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Is there still a chance of finding a stable job? Evidence from a University in Southern Italy

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Differing characteristics in the labour market and educational system may lead to different outcomes both in terms of the speed of finding a job and of the job's stability. We investigate whether having occupational specific human capital, as measured by the field of study, is associated with a higher probability of finding a stable job in a labour market which is flexible as regards atypical jobs but highly protective regarding stable jobs. We apply a discrete-time hazard model, taking into account unobservable heterogeneity, to analyse the transition to a stable job of students who graduated from the University of Calabria in 2004, at one, three and five years distance. Main findings indicate that, after controlling for a wide range of characteristics, Economics and Business graduates have a lower probability of finding a stable job than graduates in Engineering, followed by those with a degree in Sciences, Political Science, and Humanities. These results confirm that, even in a deprived area, investing in occupational specific human capital can be seen as an "insurance" against the risk of unemployment or unstable jobs.

JEL classification: C41; I20; J24; J64.

Keywords: discrete time hazard model; graduate labour market; stable job; human capital.

1. Introduction

There has been an increasing interest in the issue of the transition from university to work in recent years. In Italy a number of studies have dealt with this subject and several sample surveys have been conducted by single universities (Biggeri *et al*., 2001; Staffolani and Sterlacchini, 2001; Checchi, 2002; Brunello and Cappellari, 2009; Pozzoli, 2009 among others). The great interest in this topic is not surprising; the graduates' occupational perspectives, in fact, play a determining role in measuring the university's external efficiency, i.e. its capacity to prepare graduates for the labour market (Bini and Pratesi, 2001). Nowadays the transition period is becoming longer and the transition patterns are becoming less certain; new cohorts of graduates may have greater difficulties when looking for a stable employment in comparison to the smooth transitions experienced by graduates in the past (Salas-Velasco, 2007). Difficulties in getting a

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job soon after graduation reveal structural problems of matching labour supply and demand. Such difficulties may generate long lasting unemployment resulting in human capital depreciation which might affect an entire future professional career (e. g. salary over the course of a working life).

Italy shares some negative records with some other Southern European countries. These include a high youth unemployment rate, a low female participation rate, a high rate of long-term unemployment and an employment rate which is a long way from the target of 70% of the working age population that the European Union set for 2010[1]. Furthermore, regional disparities are not negligible. The Northern part of the country has well-established traditions of private-sector entrepreneurship, while the Southern part has long been dependent on the agricultural sector and the government's intervention. Opportunities in the private sector are therefore better in the North whereas, in the South, where job chances in the private sector are limited, public sector employment is relatively much more attractive. Unemployment is particularly concentrated in Southern regions. In Calabria, for example, the youth unemployment rate in 2005 was 46,1% whereas it was 8,6% in Trentino-Alto Adige. Production structure, high reservation wages[2] and widespread opportunities to do undeclared work are all elements that contribute to give an explanation for the mass unemployment in the South.

Over the past two decades, Italy's labour market has been marked by a transformation process aimed at increasing flexibility. The most significant reform took place in 1997, but temporary contracts had been introduced up to 10 years before that date. Law 196/1997 (also called "Pacchetto Treu") represented a key step towards the liberalisation of atypical contracts by introducing temporary contracts, providing incentives for part-time work, creating Temporary Work Agencies (staff-leasing) and innovating the regulations governing fixed-term contracts. Law 196/1997 was replaced by Law n.30/2003 (also called "Riforma Biagi") which introduced a number of new atypical job arrangements, such as jobs on-call (*lavori intermittenti*), job sharing and occasional work (*lavoro a progetto*), eliminated contracts of work with on-the-job-training (*Contratti di Formazione Lavoro*), and reformed apprenticeships and temporary contracts. This reform further deregulated the use of temporary agency work and part-time work.

Deregulation of employment was expected to lower the high (youth) unemployment levels through a reduction in the time spent searching for a first job. This expectation was particularly high for the South of Italy (Barbieri and Scherer, 2009). However, while flexibility has been introduced at the margin, having far-reaching consequences on 'outsiders', that is the unemployed and school leavers, it has left those in open-ended employment largely unaffected. As a consequence of the "partial and targeted" deregulation, work contracts of new entrants have become less guaranteed, lower in salaries and less stable. Given the characteristics of the Italian occupational welfare model (which gives access to welfare rights to employees with continuous full-time work contracts) this process has produced a reduction of the social entitlements of younger cohorts of workers (Barbieri, 2007). Furthermore, the growth of atypical employment has raised concerns that the new flexible jobs, by crowding out stable employment, become an additional source of insecurity for workers and increase labour market dualism between stable and unstable careers even among graduates (Ichino *et al*. 2003; Kahn, 2007; OECD, 2002)

In the South of Italy additional factors, namely a limited growth capacity, the options available to job seekers in the labour market[3] and the quality of the match between labour supply and labour demand, seem to contribute to the difficulties younger cohorts of graduates encounter when looking for a stable job beyond the diffusion of the new contractual arrangements (Reyneri, 2006).

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[1] The World Economic Forum's recent competitiveness report ranks Italy 49th among 134 countries and near the bottom on most labour market related indicators.

[2] Straight after graduation, reservation wages might be anchored to levels that are inconsistent with the prevailing labour market conditions.

[3] Factors such as corruption and organized crime may also act as a disincentive to job creation.

Within this setting, we analyse the transition from university to a stable job, be it subordinate or self-employment, using survey data for ex-students who graduated in 2004 from the University of Calabria, located in the Southern Italian Region of Calabria. More precisely, we address a research question dealing with the time which elapses between when a student gains a degree and he/she obtains a stable job, focusing on the contribution the field of study makes to the speed of transition. It is important to answer this specific research question because of the significance given to stable jobs in the South of Italy, where a permanent job (the so called "posto fisso"), in a depressed labour market, is believed to guarantee the creation and reproduction of social relationships and that family security that is still so much more central - in terms of relative values - in the South than it is in the North. With this in mind, we apply a single-risk discrete time survival analysis accounting also for the unobserved heterogeneity between graduates. In this way we try to contribute to the understanding of whether a chance still exists of finding a stable job by investing in occupational specific fields and to what extent this type of investment can be considered a form of insurance against the risk of unemployment or unstable jobs.

The rest of the paper is organized as follows. In Section 2, we illustrate the relationship between field of study and labour market outcomes from a theoretical perspective. Section 3 reviews the main empirical works on transitions in Italy. Section 4 presents data and methods used in explaining the length of time it takes to find a stable job. Section 5 shows the main empirical results. Section 6 concludes.

2. Field of Study and Labour Market Outcomes: a Theoretical Perspective

In recent years, labour market outcomes have been much more discussed in relation to the level of education achieved than to the type of studies undertaken. Indeed, field of study is a key determinant of individual labour market outcomes (Ballarino and Bratti, 2009). In turn, the individual preference for a field of study, as suggested by a body of work on educational choice, is influenced by family background[4], individual pre-existing ability and personality traits. These factors are also likely to influence directly individual labour market outcomes (Fig. 1).

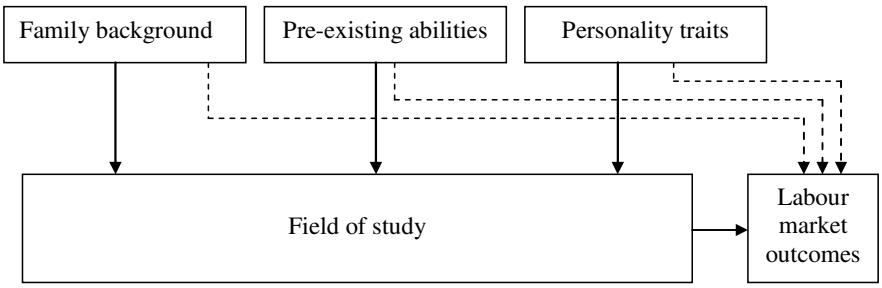

Fig.1. The relationship between Labour Market outcomes, Field of Study and other determinants

It is possible to resort to several theoretical approaches to analyse the relationship between field of study and labour market outcomes. First, according to the human capital theory, different fields of study, by generating differing degrees of specificity in terms of knowledge and skills, may lead to different outcomes in terms of employability (Paul and Murdoch, 2007;

[4] Blundell et al. (2003), Checchi and Flabbi (2007), Dustmann (2004), Montmarquette (2002) are among several studies that point to parents' education as one of the most essential factors to be controlled for in measuring the effect of education on early labour market outcomes.

