

Vocational high school or Vocational college? Comparing the Transitions from School to Work *

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Abstract

Using a specific microdataset with information on working histories, we analyse the labour market entry of Spanish youths who have completed vocational education. Young people can enter the labour market with vocational high school (upper secondary education) or with vocational college (tertiary education). Both present a period of workplace training, although, as they belong to different schooling levels, they have different entry requirements. Those who complete vocational college has spent more years in education and we would expect more success in finding a first job. Surprisingly, results do not confirm this hypothesis. We do not find important differences in the estimates of the determinants of transitions across types of vocational education. Apprenticeship has a very important role on increasing the hazard rate to employment and this result holds after controlling for unobserved heterogeneity.

JEL Classification: *J13, J24, I20*

Keywords: *vocational education, labour market entry, apprenticeship, training, duration models*

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1 Introduction

The transition from initial education to the labour market is a very important event in the life of young people. As pointed out by Heckman and Borjas (1980); Gregg (2001); and Stewart (2007), bad outcomes in early working life can have negative consequences on later outcomes. However, it is an uncertain process, because after completing education, young people usually enter the labour market having a lack of work experience. Therefore, the success of this transition will depend greatly on the labour market context and on the type of education pathway (general, school-based vocational or apprenticeship) followed by a person (OECD, 2000). In this context, analysing to what extent each type of educational track smooth the school-to-work transition constitutes a central research topic in all countries¹. Regarding this, school-based vocational and apprenticeship paths provide an initial work experience, which can enhance transitions in several ways: it aids the matching between employers and young people, reducing unemployment or inactivity spells; it develops work-related knowledge and skills; and it makes learning more applied and relevant (OECD, 2000).

In this paper, we analyse the school-to-work transitions in Spain for individuals who have completed vocational education. The Spanish education system presents general and vocational paths. Vocational education is school-based, oriented to provide a specific qualification to access the labour market. This path makes less sharp the transition between the classroom and the labour market through school-organised workplace experience programs. Vocational paths are available at upper secondary (*vocational high school*) and tertiary education (*vocational college*). Both present a period of apprenticeship, although, as they belong to different schooling levels, they have also different entry requirements: enrollment in vocational high school requires the compulsory schooling diploma while in vocational college the certificate corresponding to the general upper secondary track is needed. This implies that individuals with vocational college have more years of education than individuals with vocational high school.

Given this framework, the objective of this paper is to explore the determinants of the transitions from vocational school to work. As vocational college entails more years of education, we would expect a different labour market entry compared with vocational high school, and, therefore, we analyse whether exist differences in the transitions between these two vocational levels.

In several European countries, there are studies that explore the effects of training in the school-to-work transitions. They find that apprentices experience fewer unemployment spells and higher probability of moving to a first job (see, for instance, Winkelmann (1996), Euwals and Winkelmann (2004), and Parey (2009) for Germany; Bertschy et al. (2009) for Switzerland; or Askilden and Nilsen (2005) for Norway). In Spain, few papers analyse the entrance of young people in the

¹See Ryan (1998) and Ryan (2001) for a review and a cross-national comparison of school-to-work transitions, respectively.

labour market. Alba (1996) focuses on the transition from unemployment to employment among young workers depending on whether they search or not for the first job. He finds that having vocational education is one of the explanatory variables that increases the probability of finding a job. Blazquez-Cuesta and Garcia-Perez (2007) estimate the effect of decentralization of education expenditure on transitions separately for people with university and non-university education, obtaining that high expenditure reduces the time spent in finding a job for all individuals. Albert et al. (2008) look at the transitions to find the first significant and non-significant job, showing that a higher educational investment increases the probability of obtaining a significant job. However, any previous study does not have analysed the transitions for people who have completed vocational college and vocational high school in Spain. Therefore, our contribution to the literature is to fill in this gap. In addition, this paper enriches cross-country comparisons by providing another national analysis of the role of apprenticeship on improving the labour market entrance. We consider that this is a very important issue from a policy perspective, specially today, when young people have difficulties to enter the labour market due to the strong recession.

For our purpose, we use a unique micro-dataset on schooling and labour histories elaborated by the Spanish Statistics Institute in 2005 (*Survey on Education and Labour Market Transitions*). It contains representative samples of individuals who completed vocational high school or vocational college in the school year 2000/2001. The design of this dataset is adequate to compare transitions between levels of vocational education. First, people are observed at the beginning of their labour careers, after completing the corresponding vocational studies. Second, all sampled individuals have finished vocational education in the same year (2001), facing the same economic conditions when they start searching for a job.

In our analysis, we study transitions by looking at the number of months to find a first job and a first “significant” job (a job which lasts at least six consecutive months). Applying duration techniques, our results show that the patterns of the empirical hazards to the first (significant or not) job are very similar in the two groups of vocational education. We neither find important differences in the estimates of the determinants of duration (gender, apprenticeship, type of school, parents’ education,...) between types of vocational levels. Nevertheless, both in vocational high school and vocational college, we obtain that apprenticeship and parents’ education have an important effect on the hazard rate to employment and this result holds after controlling for unobserved heterogeneity.

