen course is offered in the region where they graduated; this is particularly so for women continuing vocational education and especially those with an STS diploma. This result may imply that women are inclined to continue their education provided it does not require significant geographical mobility (mobility being unimportant for these graduates, Martinelli and Vergnies, 1995); a choice of proximity (confirming the one made after obtaining the baccalaureate). Conversely, for men, the region variable has little effect on the decision to continue their education in relation to other factors. Women are especially sensitive to family situation. Women's decision to continue their education is very much conditioned by their family situation (whether or not they have dependent family members). Single women feel able to follow long-cycle courses. Being single is also a positive factor for men, regardless of their chosen course, but not as much as for women.

Differing profiles according to perception of labour market conditions and job characteristics

The continuation of education generally indicates students' concern not only for their short-term future but also about their position in the socio-professional hierarchy as their career develops. The reason for embarking on continued education may be a certain disappointment when potentially emerging onto the labour market linked to poor job and career-development prospects. It may be influenced by a large number of graduates on a slack labour market leading to devalued qualifications or difficult access to the desired position on completion of their education when planning their career path. Knowing that their job prospects are very much conditioned by their obtaining a relevant qualification (Kirsch and Desgouttes, 1996) and finding in-service training facilities very limited or restricted at their level of education, they tend to be all the more concerned about their career development and hence to continue their education.

However, the factors determining continued education vary according to the subject in which they wish to continue their education. Thus, the main

reason for BTS graduates to continue their education is access to a first stable job. In addition to job security, their university counterparts also seem to be concerned about salary and career development. Distinguishing the nature and length of the chosen courses enables a detailed analysis to be made of certain profiles between men and women and according to the original qualification. Male STS or IUT graduates in continued education seem to be motivated mainly by the characteristics of the job. Many STS graduates seem to continue their education on long vocational courses in response to fear of unemployment and job insecurity. Besides the desire to gain direct access to a stable job, IUT graduates appear to continue their education in order to develop a career path leading to a management job. IUT and STS graduates following traditional university courses are similarly motivated, particularly concerns about the characteristics of the job, in this case direct access to a job with an indefinite contract and, especially for DUT holders, development towards management positions.

Women BTS graduates continuing their education on short-cycle courses seem to be particularly sensitive to salary, but the risk of unemployment has an even greater influence on their decision. Continuing education in short-cycle courses masks the fear of unemployment by delaying their entry into the labour market. Their university counterparts are motivated to continue their education in short-cycle courses not so much by the risk of unemployment as by its duration. Post-BTS/DUT education is thus a way of specialising or diversifying skills, so enabling these students to distinguish themselves from other candidates on the labour market and – owing to the applied nature of this training – to find work more quickly than if they had ended their education at BTS or DUT level.

Women BTS graduates continuing long-cycle general education, besides their desire to gain rapid access to employment, seem to be motivated by the desire to move towards stable jobs and management positions. Their university counterparts have similar concerns, but salary seems to be a more important issue for them than the desire to achieve 'managerial' status.

Finally, female students continuing their education on long-cycle vocational courses have different motivations according to whether they hold a DUT or a BTS. The original course is highly significant in this case. For instance, IUT graduates seem to be particularly motivated by the characteristics of the job (job security, salary) while STS graduates seem to be particularly concerned about the duration of unemployment that their fellow students from previous years may have experienced.

Similarities and differences between different profiles

After revealing the main factors determining whether students continue their education for each course type, similarities and differences between certain profiles appear, according to the student's personal characteristics and to the situation on the labour market and in the employment system.

From the viewpoint of the students' socio-economic characteristics, the fact of being of standard age is an important factor for men continuing their education on a long-cycle vocational course. This continued education behaviour may lead to an intermediate choice of postponing entry into the labour market on account of the economic climate, so deliberately using BTS or DUT training as pseudo-DEUGs. This intermediate choice of long-cycle vocational training can prove difficult if it was not planned, since the student has to commit to a new stage and a new training cycle in which not being behind at school is a variable influencing the decision. While the 'standard age' effect also applies in a positive way to women, the 'family circumstances' effect is more important for them. The longer the studies women consider, the more important it is for them to be single. Moreover, men and women following long-cycle vocational training courses tend to have similar profiles, regardless of the original course. Their decision to continue their education on a long-cycle vocational course is influenced more than for other courses by the father having a managerial position. The mother's employment, on the other hand, has only a slight influence and only for male BTS graduates continuing their education with a post-BTS or in a long-cycle general course. The general baccalaureate has a positive impact on the continuation of education in all cases, regardless of gender. However, the longer the continued education considered by IUT graduates of both genders, the more important it is to have a general baccalaureate. It is important to male STS graduates continuing education in short-cycle courses and to women taking long-cycle vocational courses.