Giesecke and Schindler, 2008). Fields of study offer important signals of job seekers' potential productivity which allow employer's asymmetry of information regarding the productivity and trainability to be overcome (Arrow 1973; Spence 1973; Riley 2001). Previous literature has generally shown a superior performance of "quantitative" fields (hard fields)[5], considered more occupational specific, compared with "non-quantitative" ones (soft fields)[6], considered less occupational specific and less challenging (Biglan, 1973; see also section 3 for further details).

Second, according to the signalling theory (Spence, 1973), the field of study functions as a screening device to identify pre-existing differences in job seekers' talents and characteristics. In fact, ability distribution may be expected to differ across fields. Soft fields may rely less heavily than hard ones on prior ability so that less able students tend to select, or be selected for, less challenging fields than more able ones. This implies that less demanding fields carry a lower signal value in the labour market compared to more challenging fields (Reimer *et al*., 2008). It is worth noticing that those wishing to start their own business do not need to signal anything. Hence, for them, education is a consumption good or an investment aimed at increasing productivity.

Third, the individual preference for a specific field of study may reflect his/her personality traits. The latter, in turn, represent a good predictor of job performance (Semeijn *et al*., 2005). In 1973, the American psychologist David McClelland highlighted, by introducing the term 'competence', the importance of personality traits, self-image and motivation for job performance. Economists highlight the role of psychological capital[7], besides the level of educational qualification, in job performance but - considering personality unobservable and/or not measurable - they have not examined whether an association between psychological capital and individual productivity exists (Goldsmith *et al*., 1997).

In the light of these considerations, given that the Italian educational system is able to produce both specific and generic degrees, it is important to establish whether, in a "depressed" economy, a labour market which is flexible with regards atypical jobs and still highly protected for stable jobs favours the specific or the generic (Scherer, 2005). On one hand, generic graduates might have low reservation wages and low expectations and might be more willing to accept unstable/low paid jobs. Additionally, it is likely that labour market flexibility and the increasing importance of tertiary industries favour graduates with good communicative and relational skills, i.e. graduates in generic fields, as for them it is easier to enter the networks which characterise the core of the new economy (Ballarino and Bratti, 2009). Therefore, graduates in generic fields could have an advantage compared to graduates in specific ones in terms of speed, but not necessarily in terms of job quality. On the other hand, we may expect fields classified as hard to affect positively the probability of finding a stable job thanks to at least four interconnected elements. First, hard fields are chosen by few students[8]. They are, in fact, considered difficult: students are required to regularly attend lectures, the workload is higher that in other subjects and final marks are generally lower[9] (Benadusi *et al*., 2005). Although Italy, and in particular the South, is specialised in traditional sectors characterised by small/medium size firms, low investment in research and innovation and, hence, low demand for

[5] Fields such as Engineering, Mathematics, Physics and Natural Science are classified as Hard. Business and Economics are often classified as Hard Social Sciences.

[6] Humanities and Law are classified as Soft. Political Science is often classified as Soft Social Science.

[7] Constituted by, for example, a person's perception of self, ethical orientation, general outlook on life and attitudes towards work

[8] A university reform (DM 509/99), first implemented in the academic year 2001/2002, has introduced a switch from a one-level education system with just one degree to a structure including two levels: the first one lasts three years and the second one ends after two additional years. By simplifying educational tracks, this so-called 3+2 reform could have influenced the choice of faculty leading new entrants to choose more challenging fields.

[9] The difficulty of scientific subjects partly stems from secondary school leavers' poor preparation in mathematics and science. This latter also characterises those coming from lyceums, as confirmed by the standardised OECD's Programme for International Students Assessment (Bratti et al., 2007).

high skilled and high specific human capital, specificity may still help in the search for a stable job because of the low number of graduates in hard fields.

Second, the choice of a hard field gives a strong signal in the labour market. In fact, the choice of a field, being influenced by pre-existing cognitive and non cognitive (psychological traits) abilities, is a vector of information for employers. Therefore, as it carries a signal of potentially high productivity, a degree in a hard field may raise the probability of getting a stable job.

Third, students from hard fields may need less training. The probability of finding a stable job is higher for labour market entrants who are already qualified for an occupation, i.e. individuals who do not have to be trained on the job. If occupational specificity is high, a training period may be not necessary and assessment may be immediate. By contrast, the job and workers matching is more difficult if the occupational specificity is low (Scherer, 2005).

Finally, graduates from hard fields may be favoured by those labour market conditions highly protective towards stable jobs which make subsequent corrections difficult. Noticeably, a high level of employment protection leads employers to be more cautious when creating new employment and filling vacancies. Besides, a high level of employment protection together with low specificity give rise to long waits before finding a job.

This means that, for an individual with generic human capital, the lack of occupational specificity may bring about a delayed entry whereas, conversely, the wait for a job may be shorter for an individual with specific human capital.

3. The Empirical Evidence

The transition from university to work has received increasing attention in the literature on labour market outcomes even if it has been studied mainly by using descriptive statistical methods (Salas-Velasco, 2007).

Entering the labour market successfully depends on coordination between the education system and the labour market which, in turn, improves matching between labour market supply and demand (Bini and Pratesi, 2001). In Italy, where there is no close coordination between the academic and the working worlds, the valuation of the observable (e.g. the duration of an individual's university career, the field of study, the graduation marks, the gender, the graduate family background) and/or unobservable factors that influence the transition from university to work is crucial in the implementation of active policies.

A number of empirical studies have been carried out, at local and national levels, but few of them investigate explicitly the problem of the time which elapses between graduation and labour market entry.

Among the researchers who study the transition to the labour market of graduates from specific universities, Santoro and Pisati (1996) apply a continuous survival time Cox model and use a sample of students who graduated in 1993 from a university located in the Emilia-Romagna Region. Without explicitly taking into account unobserved heterogeneity between graduates, they find that the field of study and the final degree mark have significant effects on the probability of getting a job: graduates in Economics and Engineering have a higher chance of getting a job than graduates in Law and Humanities and students with better academic performance are more likely to undertake post-graduate studies or are more selective and postpone the transition to work. However, they do not find any statistical significance for the effect of variables such as high school type, work experience while at university, age at graduation and family background.

Staffolani and Sterlacchini (2001) analyse the occupational outcomes of students who graduated in 1992 from four universities located in the Marche Region at three and five years after graduation. They find a statistically significant higher probability of obtaining a stable job

for graduates in Electronic Engineering and Economics and Business and a lower probability for graduates in Mathematics, Science, Literature and Languages compared to Political Sciences. They also find a high proportion of temporary jobs among graduates in Science, Literature and Socio-Political Sciences three years after graduation.

Checchi (2002) and Checchi *et al*. (2004) analyse the occupational outcomes of graduates from the two public universities in Milan, for the years 1997 and 1999, three years after graduation. They find that graduates in the Humanities are slower in finding their first job compared to graduates in Medicine, Pharmacy, and Science. The latter also have a higher average salary than graduates in the Humanities and Law.

Among the researchers who use the Longitudinal Survey on Italian Families, Bernardi (2003) estimates an event history model for the whole Italian population of school-leavers from 1950 to 1990 using a piecewise constant exponential model with competing risk[10]. He finds a general decrease in the impact of university degrees on the chance of getting a stable job and a constant advantage for Technical and Scientific graduates over Humanities graduates in the chance of finding a first stable job. Moreover, he finds that the transition into the labour market is more difficult for women and for residents of the Southern area; the class of origin plays a crucial role just in the choice to become self-employed.