The rest of the paper is organized as follows. Next Section provides an overview of the Spanish education system. Section 3 describes the dataset we use. Section 4 presents the duration analysis and Section 5 shows the results. Finally, Section 6 and Section 7 discusses and concludes, respectively.

2 Spanish education system

In Spain, compulsory schooling covers ten years, up to the age of sixteen. Then, young people can proceed to post-compulsory secondary education (high school) or they can enter the labour market (see Figure 1). In the high school level, an individual can choose between attending academic high school and vocational high school. After completing upper secondary education, a person can decide to attend university or vocational college (tertiary education). Access to university requires the academic high school diploma and to pass a general (not university-specific) test. Access to vocational college is direct from the academic track but not from the vocational track. From the latter, it is required to pass an admission test. The schooling system allows to attend academic high school after completing the vocational track and it also permits to attend university after graduating from vocational college². Then, to sum up, the main difference between vocational high school and vocational college are the entry requirements.

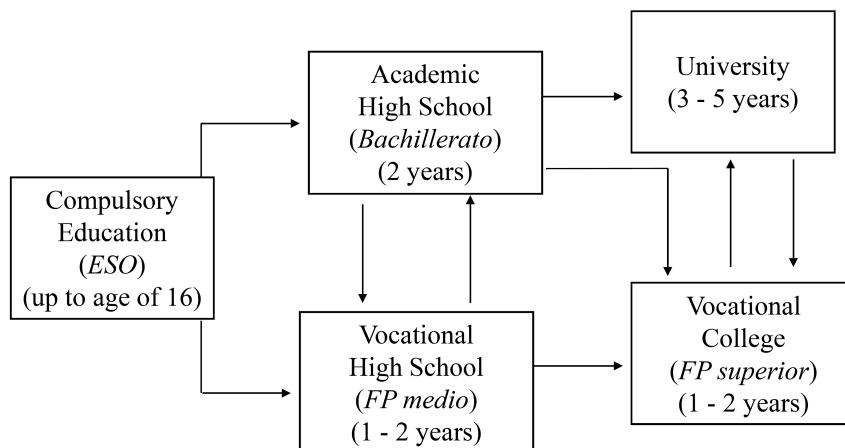


Figure 1: Schooling levels in post-compulsory education

Education received both in vocational high school and vocational college is a schooling-based training with apprenticeship in firms. This education is oriented to give individuals a specific qualification to enter the labour market. In particular, the fields of programs offered include, for example, agriculture, forestry and fishery, manufacturing, health, building, clerical support,... The duration of the programs ranges between one and two years and apprenticeship in firms supposes up to a twenty-five percent of that time. Apprenticeship is compulsory but, in some cases, it can be waived with previous work experience if it is related to the content of the program.

In Spain, vocational education is attained by around 20% of young people, as it is shown in Figure 2, where we present the distribution of the educational levels of people aged 20-29 years old over the period 2001-2010. On the one hand, as we can see, the evolution of the educational

²The schooling system shown in Figure 1 was passed in the 1990 law (*Ley Orgánica General del Sistema Educativo*), which increased the age of compulsory education from 14 to 16 years old and reformed the upper secondary education, and it is still in force nowadays.

attainment of young people is quite stable across this period: the distributions of schooling levels are similar between 2001 and 2010. On the other hand, we can observe that the distribution of the educational achievement is grouped into two categories. The first one comprises compulsory education, academic high school and university or more and it includes around 70% of total people aged 20-29 years old. The other three schooling levels (primary or less, vocational high school and vocational college) form a second category that comprises the remaining 30% of people. Thus, the educational attainment of young people in Spain is mainly academic oriented.

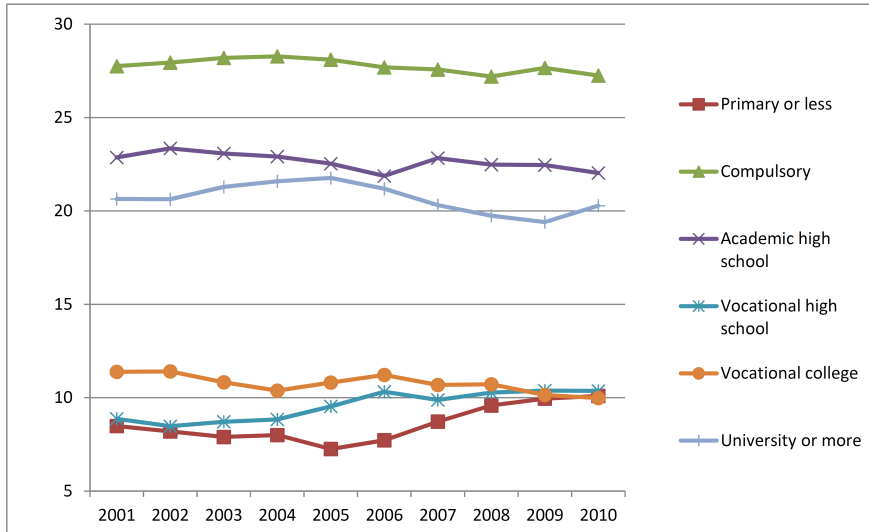


Figure 2: Schooling levels of people aged 20-29 years old (% , Spanish Labour Force Survey)

3 Dataset

The data we use come from the *Survey on Education and Labour Market Transitions*, produced by the Spanish Statistics Institute in 2005. The objective of this survey is to know the education and labour decisions of individuals who completed any non-university education level in the school year 2000/2001. In particular, the sampled groups are individuals who completed compulsory schooling, academic high school, vocational high school or vocational college in that school year. For the purpose of the paper we use the last two samples.