So we see that the differences and similarities between students' profile for the variables relating to an understanding of tensions on the labour market and to the characteristics of the job do not tally with those observed for graduates' particulars. Women's motivation for continuing their education varies according to the original diploma. Thus, BTS graduates continuing short- or long-cycle vocational education are particularly sensitive to the conditions for finding a job. It is mainly the characteristics of the job that influence IUT graduates to continue their education on long-cycle vocational or general courses. While for women, the original qualification is the element determining the structure of the continued education profile, men find the job characteristics more important in deciding on continued education. However, the 'original qualification' effect is important in relation to the effect of 'access to management' regardless of the type of continued education chosen. All are motivated by the possibility of gaining access to managerial functions. Moreover, we observe similar motivations from the viewpoint of the choice of continuing long-cycle education. What-

ever the type of long-cycle education followed, IUT and STS graduates share the desire to obtain a secure job. However, those continuing their education on long-cycle vocational courses are also concerned about the risk of unemployment. On the other hand, graduates continuing with short-cycle education are characterised by diverging traits. BTS graduates, by extending their education for a further year, are seeking to gain direct access to a secure job while DUT graduates continue their education with short-cycle courses in order to attain a 'managerial' position, requiring a level of recognised education of baccalaureate plus three years; moreover, the first DNTS (national specialist technical diplomas) appeared mainly for post-DUTs rather than post-BTSs (Gendron, 1995) ⁽¹⁰⁾.

Conclusion

To sum up, the regression models show for continued education in general that the more students are pessimistic about the labour market situation, the more they are inclined to continue their education, especially if they already have a general baccalaureate, if they are from a comfortable background and if there has been no break or failure in their schooling; these trends tally with those highlighted by Cahuzac and Plassard in 1996. On the other hand – and this is the paper's original contribution – distinctions appear when looking at the type and length of continued education. An analysis of the factors behind the decision to continue education, according to the course, using the database used in my work (Céreq survey 1991) enables these factors to be specified on the basis of the length and type of course followed, which was not possible with the data used by Cahuzac and Plassard (1996). This is the original aspect of this work and it is the main reason why our conclusions differ from those offered by Cahuzac and Plassard. While these two authors wondered 'whether the continued education movement, mainly based around university courses, was tending towards a movement in favour of general training⁽¹¹⁾', our models' ability to distinguish between continued education courses allows the opposite conclusion to be drawn, namely the trend towards continuing education in

⁽¹⁰⁾ This, like the recent creation of vocational degrees, is the responsibility of the universities.

The vocational degree is issued by the universities, alone or jointly with other public higher-education establishments, empowered to do so by the Minister for Higher Education.

⁽¹¹⁾ These differences between our respective conclusions may be explained by the coarse groupings of the continued education courses that Cahuzac and Plassard (1996) were obliged to adopt, owing to the nature of the database used. For these authors, all second-cycle university courses were regarded as mainly 'general' education, whereas many students continued their education after a BTS or DUT with a master's degree in science and technology or applied to a vocational field.

Cahuzac and Plassard (1996), p. 11: *'In order to attempt a (rough) assessment of this process, courses have been grouped together into two main types: general and vocational. By definition, the vocational group includes courses from the initial sample (IUT, BTS, Colleges) and the 3rd cycle university vocational diplomas (DESS); the general group covers all other university diplomas (1st and 2nd cycle), and research courses (DEA, thesis).'*

vocational courses. Indeed, this tendency to continue education in vocational courses is confirmed by the practice of current students at all levels (with the creation of vocational bachelor's and master's degree courses). Thus, looking at the specific logistic models, two main profiles emerge for continued education. Short-cycle continued education courses (post-BTS and post-DUT types) meet short-term concerns such as entering the job market, while long-cycle general continued education is chosen according to the desired job and career development prospects, i.e. the probability of attaining managerial positions. Graduates engaged in long-cycle vocational continued education are influenced by a combination of these reasons.

Finally, this work has attempted to show that, in a context of competition for jobs, the demand for education depends on sequential and strategic decisions (in the sense of a strategic reaction in relation to competition or successful 'opponents' in applications for jobs by students with the same profile on the labour market) rather than simple personal decisions about allocating resources as postulated by the standard theory of human capital. Furthermore, they stress the complementary nature of approaches in terms of human capital and signalling⁽¹²⁾ and investments of form⁽¹³⁾. While the basic qualification is important, the desire to distinguish oneself from the holder of a single diploma (baccalaureate + 2 years) by continuing one's education may be indicative of a concern to 'stand out' on two counts with a potential employer. First, the entrance to the initial training, which is selective, and second by specialising in some cases. This desire to stand out is particularly meaningful in the context of the French labour market, which is very hierarchical in its judgment of qualifications (Gendron, 2005, 1999).