Using a sample restricted to Northern Italian school-leavers from the 80s and the 90s, Barbieri and Scherer (2001) show that graduates in Medical, Technical and Economic disciplines have more chance of quickly finding their first stable job than graduates in Humanities and Law.

Among researchers who use specific waves of ISTAT (the Italian Statistical Institute) Graduates' Employment Survey data which gather evidence at a national level, Biggeri *et al*. (2001), focusing on the time taken to obtain a first job, evaluate the factors that determine the transition from university to work as well as the effectiveness of course programmes in Italian universities with respect to labour market outcomes. By using a three level discrete-time survival model they find substantial differences between course programmes, but also between universities and show that the transition from university to work is a complex phenomenon with a number of intervening factors. In particular, Biggeri *et al*. find that the final mark has a positive effect on the probability of obtaining a first job after graduation but they do not report results on fields of study. With regards social background covariates, the occupational status and educational level of the student's parents at the time of the degree are both significant: graduates have a higher probability of obtaining a job if at least one of their parents is currently working or if at least one of them has a secondary school certificate or a degree. Moreover graduates who have previous working experience are more likely to obtain a job sooner.

Ballarino and Bratti (2009), using a multinomial logit model, find that during 1995-2004 the best performing fields of study in terms of finding a stable job three years after graduation were and remain Hard Sciences, Hard Social Sciences and Technical degrees, that is the quantitative ones. In a previous version of the article (Ballarino and Bratti, 2006), they find that graduates with upper and middle class origins have greater probability of obtaining a stable job than their colleagues of working class origin: in a worsened labour market situation, where jobs are scarce, family resources (such as networks and relationships of personal trust) increase their effect on the chances of finding a stable job. However, the direct effects of family background on graduates' careers are not very strong.

Ballarino (2006) focuses on the returns on degrees in different fields and, by estimating an event history model of the time taken to obtain a stable job after graduation, finds that graduates in technical-scientific subjects perform best from this point of view, closely followed by graduates in Economics, while graduates in Social Sciences, Education and Law do significantly worse.

[10] The alternative destination states are finding a job as a dependent worker or becoming a self-employed.

Pozzoli (2009) estimates a discrete-time single-risk model to study employment hazard and test different specifications for individual unobserved heterogeneity distributions. He finds that the final mark has not a statistically significant effect on the probability of getting the first job; the parents' education level at the date of graduation and the father occupation have a positive effect on the graduates chance of employment. Older and female graduates, those who graduated in the Humanities and Social Sciences, those who had fathers employed in non-qualified occupations and those who attended a university in Southern and Central Italy have a lower hazard of obtaining their first job. Some heterogeneity in the results is found on the basis of gender and macro-regions. Furthermore, Pozzoli estimates a competing risk model to characterize transition out of unemployment and finds that age and work experience while at university have a negative effect on the hazard of exit from unemployment, the final mark at university and school and the high school type have not statistically significant effects on the probability of finding an open-ended job. Having a father entrepreneur, manager, professional worker or white-collar worker increases the hazard rate of open-ended employment. Female graduates have a lower hazard of exit to open-ended employment than male graduates. Those who took their degree in the Centre of Italy are less likely to enter open-ended employment than those who graduated in Northern Italy. Graduation in Humanities seems reduce the probability of entering into both permanent and fixed-term jobs.

To summarize, previous research finds a better performance on the part of hard fields compared with soft ones in the university-to-work transition and no strong direct impact of family background on graduates' labour market outcomes.

We try to contribute to this literature by assessing the transition from university to stable job of graduates from a University in a Region of Southern Italy characterised by difficult social and economic conditions, taking into account field of study along with observable individual and family characteristics and incorporating unobserved heterogeneity between graduates.

4. Data and Methods

Data used in the analysis come from the AlmaLaurea Interuniversity Consortium, which was founded in 1994 on the initiative of the Statistical Observatory and is run by the University of Bologna. It currently covers 75% of graduates from 60 Italian Universities. The dataset provides detailed retrospective information on students' characteristics such as academic performance, high school education, family background, labour market experience and job search activities.

Our sample of interest is defined as a stock-sample including all summer session 2004 graduates from the University of Calabria who declared their intention to search for a job and not to pursue other studies to an end-of-university-career questionnaire organized via the Web. We follow them at one year (2005), three years (2007) and five years (2009) after their graduation until they find a stable job or are censored. Finding a stable job is regarded as a permanent state (since it is open-ended), therefore, we only use information up to the year of the survey in which this occurs. As we are considering a follow up period of five years, the possibility of this assumption of irreversibility becoming unrealistic is unlikely to be a concern[11].

The full 2004 sample included 1781 individuals. In 2005, 2007 and 2009 respectively, 1781, 1429 and 1421 questionnaires were completed. The associated response rates were approximately 89%, 84% and 77%. For the present analysis, we drop those who did not take part in the first interview (11%) and end up with a sub-sample of 1591 individuals. Furthermore, in order to only consider the youth, we drop individuals who were aged over 35 years at the time of graduation (4.2 %). Then, we drop those who found a stable job before graduation and were still

[11] In fact, some people with a stable job may loose it. Given that one cannot rule out this possibility, in order to validate the assumption of irreversibility, it is opportune, in our analysis, to consider the event of interest as the finding of a "first" open-ended job.

doing the same job at the time of the first interview (4%). Finally, we discard graduates who were not interested in finding a job (20%) either because they declared their intention to continue studying in 2004 and had not changed their minds one year after graduation (confirmed by their declaration that they were not searching for a job) or for reasons other than studying. Therefore, our working sample consists of 1175 individuals – 743 (63.2%) women and 432 (36.8%) men. However, the length of follow up and rates of censoring cause effective sample sizes to differ from the number of baseline cases (Table 1). The percentages of subjects with a stable job are, respectively, about 12%, 18% and 25% in 2005, 2007 and 2009 for a total of 468 occupied in a stable job (failures). Excluding those failed and lost to follow-up, 1039 and 593 subjects are at risk in the second and third survey, respectively.

Table 1. **Number of graduates at prior interview (risk set), outcomes and censoring at 1-year, 3-years and 5-years**

	1-year		3-years		5-years	
	N.	**%**	**N.**	**%**	**N.**	**%**
Risk set	1175	100.00	1039	100.00	593	100.00
Open-ended contracts (event)	136	11.60	186	18.00	146	24.60
Loss to follow up[†]	-	-	260	25.00	70	11.80
Without a job[‡]	638	54.30	285	27.40	181	30.60
Fixed-term contract[‡]	401	34.10	308	29.60	196	33.00

Notes:[†] Censoring due to loss to follow-up may occur at each interview. [‡] These subjects are censored at the time of the 5-year interview.

The relevant questions considered in order to classify individuals according to their occupational status are the following: "Are you working at this moment?" and "If you are employed, what kind of contract do you have?". In order to identify individuals with a stable or atypical job, we rely on the AlmaLaurea classification based upon the self-reported current job contract. To be more precise, the former refers to both open-ended contracts and self-employment whereas the latter includes collaborators (often referred to as co.co.co contracts - contratti di collaborazione coordinata e continuativa) and those with fixed-term contracts, apprenticeships, no contract and others.

Table 2 provides summary statistics for the variables used in the analysis, separated according to gender. We group the fields of study into five categories, namely Engineering (Hard), Sciences including Pharmacy, Mathematics, Physics, Biology, Natural Sciences, Chemistry and Geology (Hard), Economics and Business (Hard Social Sciences), Humanities including Literature, Languages, History and Philosophy (Soft), and finally Political Science (Soft Social Sciences). Graduates in Engineering and Sciences represent respectively 16.3 and 14.2% of the whole sample whereas graduates in Economics and Business and in Political Science account respectively for 28.5 and 9.6%. Finally students holding a degree in Humanities make up 31.3%. Engineering is predominantly chosen by males. 38% of the sample obtain their degrees at the age of 27 or over. Most students have diplomas from Scientific and Technical high schools. Classical high school is predominantly chosen by females. With regards family background, as measured by father's occupational status and parents' education, 27% of the sample have a retired father whereas 86% come from a low educated family[12]. Most graduates have no preference about the type of work they are looking for, but, among those searching for a public sector employment, three out of four are females. Most of the sample has not had any

[12] We are not able to use other measures of family background such as social class because of the high presence of missing values in these variables. However, even though social class is included it is not statistically significant.

previous working experience before graduation[13]. With regards final marks, females generally perform slightly better than males both at school and university.