The survey collects information about education and labour activities since 2000/2001 until 2005 by using a retrospective interview. In consequence, individual decisions are observed along four years following graduation from vocational high school or vocational college. The dataset contains three types of information:

- **Personal characteristics.** Individuals report date of birth, gender, mother and father’s education and province of residence.
- **Education.** Individuals indicate the age at which they finished the corresponding vocational schooling level, the program field completed and the type of school attended (private, semi-

private or public). As we explain above, vocational education includes apprenticeship in firms and the survey asks individuals whether this was their first work experience. In addition, the survey provides information on educational histories for the next years.

- **Work.** On a monthly basis, all individuals are asked about their employment or unemployment status. If they work, they report whether the job is part-time or full-time. Besides, a questionnaire on the job characteristics is asked to those individuals who are in some of the following situations:

1. They work in a full-time job at the moment of the interview.
2. They worked in a full-time job in the same firm for at least six consecutive months in the past.

Individuals have to fill in as many questionnaires as times they are in any of the previous situations. The questions about the job refer to the activity of the firm, occupation, net monthly wage on an interval basis, type of contract, hours worked, necessary qualification for the job, starting and finishing dates, the means that the individual used to find the job.

The initial sample sizes are 7,615 and 11,244 individuals with vocational high school and vocational college, respectively³. As we are interested in comparing the school to work transitions of people who have attained vocational high school or vocational college as their maximum schooling level, we decide to focus on the subsample of individuals who do not attend further education in order to avoid misleading results. Thus, we drop those individuals who continue in education in the school year 2001/2002 (1,297 and 3,977 for vocational high school and vocational college, respectively) and those who reenter the education system after that school year (around 10% of the remaining sample). Final sample sizes are 5,725 with vocational high school and 6,408 with vocational college⁴.

Table 1 contains a description of the two samples. As we can see, the proportion of females is a bit higher among those who completed vocational college, while individuals who obtained a vocational high school diploma are younger. However, this is not surprising, given that vocational college is tertiary education and vocational high school is secondary (see Figure 1). More than 70% of individuals completed vocational education in a public school, while very few people attended a private one⁵.

With respect to parents' education, the most prominent feature is that both father and mother present a low schooling attainment, specially for the latter. It is also interesting to note that the

³We drop 21 individuals who reported having completed vocational high school with less than seventeen years old or vocational college with less than eighteen years old. Because these situations are impossible according to the schooling system explained previously, we consider them as measurement errors.

⁴We have checked that the distribution of observable characteristics in the initial sample does not change after dropping individuals who continue in education. This analysis is available upon request.

⁵According to the Spanish Ministry of Education, in 2001, around 70% of the schools that offer vocational education are public.

percentage of people who report not knowing parents' education is not negligible, although it is lower among those who completed vocational college.

Regarding the apprenticeship, it is important to remind that it is compulsory and intended to give all individuals an initial job experience before entering the labour market. However, it can be waived with previous labour experience if it is related to the content of the vocational program. If previous jobs are not connected with that content, individuals need to take the apprenticeship. The information in the questionnaire allows us to distinguish among those situations, and we construct the following three mutually exclusive variables:

- *App_1st*: equal to one if an individual took the apprenticeship and this was her first labour experience.
- *App_previous*: equal to one if an individual took the apprenticeship although she had worked previously.
- *No app*: equal to one if an individual did not take the apprenticeship because it was waived with previous labour experiences.

Table 1 shows that few individuals did not complete the apprenticeship in vocational high school (3%) while the percentage is higher in vocational college (12%). We can see also that the proportion of individuals for whom the apprenticeship was her first labour experience is higher in vocational high school than in vocational college. However, the percentage of people who completed the apprenticeship having previous experience is similar (around 50%).

Finally, with respect to the type of program field, those with vocational high school are more likely to finish a program in Clerical and Transportation or in Manufacturing, while around 40% of people with vocational college have completed a program in Social Services; in both cases, few people obtained a degree in the field of Agriculture and Fishery.