Moreover, while these models attempted to understand continued education in terms of 'employability strategy' by studying the impact, on the decision to continue one's education, of the difficulties encountered by IUT and STS graduates on the labour market and in the employment system, these models did not aim to take account of the 'training strategy' that characterises another face of the continued education phenomenon. However, monographic surveys of socio-economic approach conducted on BTS

⁽¹²⁾ While the theory of human capital assimilates training to a productivity factor investment, Spence's signal theory (1973) differs specifically on this point by considering that the investment in training is more of a filter revealing the individual's potential than a productivity indicator. It is based on the fact that employers have incomplete information on the job applicant and regards the investment in education as a signal. Thus, without knowing the capabilities of job applicants, employers look for all the signals that they may emit: in particular, the diploma is indicative of the applicant's potential as much if not more than his level of productivity.

⁽¹³⁾ As an extension of the theory of human capital and on the border of the conventionalist current, the theory of investments of form (Thévenot, 1986) considers that employees' qualifications play a decisive role in the operation of the labour market, but within the framework of institutions (classification standards, pay scales), which create vertical hierarchical systems and horizontal equivalents.

graduates in short-cycle continued education [not tackled in this article, but developed in a report and in the work (Gendron, 1995, 2004)] enabled us to highlight this 'training strategy' dimension, referring to the use of these short-cycle courses as a stage of training (foundation course, pseudo-DEUG or pseudo-CPGE). Continued education of this kind appears to be a sequential strategic choice where the decision to continue in this context illustrates behaviour by players facing reality, knowing how to act and react to their evolving environment and the difficulties of dealing with uncertainty, relying more on cognitive than calculated reasoning. The flexibility that it contributes to students' strategies, decisions in sequences (or stages) helps them to play the dual role of reducing uncertainty and optimising the conditions in the sense that the student's cognitive reasoning allows for review, adaptation and learning, experience and maturity on the part of the player in a changing environment. Thus, an approach in sequential and strategic terms helps to explain this rise and the diversity of strategies for continued education of these graduates: behaviour combining training strategy and/or employability strategy, and of minimising risks (of failure at university) and maximising competitive advantages (via the added value of technical and professional skills imparted in continued education and its corollary, signalling).

Finally, while this enthusiasm for these courses may be an indicator of the success of the training, on the other hand, the ongoing rise of continued education calls into question their 'final' status and gives rise to a number of comments. In general, the question is asked about the challenge of investment in education and of its signalling and the misuse of educational policy by the players' strategies, notably the effect of selection at the entrance to these courses which end up accepting 'good' students capable of following long-cycle courses and who have a relatively high propensity for continued education. In particular, the structure, organisation and operation of the higher education system which, through the action of supply also feeds continued education, and the rules on the labour market in France are not unconnected with students' choices and the reasons behind career decisions and choices. Moreover, from the viewpoint of the organisation of higher education, it would be interesting to know the impact of entrance selection for these courses on continued education⁽¹⁴⁾.

Also, these initial results support the need for socio-economic and psychological research work, data and information about the way in which stu-

⁽¹⁴⁾ Work on the Two-Year Colleges (TYCs) of the Community Colleges, which are short-cycle technical courses in American higher education, open to all, non-selective and allowing for continued education in Four-Year Colleges, has attempted to understand the impact of the absence of entrance selection on continued education (Gendron, 2000). That research revealed a relatively low level of continued education at the end of these TYCs, partly linked to the lack of selection at the entrance to these courses which attract students really motivated by a short vocational course, even though the continuation of education at the end of these courses is institutionally possible and expected. These initial analysis results must nevertheless be viewed with some caution, as in any attempt at international comparisons, in view of the different socio-economic and labour-market contexts of the two countries.

dents take educational decisions and the way in which they make their choice of course depending on the structure and organisation of available training and in relation to the expectations and rules of the French labour market. These works and those on this phenomenon of continued education raise especially the real issue of vocational training in France, which has yet to be seriously thought through.