Besides factors at graduation, the analysis also includes two time-varying covariates, namely having children ("children") and attendance of a course for a master's degree ("master attendance"). The former is an indicator variable which has value zero for interviews prior to its occurrence and one for the interviews after it occurred. Similarly, the latter takes a value of one if, during the follow-up, the individual gets a master's degree and zero otherwise.

[13] Missing values in the variables used to measure family background, type of work searched and previous working experience account for less than 7% of the sample.

Table 2. Sample summary statistics (Profile students survey 2004)

	Gender	
	Female	**Male**
	%	%
Field of study		
Engineering *(n*=192*)*	27.1	72.9
Sciences *(n*=167*)*	64.7	35.3
Economics and Business *(n*=335*)*	61.5	38.5
Political Sciences *(n*=113*)*	72.6	27.4
Humanities *(n*=368*)*	80.2	19.8
Total (n=1,175)		
Age at graduation		
<23 years *(n*=92*)*	66.3	33.7
23-24 years *(n*=319*)*	74.3	25.7
25-26 years *(n*=367*)*	61.3	38.7
>=27 years *(n*=397*)*	55.4	44.6
Total *(n=1,175)*		
Upper secondary school *(n*=streams*)*		
Classical *(n*=165*)*	72.7	27.3
Scientific *(n*=417*)*	57.3	42.7
Technical *(n*=449*)*	55.5	44.5
Other *(n*=Linguistic, Artistic, etc.*) (n*=144*)*	93.8	6.2
Total *(n=1,175)*		
Father's occupational status		
Employed *(n*=669*)*	64.3	35.7
Retired *(n*=322*)*	60.6	39.4
Other *(n*=unemployed, etc.*) (n*=104*)*	68.3	31.7
Total *(n=1,095)*		
Parents' education		
Low *(n*=none, primary and secondary*) (n*=943*)*	60.1	39.9
High *(n*=at least one parent with a degree*) (n*=163*)*	64.4	35.6
Total *(n=1,1106)*		
Type of work sought		
Public sector *(n*=238*)*	73.9	26.1
Private sector *(n*=166*)*	50.0	50.0
Self-employment *(n*=62*)*	45.2	54.8
No preference *(n*=636*)*	65.4	34.6
Total *(n=1,102)*		
Previous working experience before graduation		
No *(n*=701*)*	59.3	40.7
Yes *(n*=405*)*	71.4	28.6
Total *(n=1,106)*		
Students' performance	*mean (*sd*)*	*mean (*sd*)*
Upper secondary school final mark *(range* 36-60)	50.3 (7.8)	49.2 (7.4)
University final mark *(range* 66-110)[a]	103.7 (7.4)	100 (8.2)
Total *(n=1,175)*		

Note : [a] This piece of information is gathered in the subsequent survey.

Model specification

This paper considers survival analysis to study the probability of finding a stable job. Unlike logistic regression which examines the overall probability of an event without considering the timing of that event, survival analysis allows for investigation of the longitudinal progression of the probability that an event will occur. More specifically, the survival analysis will investigate whether the field of study has a significant effect on the probabilities of the event's occurring across the observation periods after controlling for the effects of other covariates which have been shown to be associated with the probability of entering the labour market. The event of interest (failure) occurs when a graduate finds a stable job. Transition may take place at any point in time but, as the follow-up is done at fixed intervals, the observed time *T* for the *i-th* graduate ($i = 1,2,\ldots,N$) is known only to lie between two values a_i and b_i. This type of data are also referred to as interval-censored survival data. To be more precise, for graduates who find a stable job between two interviews, all is known is that "survival" time is at least as long as the time of the earlier interview and is no longer that the time of the most recent one. These observations are completed spell data. Instead, for those having not found a stable job yet at their last follow up, all is known is that their "survival" time is at least as long as the time associated with their last interview. These observations are right-censored. A censoring variable will let us know whether the transition to a stable job occurred ($c_i = 1$) or not ($c_i = 0$) in each time period.

In the present analysis since only a few values are possible for the two endpoints, it is easier to refer to the interval-censored values by intervals on a time scale common to all subjects. Following the notation by Hosmer and Lemeshow (1999), assume that we have $J+1$ such intervals. More precisely, let I_j denote the *j-th* time interval $(t_{j-1}, t_j]$ for $j = 1,2,\cdots,J+1$ with $t_0 = 0$ and $t_{J+1} = \infty$, and these intervals are the same for all subjects. Let y_{ij} a binary variable indicating the specific time interval observed for the *i-th* subject, defined as equal to one if $(a_i, b_i] = I_j$ and zero otherwise.

The hazard of a graduate's finding a stable job in the *j*-th interval I_j with $j = 1,2,\cdots,J+1$, provided that he has not experienced the event in an earlier period, is thus given by:

$$\theta_{ij} \equiv \Pr[T \in (t_{j-1}, t_j) \mid T > t_{j-1}] = 1 - \exp[-\exp(x_i'\beta + \tau_j)] \qquad [1]$$

$$\tau_j = \ln\left\{-\ln\left[\frac{S_0(t_j)}{S_0(t_{j-1})}\right]\right\} \qquad [2]$$

In this framework our lower interval boundaries correspond to dates 2004, 2005 and 2007 whereas the upper interval boundaries to dates 2005, 2007 and 2009 implying time intervals of unequal length (0,1],(1,3],(3,5]. Referring to our sample as a stock sample (Jenkins, 1995), $t_0 = 0$ represents the first observation on the stock sample when an individual is at risk of getting a stable job. At the end of a time period (for example after 1 year), some graduates will still be not working, will be in a fixed-term occupation or will be lost to follow-up whereas some will have found a stable job. The former, contributing right-censored spell data, are identified using censoring indicator $c_i = 0$ and will be at risk of finding a stable job in the subsequent interval. By contrast, the latter, contributing to completed spell data, are identified by $c_i = 1$ and will exit permanently from the analysis. More generally, the probability of survival until the end of the *j*-th interval is the product of the probabilities of not experiencing the event in each of the intervals up to and including the current one. For example, S_{I_3} = (probability of survival through interval

I_1)*(probability of survival through interval I_2, given survival through interval I_1)*(probability of survival through interval I_3, given survival through interval I_2). We rely on this framework to create person-period data so that each graduate contributes one record for each survey period, from immediately after his/her graduation up to the time of interview in which he/she finds a stable job, or the latest interview when he/she is observed (censoring due to loss to follow-up) or the 2009 interview if he/she never finds a stable job (administrative censoring).

Following Hosmer and Lemeshow (1999), the log-likelihood function can be written as a likelihood function for a binary regression model:

$$l(\beta) = \prod_{i=1}^{n} \prod_{j=1}^{k_i - 1 + c_i} \left(1 - \theta_{ij}\right)^{1 - z_{ij}} \theta_{ij}^{z_{ij}} \qquad [3]$$

Where k_i is the observed interval for the *i-th* individual, that is $I_{k_i} = (a_i, b_i]$, and $z_{ij} = y_{ij} \times c_i$, that is a pseudo binary outcome variable. This version of the log-likelihood corresponds to the Prentice and Gloeckler model (1978). It is equivalent to the log-likelihood for a generalised linear model of the binomial family with a complementary log-log link (Jenkins, 1995).