The survey does not provide information on grades but, according to Figure 1, a student who completes education on time is between 17 and 18 years old in vocational high school and between 19 and 20 years old in vocational college. Thus, we can proxy performance with the age when students finished education. Regarding this, we do observe many individuals who finished vocational high school with more than 18 years old or who graduated from vocational college with more than 20 (see Table 2). However, one possible concern in using the age as a proxy for performance is whether finishing older is consequence of bad results in vocational education or in previous attended schooling levels. Unfortunately, we cannot distinguish perfectly between these situations because the database does not have enough information. Nonetheless, we know from the sample of people who completed compulsory schooling in 2001 (provided also by the survey), that most individuals who attend vocational education usually have finished previous schooling levels with one or two years of delay (see Section 6 for more discussion). So, completing vocational

school on time implies that individuals will be around 19-20 and 21-22 years old in vocational high school or vocational college, respectively. As observed in Table 2, we do find that more than 50% of students have finished vocational education with those ages. This evidence suggests that the age when people completed vocational education can be used as a proxy for performance in that level, although taking into consideration that the evidence is not conclusive.

4 Duration analysis

The design of this dataset is adequate to analyse differences in the transitions to labour market from the two vocational levels because it allows observing individuals in the beginning of their labour careers, just after completing vocational schooling. In addition, as the target population of the survey is people who completed education in 2001, all individuals, independently of the vocational level finished, face the same business cycle conditions when they start to search for a job.

We study these transitions by comparing the duration until finding the first full-time job and the first “significant” full-time job. The duration variables are based on the monthly information on individual employment status. We concentrate on full-time instead of part-time jobs because we look at young people who do not continue in education⁶. In addition, following the definition used by the Spanish Statistic Institute a job is significant if it is full-time and lasts, at least, six consecutive months. This definition is applied in the *Survey on Education and Labour Market Transitions* to collect information on job characteristics.

4.1 A first look at the duration data

We observe that the percentage of individuals who do not find a job (significant or not) between 2001 and 2005 is very small (see Table 3). Not surprisingly, the percentage is a bit higher when we refer to find a significant job (remind that the period considered in the analysis corresponds with the years of an economic expansion). We observe also some differences by gender: few men do not get any type of job while the percentages for women are higher, specially with respect to find a significant job. In addition, we find that the percentage of individuals for whom the first significant job is also the first job is around 71% in both types of vocational education. This is a first evidence on the success of transitions from school to work because most individuals find a job and, more important, for most of them the first job is significant. However, with respect to this, we do not find any important difference between vocational high school and vocational college.

In Table 4, we present the percentage of individuals by year when they found the first and the first significant job. Two years after completing education, most people had found a job (90% for first significant job and 95% for first job), with some differences across vocational levels. Among

⁶According to Eurostat, in 2005 only around 13% of people worked in a part-time employment in Spain.

those individuals with vocational college, the percentage who find an employment in 2001 is higher for both types of job in comparison with the percentages in vocational high school.

In Table 5, we analyse whether there are differences in average duration to find a job by vocational study, apprenticeship and age when individuals finished education. On average, people with vocational high school or vocational college last around 3.8 months to find the first job and around 6 months to find a significant employment. If we distinguish by the apprenticeship situation (see the first two rows of Panels A and B of Table 5), the average hide important differences: individuals with apprenticeship and previous experience present the lowest average duration in finding both jobs, and, interestingly, in Panel B (first significant job), people who did not take the apprenticeship have the highest average in both types of vocational schooling. However, we do not observe a clear decreasing or increasing age pattern in average duration in either vocational high school or vocational college. In consequence, it seems that completing vocational education on time does not provide any advantage to find a job. However, we have to be cautious on drawing this conclusion because, as discussed in the preceding Section, we do not have information on the years previous to complete vocational education.

Finally, and before turning to the estimation of the duration models, we have explored the patterns of getting a job by vocational education using the non-parametric Kaplan-Meier estimates of the empirical hazard. First, in Figure 3, we show the estimates corresponding to find the first job (right panel) and the first significant job (left panel). Regarding the first significant job, the patterns are more or less the same between vocational high school and vocational college: the hazards fall very quickly from the first to the sixth month and, then, they fall slowly and monotonically. The same behaviour is observed in the duration to find the first job, although in this case, the hazards fall even more quickly in the first months. Then, in Figures 4 and 5 we present the Kaplan-Meier estimates by the type of apprenticeship for first and first significant job, respectively. The main differences are observed in vocational high school (left panels). Those individuals who had previous experience and took the apprenticeship present the quickest fall in the hazard rate. However, for individuals who did not take the apprenticeship the exit rate goes down more slowly, specially since the sixth month.

4.2 Duration models

We analyse the determinants of the transitions from school to the first (significant or not) job by estimating a duration model. We use discrete-time models since, in our data, exit to employment occurs in continuous time although we only observe time at one-month intervals⁷. Let T be a discrete duration random variable indicating number of months and taking on values $\{1, 2, 3, \dots\}$

⁷See Lancaster (1990) and Jenkins (1995, 2005) for the basic features of such models.