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Annex 1

The organisation of higher education in France

Higher education in France can be defined as the set of training courses that lead to continued education after the baccalaureate, the first level of higher education (see diagram below). French higher education is characterised by the coexistence of a multiplicity of training types with widely varying goals, administrative structures, admission conditions and organisation of studies. Thus, students are divided between, on the one hand, universities, which offer general and vocational training that is mostly multidisciplinary in the three education cycles. These include the university technology institutes (IUTs), which offer two-year courses up to the university-level technology diploma (DUT) and the engineering colleges; and secondly, the post-baccalaureate classes of the public or private secondary schools under contract. These two-year courses, taking place in the secondary schools, are provided by second-level teachers and, in accordance with the decentralisation laws, are funded by the regions for operation and investment, while the State covers the remuneration of teachers and teaching expenses. They comprise: firstly preparatory classes for the major colleges (CGPE), preparing students for competitions for the engineering colleges, commerce and management colleges and the higher normal colleges; secondly, the higher technical sections (STS), preparing students for the higher technology certificate (BTS) which aims to place graduates in work; finally, there is a variety of other public and private training courses. In particular, we would mention: *the paramedical and social colleges*, which are under the authority of the Health Minister, the *universities' independent engineering colleges*, which come under the authority of the Education Ministry or other technical ministries: Defence (*École polytechnique*), Agriculture (agronomy colleges), Industry (mining and telecommunications colleges), Infrastructure (*École des ponts et chaussées*). These colleges were often founded at the time of the French Revolution and are responsible, in particular, for training the engineers of the State's main technical bodies, the commerce and management colleges, mostly private or depending on the chambers of commerce, the higher art and culture colleges (architecture, fine arts) under the Culture and Communications Ministry.

Despite this very high degree of diversity, characteristic of French higher education, it is nevertheless possible to distinguish some common features. It is no longer possible to contrast universities and colleges, in that universities have considerably developed vocational courses in which a high proportion of engineers and management graduates are now trained, while colleges have become increasingly involved in research activities. However, the French system is characterised by the coexistence of selective and non-selective sectors. The highly sensitive issue of selection emerges for access to higher education and is discussed in this article.

*The first cycle of higher education, lasting two years, is generally based on the principle of non-selection. This is set out in Article 14 of the 1984 law on higher education, now Article L 612-3 of the education code, which gives every baccalaureate holder the right to enter the university course of their choice. But exceptions are also made: university technology institutes (IUTs), preparatory courses for the major colleges (CGPE), higher technical sections (STS) and health education courses. The latter are subject to a *numerus clausus* set at national level after a competition that is taken at the end of the first year of university. Conversely, universities offering long-cycle courses have no say in recruiting their students since the principles of free access and non-selection apply. Thus, the corollary of free access to university and entrance selection for short-cycle courses means that students' entrance into university depends both on their wishes, information they have gathered or assimilated and whether or not they are accepted on the selective courses. The outcome is therefore not necessarily ideal. For example, a significant number of baccalaureate holders end up on a general university course even though they had applied for a short-cycle selective vocational course. Conversely, a growing number of baccalaureate holders choose to enter an IUT or STS but end up continuing their education in the second cycle. This is the phenomenon analysed in this article.*

Figure 1: Simplified diagram of the French secondary and higher education system (and apprenticeship system)

		Main certificates of the general curriculum (in the education system: school status)			<i>CFA certificates (apprentice status)</i>		
Higher education	18 years old and above	Level II-I	Doctorate		<i>(new Bologna process structure below)</i> Doctorate	<i>Qualified engineer</i>	
			DEA – postgraduate degree DESS – postgraduate diploma of advanced specialised studies Engineering diploma				Master's degree (former <i>maîtrise</i> + DEA or DESS)
			Master's degree				
			Bachelor's degree		Bachelor's degree		
		Level III	DEUG – Diploma of general university studies DUT- university-level technology diploma BTS - general or technological upper-secondary school-leaving certificate			<i>DUT, BTS</i>	
Secondary school	15-18 years old	3-4 years of study	Level IV	General baccalaureate	Technology baccalaureate	Vocational baccalaureate	<i>Vocational baccalaureate</i>
			Level V	General education	Technology education	BEP CAP Vocational education	<i>BEP CAP Vocational education</i>

Annex 2 Characteristics of the statistical population

Table 1: **Description of the population**

Particulars of 1988 graduates		Breakdown by continued education course (%)		
		Post-BTS Post-DUT	Long-cycle general courses	Long-cycle vocational
Number of BTSs: 35 481 Number of DUTs: 20 400				
Course type	BTS	15.93	42.91	41.17
	DUT	10.49	62.93	26.58
Gender	Male	16.7	55.02	28.28
	Female	8.04	51.47	40.48
Family circumstances	Single	12.2	54.95	32.88
	Married, Divorced	19.13	43.43	37.44
Type of baccalaureate	Technical	10.76	57.46	31.78
	General	17.48	45.86	36.65
Region	South	13.46	50.71	35.87
	Centre	17.11	53.24	29.64
	North	15.53	57.0	27.47
	West	9.7	56.94	33.37
	Île de France	10.35	51.93	37.73
Father's profession	Managerial	11.36	50.55	38.09
	Non-managerial	14.38	55.89	29.73
Mother's activity	In employment	13.04	53.52	33.45
	Not in employment	13.05	53.54	33.41

Source: Céreq data, Processing by Cereq-Laboratoire d'Économie Sociale.