To describe unobserved (or omitted) heterogeneity between graduates, a Gamma distributed random variable ε_i, with unit mean and variance $\sigma^2 = v$, is incorporated into the previous model [1]. The corresponding discrete-time hazard function is:

$$\theta_{ij} = 1 - \exp\left\{-\exp[x_i' + \tau_j + \log(\varepsilon_i)]\right\} \qquad [4]$$

Ignoring unobservable heterogeneity when it is important may have the following effects. First, baseline hazard probabilities (duration dependence) will be biased downward, that is an increasing hazard will appear to be increasing more slowly while a decreasing hazard will appear to be decreasing more rapidly. This may result from a selection process according to which graduates with unobserved heterogeneity correlated with higher exit rates end the spell more speedily. Then, as time passes more frail graduates remain in the group of surviving graduates, which implies a lower probability and so the underestimation of the true probability. Secondly, time-independent covariate effects will be underestimated, even if the sources of heterogeneity are not associated with the observed variables. If such sources are correlated with the observed variables, spurious time-dependent effects may be found for the observed variables.

Both models are estimated using the *pgmhaz8* procedure authored by Stephen Jenkins (2004). We also estimate a fully non-parametric specification for the baseline hazard with duration dummies corresponding to each duration interval. This specification places no constraints on the shape of the baseline hazard function and it is easily interpretable since each associated parameter represents hazard in time period I_j for the baseline group[14]. Since the field of study effect may change over the period of follow up (i.e. non-proportionality of the effect), we also test for possible interaction between field of study and time.

5. Results

Table 3 presents estimated coefficients for a variety of individual and family variables and from

[14] We can not apply a competing risk analysis because it requires that all outcomes are final. More precisely, once one has occurred, the observation is over for that person and we can not use the occurrence of one type of event (e.g. atypical job) to predict a later one.

separate complementary log-log models predicting stable jobs among 1,093 graduates aged under 35, who are searching for a job after graduation[15]. These account for a total of 2,286 person-periods at risk. The exponentiation of coefficients yields hazard ratios (HR). We estimate six different models. Model 1 just includes duration, field of study and university final mark. Model 2 adds variables measuring individual characteristics. Models 3 and 4 include the upper secondary school and family background variables to the previous specification, respectively. Model 5 adds new relevant control variables relating graduates' searching behaviour and working experience. By comparing these specifications, we see whether the observed covariates at graduation influence the main effect of the field of study. Estimates are quite similar across all five model specifications.

Besides the effect of factors at graduation that remain constant over the period of observation, in Model 6 we add two time-varying covariates, namely the presence of children and the attendance of a master degree course. Results are relatively stable compared to the previous specifications. All models accounts for unobservable heterogeneity with a gamma distribution. Gamma variance parameter is not statistically significant for all specifications[16]. This finding may depend on the short number of time intervals that makes difficult to distinguish frailty from duration dependence. Another possible explanation is related to the choice of the distributional shape for unobservable heterogeneity. For that reason, we also run a discrete mixture model using two mass points (Heckman and Singer, 1984) where the coefficient for the mass point for type one graduates is normalised to zero while the coefficient for the second mass point is estimated[17]. The model only converges for the less complex specifications (Models 1-3). The bulk of the probability mass is given to the second type (92%). We can not reject the null hypothesis that the mass point for type two is statistically no different to the mass point for type one (the estimated mass point for type two is 12.86 with *p*-value 0.96).

Henceforward, we refer to exponentiated coefficients of Model 5 including predictors measured at graduation to interpret our results. Each figure illustrates the estimated step-shaped probability functions for significant predictors based on the fitted model 5 in Table 3. Values are obtained at endpoints of each interval with functions between interviews assumed to be constant because of the interval censored data setting.

To check the robustness of our results we estimate a multivariate probit model. The qualitative results for this model are comparable with those of the interval censored discrete time model. We again find a statistical significant association between field of study and the probability of finding a stable job[18].

[15] We exclude from Model 1-3 anybody who is missing values for predictors on the following models to make the sample size the same. Nonetheless, there are no major differences in Models 1-3 that result from dropping the 82 individuals.

[16] Coefficients from the complementary log-log model without frailty are approximately the same as those from the model with frailty.

[17] The estimation uses Jenkins' hshaz module (Jenkins, 2004). Estimates are available upon request.

[18] The estimates are available upon request to the authors.

Table 3. Estimated coefficients and SEs based on the interval censored proportional hazard model

	Model 1 Field of study	**Model 2** Demographic characteristics	**Model 3** Upper secondary school	**Model 4** Family background	**Model 5** Work experience and search behaviour	**Model 6** Other controls (Time varying covariates)
Time dependence *(ref Time interval 1 [2004-2005))*						
Time interval 2 [2005-2007)	0.924***	0.874***	0.907***	0.918***	0.914***	0.971***
	(0.155)	(0.151)	(0.152)	(0.152)	(0.147)	(0.150)
Time interval 3 [2007-2009)	1.199***	1.134***	1.200***	1.222***	1.215***	1.311***
	(0.262)	(0.251)	(0.247)	(0.244)	(0.228)	(0.234)
Field of study *(ref Engineering)*						
Economics and Business (Hard Social Science)	-0.765***	-0.664***	-0.716***	-0.719***	-0.732***	-0.735***
	(0.195)	(0.179)	(0.194)	(0.197)	(0.189)	(0.189)
Humanities (Soft)	-1.701***	-1.517***	-1.550***	-1.562***	-1.531***	-1.513***
	(0.250)	(0.229)	(0.257)	(0.258)	(0.247)	(0.243)
Sciences (Hard)	-0.986***	-0.894***	-0.983***	-0.976***	-0.963***	-0.991***
	(0.227)	(0.211)	(0.225)	(0.226)	(0.219)	(0.219)
Political Sciences (Soft Social Science)	-1.038***	-1.013***	-1.133***	-1.129***	-1.124***	-1.108***
	(0.248)	(0.237)	(0.261)	(0.263)	(0.257)	(0.256)
Academic performance						
University final mark†	-0.001	-0.003	-0.000	0.000	0.002	0.005
	(0.007)	(0.007)	(0.008)	(0.008)	(0.008)	(0.008)

Notes: SEs in parentheses. ***p-value<0.01, ** p-value<0.05, * p-value<0.1. Estimates account for unobservable heterogeneity (Gamma distribution). † Final marks are centred at their mean.

Table 3. Estimated coefficients and SEs based on the interval censored proportional hazard model (*continued*)

	Model 1 Field of study	**Model 2** Demographic characteristics	**Model 3** Upper secondary school	**Model 4** Family background	**Model 5** Work experience and search behaviour	**Model 6** Other controls (Time varying covariates)
Demographic characteristics						
Gender *(ref Female)*						
Male		0.371***	0.323***	0.336***	0.297**	0.276**
		(0.120)	(0.121)	(0.120)	(0.116)	(0.116)
Age at graduation (ref *≥27 years)*						
<23		-0.620	-0.604	-0.624	-0.521	-0.582
		(0.425)	(0.428)	(0.431)	(0.432)	(0.433)
23-24 years		0.375***	0.362**	0.316**	0.361**	0.333**
		(0.137)	(0.142)	(0.146)	(0.144)	(0.147)
25-26 years		0.283**	0.299**	0.264**	0.264**	0.241*
		(0.121)	(0.127)	(0.129)	(0.126)	(0.127)
Upper secondary school s*treams* *(ref Scientific)*						
Classical			-0.403*	-0.431*	-0.374*	-0.347
			(0.220)	(0.222)	(0.220)	(0.222)
Technical			-0.260	-0.250	-0.235	-0.247
			(0.174)	(0.176)	(0.174)	(0.175)
Other			-0.135	-0.143	-0.127	-0.118
			(0.119)	(0.122)	(0.118)	(0.120)
High school performance						
High school final mark†			-0.011	-0.010	-0.010	-0.010
			(0.008)	(0.008)	(0.008)	(0.008)

Notes: SE in parentheses ***p-value<0.01, ** p-value<0.05, * p-value<0.1. Estimates account for unobservable heterogeneity (Gamma distribution).
† Final marks are centred at their mean.