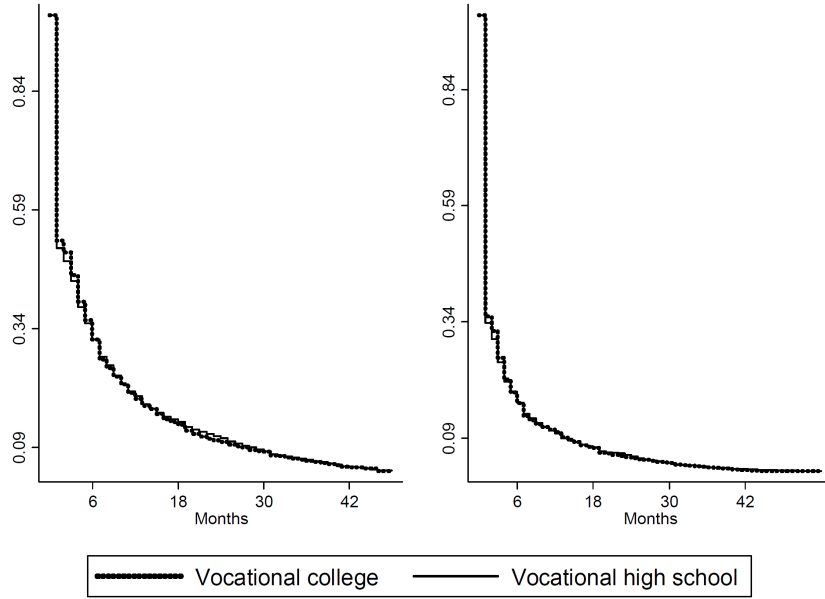


Figure 3: Kaplan-Meier empirical hazard to first significant job (left panel) and to first job (right panel)

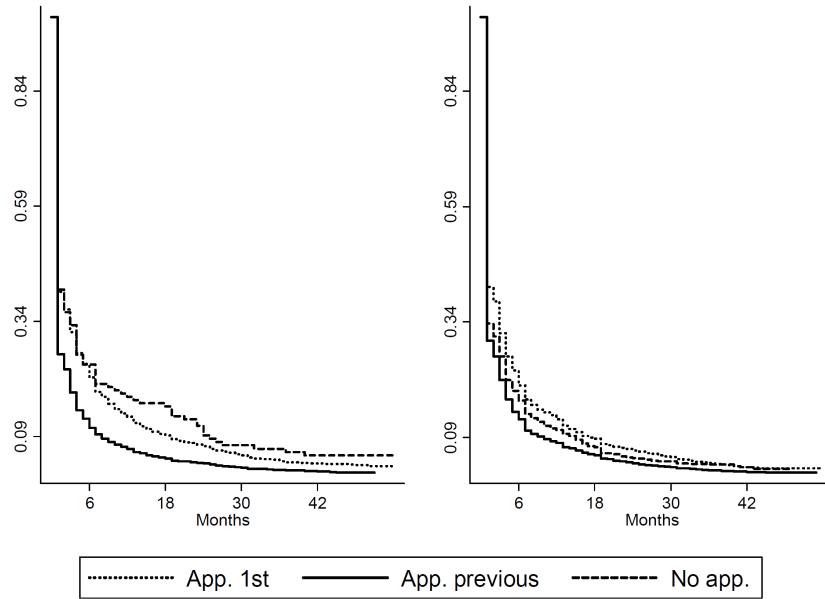


Figure 4: Kaplan-Meier empirical hazard to first job, by type of apprenticeship. Note: Vocational high school on the left panel and Vocational college on the right panel. App. 1st: Apprenticeship (1st labour experience). App. previous: Apprenticeship (previous labour experience). No app.: No apprenticeship.

with probability mass function:

$$p(t) = Pr(T = t), \quad t = 1, 2, \dots$$

and cumulative distribution function:

$$F(t) = Pr(T \leq t) = p(1) + p(2) + \dots + p(t)$$

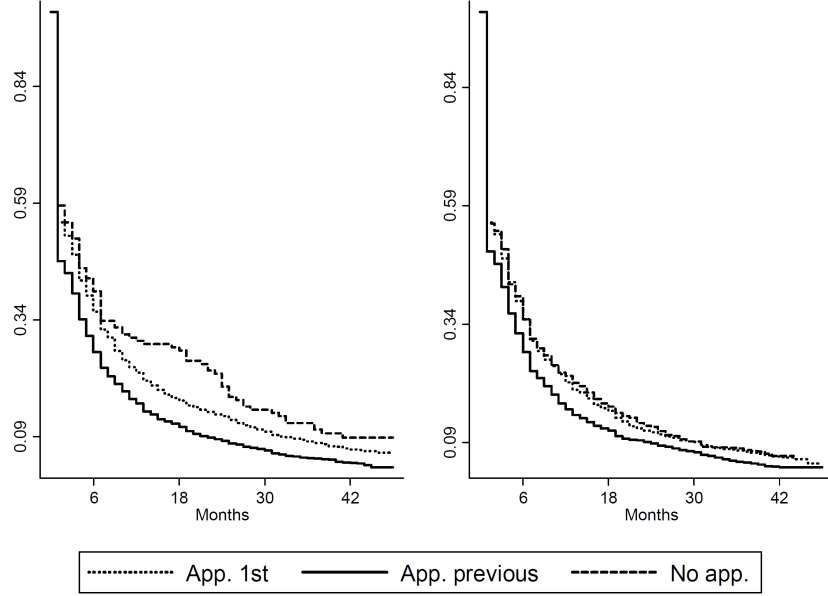


Figure 5: Kaplan-Meier empirical hazard to first significant job, by type of apprenticeship. Note: Vocational high school on the left panel and Vocational college on the right panel. App. 1st: Apprenticeship (1st labour experience). App. previous: Apprenticeship (previous labour experience). No app.: No apprenticeship.