Table 3. Estimated coefficients and SEs based on the interval censored proportional hazard model (*continued*)

	Model 1 Field of study	**Model 2** Demographic characteristics	**Model 3** Upper secondary school	**Model 4** Family background	**Model 5** Work experience and search behaviour	**Model 6** Other controls (Time varying covariates)
Family background						
Father's occupational status *(ref employed),*						
Retired				-0.182	-0.160	-0.184
				(0.122)	(0.122)	(0.122)
Other				-0.251	-0.262	-0.247
				(0.198)	(0.197)	(0.198)
Parents education *(ref high education)*						
Low education				0.212	0.151	0.130
				(0.148)	(0.147)	(0.148)
Search behaviour (*ref public)*						
Private (job sought)					0.333*	0.340*
					(0.176)	(0.178)
Self-employment (job sought)					0.023	0.033
					(0.251)	(0.252)
No preference (job sought)					0.123	0.129
					(0.145)	(0.145)

Notes: SE in parentheses *** p-value<0.01, ** p-value<0.05, * p-value<0.1. Estimates account for unobservable heterogeneity (Gamma distribution).

Table 3. Estimated coefficients and SEs based on the interval censored proportional hazard model (*continued*)

	Model 1 Field of study	Model 2 Demographic characteristics	Model 3 Upper secondary school	Model 4 Family background	Model 5 Work experience and search behaviour	Model 6 Other controls (Time varying covariates)
Work experience						
No previous work experience					-0.396***	-0.404***
					(0.115)	(0.116)
Other controls (Time varying covariates)						
Master attendance *(ref no attendance)*						-0.200*
						(0.120)
Children *(ref no children)*						-0.490**
						(0.249)
Constant	-1.235***	-1.655***	-1.467***	-1.550***	-1.534***	-1.449***
	(0.174)	(0.171)	(0.193)	(0.239)	(0.283)	(0.285)
Observations	2,286	2,286	2,286	2,286	2,286	2,286
Gamma variance	0.095	0.006	0.082	0.093	0.042	0.063
SE Gamma variance	0.333	0.302	0.293	0.286	0.250	0.243

Notes: SE in parentheses *** p-value<0.01, ** p-value<0.05, * p-value<0.1. Estimates account for unobservable heterogeneity (Gamma distribution).

The role of time dependence

In line with Pozzoli (2009) we find that time has a positive effect on the probability of finding a stable job. This finding can be explained by the fact that, as time proceeds, individuals become increasingly informed about the availability of job opportunities, refine their search methods and increase their job search ability. Fig. 2 illustrates the estimated baseline probability function.

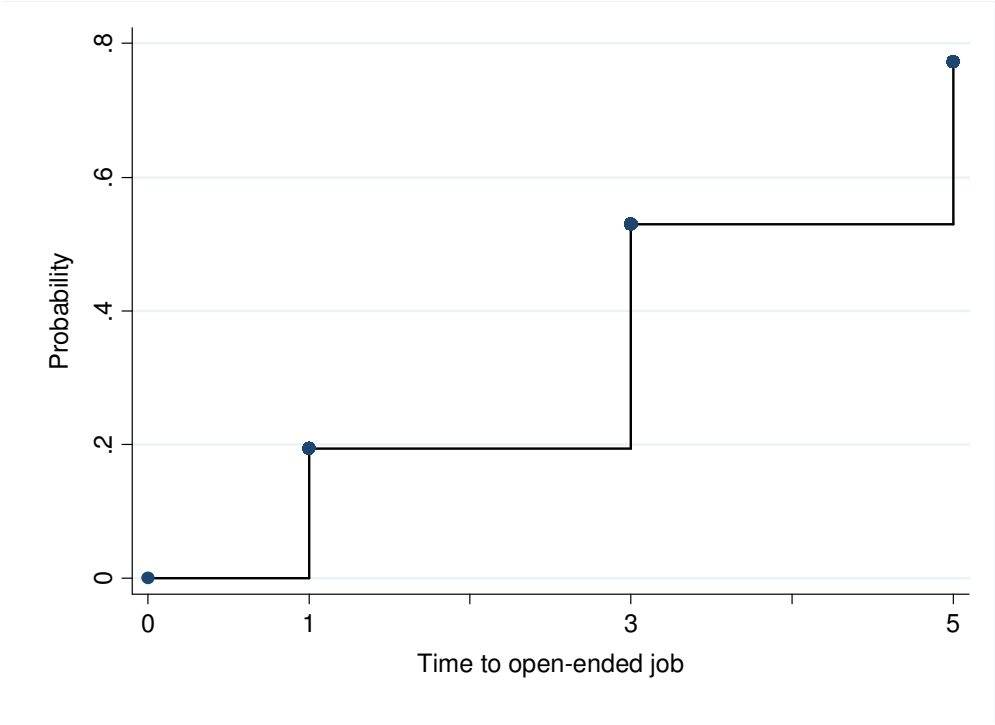

Fig. 2. Estimated baseline probability of finding an open-ended job

The role of the field of study

Economics and Business graduates find a stable job at a rate that is about 52% (p- value<0.01) lower than graduates in Engineering, followed by those with a degree in Sciences (62%, p-value<0.01), Political Science (68%, p-value<0.01) and Humanities (78%, p-value<0.01). Besides, interaction between fields of study and time dummies does not turn out to be statistically significant, supporting the assumption of proportionality. Hence, it seems that individuals with occupational generic human capital are less likely to find a stable job compared to those whose human capital is most occupational specific.

Fig. 3 illustrates the estimated step-shaped failure functions for field of study. To be more precise, it shows how field of study affects the probability of having a stable job at 1, 3 and 5 years after graduation. At all times, the estimated probability of having a stable job is higher for graduates in Engineering. For the latter, the probabilities at one, three and five years distance are approximately 20, 60 and 80%, respectively. By contrast, for graduates in Humanities probabilities fall at nearly 5, 17 and 30%, respectively. The gap across fields of study, more generally, becomes larger over time

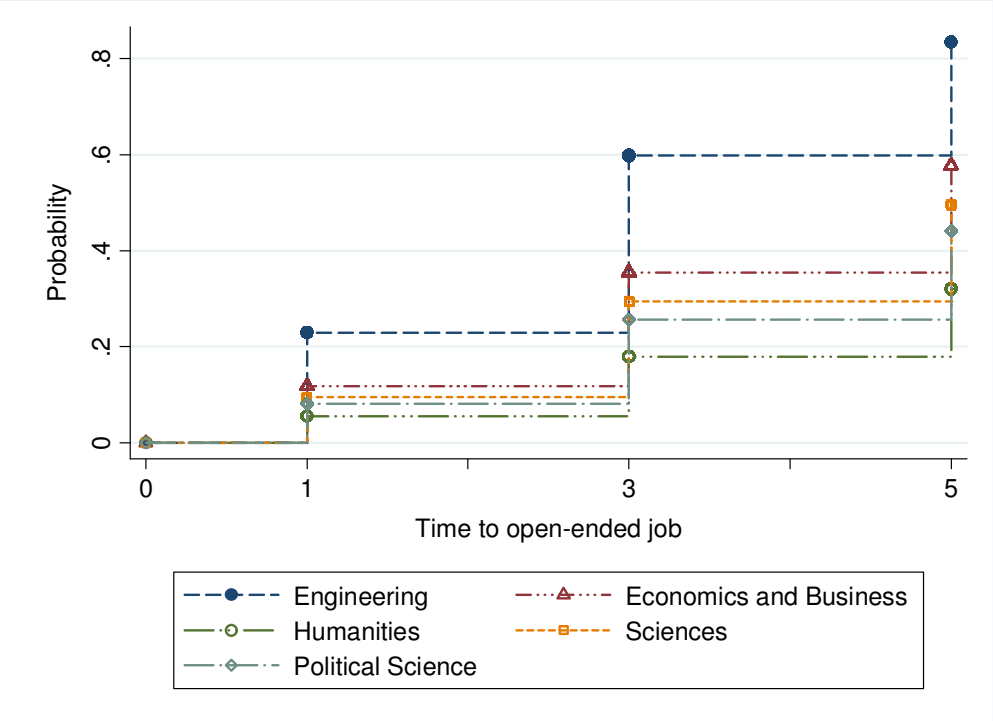

Fig. 3. Estimated probability of finding a stable job for field of study

The role of individual characteristics

Male graduates have a statistical significant higher hazard of stable employment compared with female graduates (HR 1.35, *p*-value<0.01). Graduates aged 23-24 and 25-26 exhibit a higher probability of finding a stable job than those aged over 27. Figs 4 and 5 illustrate the estimated step-shaped probability functions for gender and age groups, respectively. This finding might suggest that younger graduates (except the very young for which the coefficient is not statistically different from the aged over 27) signal a superior (academic) ability as well as other non cognitive characteristics (self-esteem, motivation, personality and so on).

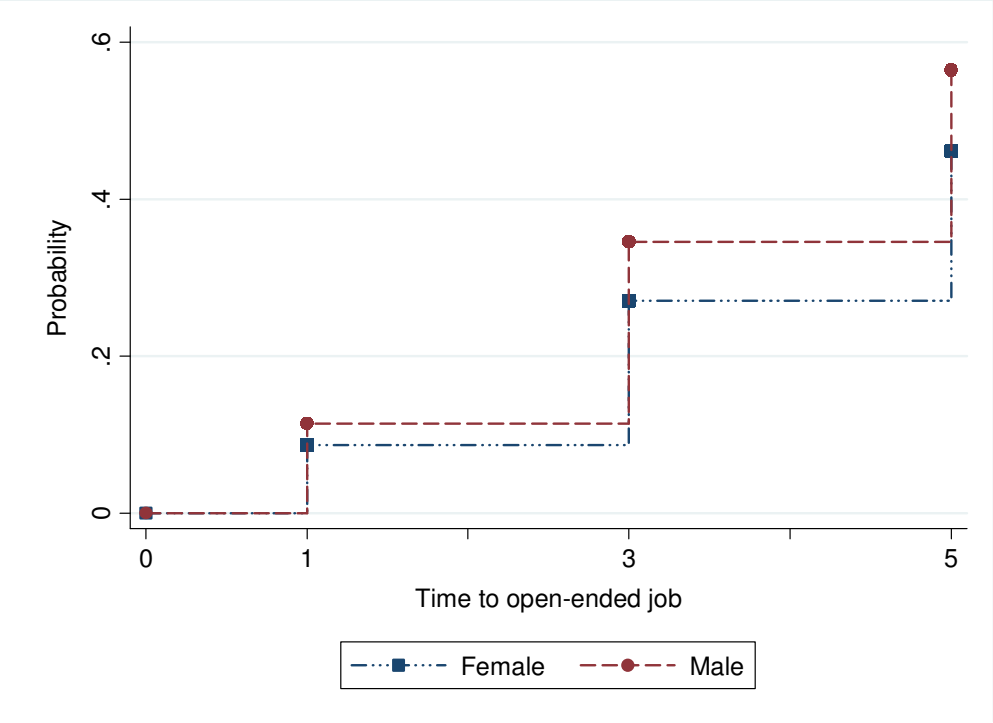

Fig. 4. Estimated probability of finding a stable job for gender

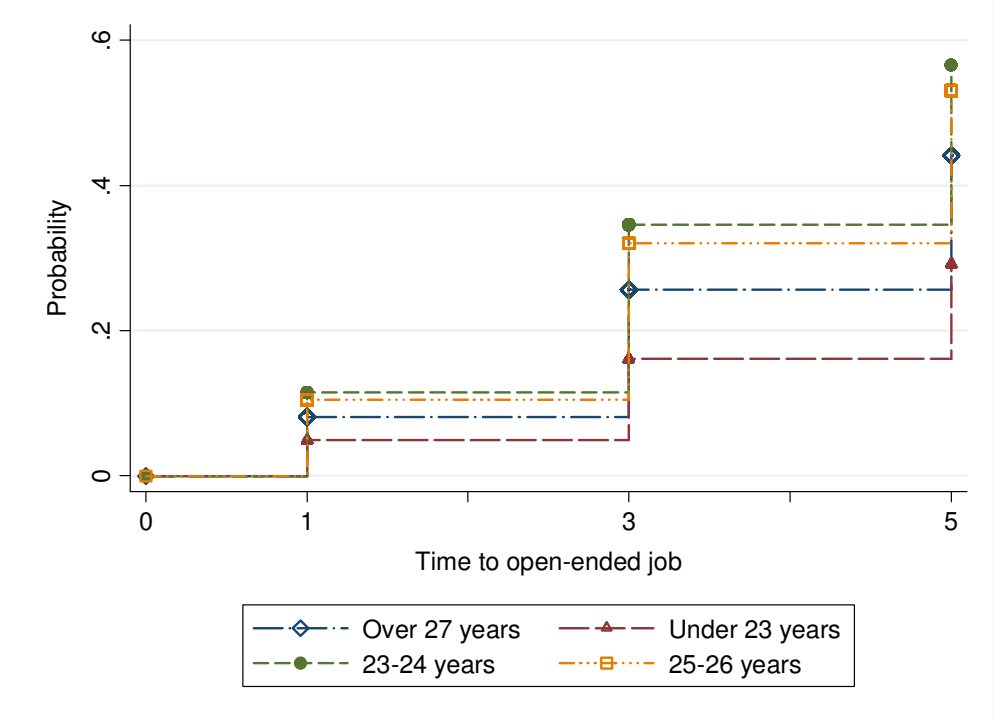

Fig. 5. Estimated probability of finding a stable job for age groups

The role of academic and school performance

There is no evidence of a direct effect of upper secondary school stream on the probability of finding a stable job. Final marks at school and at university are also not found to have an effect

at any level of statistical significance. With regards these variables, the previous literature has not reached a definitive conclusion (Biggeri *et al*, 2001; Pozzoli, 2009). In Italy, in addition, criteria such as personality and field of study seem to guide the recruitment of highly skilled workers by employers much more than the final mark, as reported by graduates (Rostan, 2006).

The role of family background

Family background can capture the role of social networks in finding a job. More precisely, graduates with low educated parents and/or a retired/unemployed father may have less access to informal networks and, thus, have to wait longer to find a job. However, after controlling for a set of variables other than field of study, we find no evidence of a direct family background effect on the labour market outcome under investigation[19]. Also with regards these variables, there is mixed evidence in the literature (Biggeri *et al*, 2001; Pozzoli, 2009 among others).

The role of other relevant variables

We find weak evidence that those searching for a private job have a higher probability of finding a stable job compared to those searching for a public sector job (HR 1.39 p-value<0.1). Additionally, those without work experience from before graduation have a 33% lower chance of finding a stable job (p-value <0.01). It is likely that, in this latter case, solid networks and channels have not been built yet. Model 6 shows that having attended a master degree course after graduation reduces the probability at which graduates find a stable job (HR 0.82 p-value<0.1). Finally, having children is associated with a lower hazard (HR 0.61 p-value<0.05). For those who have children the opportunity cost of working stably may be higher.

In the appendix we try to account for the fact that having been employed in a temporary job may affect the chance of finding a stable one. To this purpose, a variable "atypical jobs", which takes a value of one if during the follow-up the individual acquires temporary work experience and zero otherwise, is added to the final model. Results are relatively stable compared to the previous specifications except for some differences in the magnitude of the estimated coefficients and for the degree of positive duration dependence that is larger. Gamma variance parameter is, in fact, statistically significant at 10% level. The main effects model (6a) in Table 4 shows that graduates with experience of fixed-term jobs during the follow up period exhibit a lower rate of finding a stable job suggesting that intermittent contracts reduce the chance of finding a stable job. Despite this result, interaction model 6a shows that having had an atypical job mitigates the lower chance of finding a stable job for graduates in Economics and Business compared to graduates in Engineering. It is likely that, for these graduates, such contracts are designed to start them on a career as a professional accountant[20].

[19] The dataset also contains variables that describe the channels the graduates intend to utilise in their job search. The majority of them declares the intention of using all listed channels making this piece of information useless to build an indicator of the intensity of search. Nevertheless, we try to control for one channel that the literature recognises as relevant in the job search, i.e. the recourse to informal networks (relatives and friends), but it turns not to be statistical significant.