The hazard function is

$$\begin{aligned}
 h(t) &= Pr(T = t | T \geq t) = \frac{Pr(T = t)}{Pr(T \geq t)} = \frac{Pr(T = t)}{1 - Pr(T \leq t - 1)} \\
 &= \frac{p(t)}{1 - p(1) - \dots - p(t - 1)} = \frac{F(t) - F(t - 1)}{1 - F(t - 1)} \quad \text{for } t > 1
 \end{aligned}$$

and $h(1) = p(1) = F(1)$. The hazard gives probabilities of exit to employment defined over the surviving population at each time. The hazard function conditional on covariates is given by $h(t, X) = Pr(T = t | T \geq t, X)$ and we consider a complementary log-log (cloglog) specification:

$$h(t, X) = 1 - \exp[-\exp(\beta'X + c(t))]$$

The cloglog is a proportional hazard model, where $c(t)$ is the baseline hazard function which summarizes the pattern of duration dependence and it is not affected by individual covariates X . We assume that duration dependence is characterized by $c(t) = r \log t$. Thus, the hazard function is given by

$$h(t, X) = 1 - \exp(-\lambda t^r), \quad \lambda = \exp(\beta'X)$$

As Jenkins (2005) points out, this is the discrete-time analogue to the continuous-time Weibull model. The parameter r determines whether the hazard is increasing ($r > 0$), decreasing ($r < 0$), or constant over time ($r = 0$), similarly to the shape parameter in a Weibull model⁸. The cloglog model is adequate to our data because of the monotonic and decreasing hazard rates, as shown in Figure 3.

⁸In the Weibull specification, the hazard function is $h(t, X) = \lambda t^{p-1}$, where $\lambda = \exp(\beta'X)$ and p is the *shape parameter*.

One of the main issues concerning the estimation of hazard regressions is unobserved heterogeneity. Ignoring unobserved individual characteristics may bias the estimates of the effect of observed explanatory variables in the hazard function. To deal with this issue, we consider the presence of unobserved heterogeneity in the duration model by following the approach proposed by Heckman and Singer (1984). In particular, we assume that the unobserved heterogeneity follows a “mass point” distribution that takes on two different values (μ_1 and μ_2) with probabilities p_1 and p_2 respectively. The estimates are obtained by maximizing a finite-mixture likelihood function where μ_1 , μ_2 , p_1 and p_2 are additional parameters to be estimated.

Finally, the covariates included are the variables shown in Table 1: female, age when an individual finished education, type of vocational school (private, public or semi-private), educational attainment of both parents, type of program field and region dummies. We also include the three dummy variables that indicate whether an individual took the apprenticeship and whether this was her first labour experience: *App_1st*, *App_previous* and *No app*.

5 Results

In this Section, we present the estimates of the duration models to find the first job and the first significant job for each type of vocational education. We estimate three specification models (M1, M2 and M3), which consider different sets of explanatory variables. M1 includes female, age when an individual finished education, type of school and type of apprenticeship. Specification M2 adds parents’ education and M3 also controls for the type of program field⁹. We also present estimates after including individual unobserved heterogeneity in the specification with all the covariates. All Tables report the baseline hazard estimate associated with a change in the value of one of the covariates using the complementary-loglog model explained in previous Section. This hazard ratios have the virtue of being easy to interpret: those greater than one indicate that a one unit increase in the covariate rises the baseline hazard (lower expected duration), while those less than one indicate a decrease in the hazard to find a job (greater expected duration).

5.1 First job

Table 6 contains the hazard ratio estimates to find a first job corresponding to the three sets of explanatory variables. First of all, for each type of vocational education, we do not find important differences across specifications. The only exception is with respect to the public school dummy in vocational college which increases duration in all specifications although it is only significant in the last column at 10% level.

On the other hand, comparing the estimates of the third specification (M3) across vocational education (columns four and seven), we observe some similarities but also some important dif-

⁹All the specifications include region dummies. For brevity reasons, we do not show the results in the Tables although they are available upon request.

ferences. We obtain that women are 20% more likely than men to experience a greater duration in unemployment and this effect does not differ by type of vocational education. The age when an individual finished education reduces the hazard in vocational high school while it decreases the duration in vocational college, and in both cases the effects are small but significant. As we comment in Section 3, this variable can be used as a proxy for performance. However, given the lack of information on previous decisions, we have to take into account that a higher age can not reflect bad results but simply later attendance. If finishing older is a consequence of starting later in education because that person was working previously, a higher age could reduce the duration. On the contrary, if it is a consequence of bad performance, probably, the higher the age, the higher the duration in unemployment. These explanations can be behind the different effects found across types of vocational education.