[20] The accounting profession is peculiar to Italy. To be a professional accountant an individual must pass the State examination and be registered in the roll of the competent local Ordine. Besides the possession of a university degree in Economics and Business or Political Science, a prerequisite for sitting for the State examination is the completion of three years of apprenticeship in the office of a professional accountant.

6. Concluding Remarks

In this paper we try to shed some light on the role played by field of study in the finding of a stable job in a context where the culture of the "posto fisso" is dominant and the economy is depressed, controlling for a wide range of variables which may affect both a student choice and employment outcomes. In line with previous literature (Staffolani and Sterlacchini, 2001; Barbieri and Scherer, 2001; Bernardi, 2003; Ballarino, 2006; Pozzoli, 2009) we find that the field of study matters in finding a stable job. In a context that combines flexibility and low occupational and training system specificity, it is likely that entry into the labour market will be delayed and result in an unstable career. That is the case for graduates in Economics and Business, Science, Political Science and especially Humanities. Conversely, where a high level of matching is immediately achievable through the presence of high vocational specificity, it is likely that entry into the labour market will occur earlier, resulting in a stable career. This is the case of Engineering. Therefore the choice of a hard field seems to be a good investment, one that acts as a form of insurance against the risk of unemployment or an unstable career.

How may graduates in Humanities compensate for their lower chance of finding a stable job compared to those in Engineering? A policy intervention might be the strengthening of the interdisciplinarity across such distantly related fields. Interdisciplinary programmes may be formed, for example, by the combination of technology and economics or humanities education, technology and design or social science and natural science. This may be achieved by the students' themselves combining their programmes on the basis of the course options from which they can choose. However, students may not be sufficiently motivated to opt for more demanding programmes. Besides, the existing mechanisms, supporting interdisciplinarity, especially across distantly related programmes rather than closely related fields or within the same field, are quite limited. To promote successful cooperation across programmes, there is the necessity to create appropriate incentive structures so as to offer students better opportunities to move across disciplinary fields in relation to society and firms needs. These may include grants for those participating in interdisciplinary education given that not all students have such specific abilities to work in a interdisciplinary way. Alternatively, the higher education institution itself may achieve interdisciplinarity by substituting more generalist programme courses in a soft field with more specific ones offered by hard fields. To this purpose, it is essential to try to overcome the cultural resistance to cooperation within an education system which is traditionally organized on the basis of separate, individual faculties.

Besides a significant effect on the part of the field of study, other notable results include a differential effect of gender, age, pre-existing ability (as measured by types of upper secondary school diplomas), previous working experience (before graduation), further investment in education (as measured by attendance of a master's degree course), having children and having done temporary work during the follow up period. Among other factors, family background and final mark at both school and at graduation do not turn out to have an effect on the probability of getting a stable job. This is not unexpected. In fact, although from a theoretical view these variables are recognized as important, no consistent results have been well settled in the empirical literature.

Based on these findings, we think that it is important to strengthen the connections between university and labour markets and carry out project works within the programme courses. Consideration should also be given to the opportunity of combining degree study with work experience as part of the educational curriculum so as to improve the chance of finding a stable job without compromising educational performance. Despite the university's ultimate goal is providing high education and research, we argue that, in a depressed area characterized by limited job opportunities and matching between labour demand and supply, the university should respond to society needs and contribute to the development of the area. This is true especially for a local university such as the one under consideration, i.e. attended by students coming

predominantly from the same region where the university is located and for a context where graduates often do not search for a job outside. To this purpose it is recommended that the university develops a plan aimed at providing adequate career-related information and work opportunities to all students before they enter a field of study. Additionally, university should also inform prospective students about the labour market outcomes of graduates by field of study and unmet labour demand to minimize the risk of over-education and/or skill mismatch.

From a methodological view, with data at hand an interval-censored discrete time hazard model is estimated. This approach is chosen to exploit both information gathered at each interview and the advantages of duration analysis (i. e. censoring, time dependence and unobservable heterogeneity). On the other hand, we are aware that the aggregation of the available data implies a loss of information, in particular when exactly someone makes the transition. Therefore, we think that asking about dates of transitions prior to interview, even on a sub sample, would enhance the usefulness of the data.

Deeper investigations on the sub-sample of the employed should be added to this work to complete the picture concerning relevant aspects such as earnings and job satisfaction. This step would shed some light on the effect of explanatory variables on the quality of stable jobs rather than merely on the probability of finding them. This is left for future research.

Appendix

Table 4. Estimated coefficients and SEs based on the interval censored proportional hazard model

	Model 6a Other controls (Time varying covariates "Atypical")	**Model 7** Interaction between "Atypical" and field of study
Time dependence *(ref Time interval 1 [2004-2005))*		
Time interval 2 [2005-2007)	1.659***	1.597***
	(0.294)	(0.251)
Time interval 3 [2007-2009)	2.545***	2.362***
	(0.521)	(0.430)
Field of study *(ref Engineering)*		
Economics and Business (Hard Social Science)	-1.316***	-1.594***
	(0.276)	(0.297)
Interaction between Economics and Business and Atypical		0.886***
		(0.340)
Humanities (Soft)	-2.116***	-2.313***
	(0.347)	(0.357)
Interaction between Humanities and Atypical		0.664*
		(0.364)
Sciences (Hard)	-1.488***	-1.713***
	(0.300)	(0.325)
Interaction between Sciences and Atypical		0.677
		(0.430)
Political Sciences (Soft Social Science)	-1.701***	-1.921***
	(0.354)	(0.380)
Interaction between Political Sciences and Atypical		0.710
		(0.502)
University final mark†	0.014	0.013
	(0.012)	(0.011)
Demographic characteristics *(ref Female, ≥ 27 years)*		
Male	0.385**	0.380**
	(0.166)	(0.154)
<23	-0.917*	-0.928*
	(0.507)	(0.488)
23-24 years	0.394**	0.370**
	(0.197)	(0.185)
25-26 years	0.318*	0.306*
	(0.175)	(0.164)

Notes: SE in parentheses. *** p-value<0.01, ** p-value<0.05, * p-value<0.1. Estimates account for unobservable heterogeneity (Gamma distribution). † Final marks are centred at their mean.

Table 4. Estimated coefficients and SEs based on the interval censored proportional hazard model (*continued*)

	Model 6a Other controls (Time varying covariates "Atypical")	**Model 7** Interaction between "Atypical" and field of study
Upper secondary school (streams) *(ref Scientific)*		
Classical	-0.403	-0.373
	(0.283)	(0.266)
Technical	-0.379	-0.352
	(0.236)	(0.222)
Other	-0.159	-0.152
	(0.169)	(0.158)
High school final mark[†]	-0.015	-0.013
	(0.012)	(0.011)
Family background *(ref employed, high education)*		
Retired (father's occupational status)	-0.226	-0.207
	(0.161)	(0.151)
Other (father's occupational status)	-0.371	-0.345
	(0.262)	(0.248)
Low education (parents)	0.135	0.125
	(0.205)	(0.192)
Work experience and search behaviour		
Private (job sought) (*ref public)*	0.569**	0.524**
	(0.249)	(0.231)
Self-employment (job sought) (*ref public)*	-0.002	0.021
	(0.346)	(0.323)
No preference (job sought) (*ref public)*	0.232	0.228
	(0.193)	(0.181)
No previous work experience	-0.573***	-0.535***
	(0.159)	(0.150)
Other controls (Time varying covariates)		
Master attendance	-0.276*	-0.259*
	(0.164)	(0.153)
Children	-0.692**	-0.662**
	(0.315)	(0.297)
Atypical jobs	-1.254***	-1.736***
	(0.275)	(0.338)
Constant	-0.768*	-0.639
	(0.420)	(0.399)
Observations	2,286	2,286
Gamma variance	1.113*	0.838*
SE Gamma variance	0.622	0.500

Notes: SE in parentheses. *** p-value<0.01, ** p-value<0.05, * p-value<0.1. Estimates account for unobservable heterogeneity (Gamma distribution)

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