From a policy perspective, the most relevant covariates are the type of school and the apprenticeship dummies. We find that these variables have different effects on duration depending on the type of vocational education. Interestingly, attending a private school does not have significant effects on the duration to find a first job for those who completed vocational high school, whereas it increases duration for those with vocational college (note that the proportion of people with vocational college who have attended private schools is higher). On the other hand, individuals who have completed vocational high school in a public school have a lower duration in unemployment than those who attended a semi-private school. In vocational college, attending a public school increases the duration although the effect is only significant at 10% level.

Concerning the apprenticeship dummies, in vocational high school, we obtain that those students who took the apprenticeship are more likely to exit to employment. The effect is very significant and big, specially for the individuals who took the apprenticeship and had previous labour experience (the hazard rate to employment increases 65%). In vocational college, we observe different effects: *App_1st* reduces the hazard rate in a 9%, while *App_previous* is not significant. So, it seems that training is important in upper secondary education but not in tertiary. Nevertheless, as we comment below, once we control for unobserved heterogeneity (Table 7), the apprenticeship period in vocational college has also positive effects on the probability of finding a job.

We find that parents' education is an significant variable in explaining the duration to find the first job. In particular, we obtain that those individuals whose parents have upper secondary or tertiary education present lower hazard ratios than those whose parents' education is compulsory or less. If parents' education proxies income, then individuals with low educated parents need to start to work as soon as possible to contribute to the household income. This also explains why people with high educated parents have lower hazard rates.

Finally, the type of program field also plays a role in finding a job. In both vocational levels, completing a program in Manufacturing or Building has important effects in reducing the expected duration with respect to obtain a program in Agriculture and Fishery. The impact is around

55-57% for Building and 22-25% for Manufacturing. Clerical and Transportation also decreases duration although the effect is only significant in vocational high school. We do not find evidence that completing a program in Social Services affects the duration.

In Table 7, we present the results, once we control for unobserved heterogeneity, for the specification with all the covariates. Unobserved heterogeneity captures all factors, different from the observed ones, that affect duration. It is very plausible that there are individual characteristics, such as motivation or ability to find a job or to progress in education, that affect the length of spells but that we do not observe. Therefore, it is important to control for the presence of such factors in order to avoid biased estimates in the rest of covariates. Following Heckman and Singer (1984), we consider that there are two types of individuals regarding unobserved characteristics. The results show that type two individuals are more likely to spend less time searching for a job while those of type one have lower hazard ratios (see last rows of Table 7). Thus, individuals of type two can have more motivation or ability to find a job. This unobserved heterogeneity could capture also the effects of household wealth and/or parents' occupation, which it is an information not provided by the survey. Its proportion in the population is similar in both levels of vocational education (61% and 59%, respectively).

Regarding the estimates of the covariates, we observe some important changes with respect to the estimates obtained without controlling for unobserved heterogeneity. Now, in vocational college, the age when an individual finished education reduces the hazard ratio, although the effect it is small and not significant. In vocational high school, the effect of the age is even greater. Thus, after including unobserved heterogeneity we obtain evidence that finishing older increases duration in both types of vocational studies. The positive effect of public school on the hazard ratio in vocational high school is robust to control for unobserved heterogeneity while the effect is not significant in vocational college. In the latter, the negative effect of attending a private school also disappears. With respect to the training variables, in vocational high school, the sign is the same as in previous estimates but the magnitude of the effects is higher. In vocational college, unlike Table 6, taking the apprenticeship with previous labour experience shows a positive and significant effect on the hazard ratio. This reinforces the evidence that training improves the transitions from school to work and that, from this perspective, waiving it with previous experiences does not seem an appropriate educational policy. The conclusions about the estimates of the parents' education covariates are similar to the ones shown in Table 6. Finally, with respect to the type of program field, only Building remains significant after controlling for unobserved heterogeneity. Its positive effect can be explained by the expansion of the construction sector in Spain between 2000 and 2007 due to the housing bubble.

5.2 First significant job

Table 8 contains the hazard ratio estimates to find a first significant job for the three sets of explanatory variables define before. Like in Table 6, there are not important differences across specifications within type of vocational education. That is, the estimates of the covariates considered in the three specifications are robust to the inclusion of additional variables. First of all, from a comparison of the third specification across vocational levels in Tables 6 and 8 (columns four and seven), we can see that, in vocational high school, the covariates have similar effects (in terms of sign, magnitude and significance) on the duration spells to both types of jobs, although, we detect some differences. For instance, the effects of the apprenticeship dummies are also positive but smaller than in Table 6. Parents' education is important to explain the duration to find the first significant job but with some differences with respect to Table 6: now, having a father with tertiary education or a mother with upper secondary education does not affect duration, while if an individual has a mother with tertiary schooling her hazard rate is 15% lower. We detect additional differences for individuals with vocational collage. We obtain that older individuals have higher hazard ratios, but, unlike Table 6, the effect is not significant. Although attending a private or a public school have also negative effects in the hazard ratio to a significant job, only the effect of the private school is significant at 10%. Now, apprenticeship has a positive effect on the hazard rate to a significant job at 1% level and higher for individuals who combined training with previous labour experience. Apprenticeship is confirmed as an important factor to obtain a more stable job in both levels of vocational education. This result is robust to include unobserved heterogeneity in the estimation, as it is shown in Table 9. Finally, the only type of the program field in vocational college that increases the hazard to a significant job is Building.

Using the estimates from Table 8, we predict the survival function by type of vocational education (Figure 6) and by apprenticeship (Figure 7). As we can see, the Figures show a good fit of the corresponding empirical hazards (Figures 3, left panel, and Figure 5, respectively). There is some noise in the predicted hazards when the number of months to find a job is high due to the few observations with this huge duration, as Table 4 shows. Confirming the descriptive analysis, after controlling for observed characteristics, the hazard rates are similar between vocational studies, and, no taking the apprenticeship increases the time to exit a significant employment.

Finally, in Table 9, we show the results, once we control for unobserved heterogeneity of the specification with all the covariates. We also assume that there are two types of individuals in the population. Individuals of type two are around 40% and they are characterized by a higher ability or motivation to find a significant job. Nevertheless, the estimates are not significant. On the other hand, unobserved characteristics of type one individuals decrease the hazard ratio and they are significant at 1% level. Thus, these individuals can have less motivation or ability to find a job. This unobserved heterogeneity, as explained before, could capture also the effects of

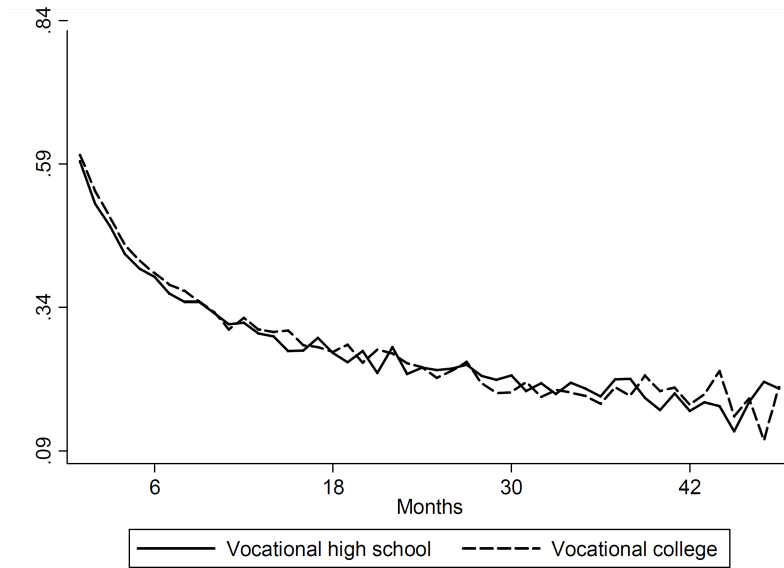


Figure 6: Predicted survival function to first significant job

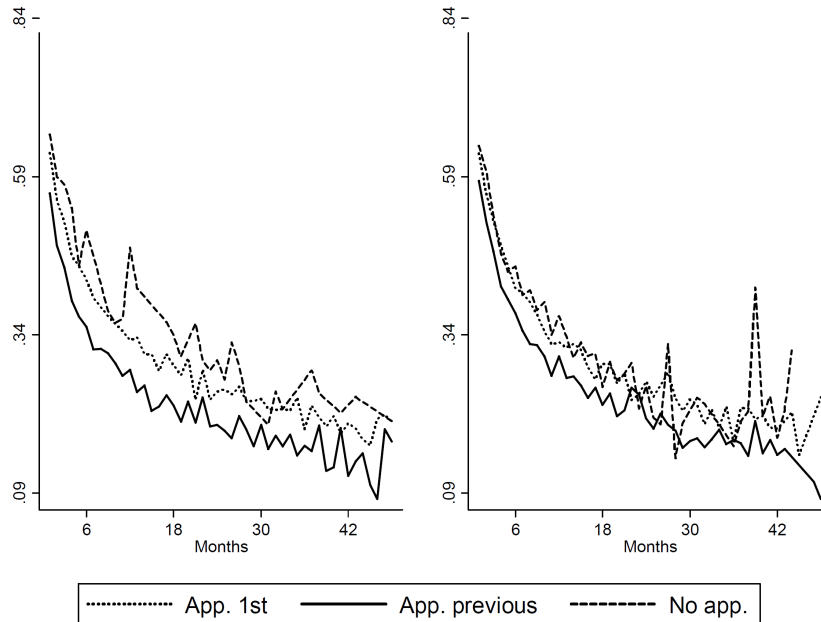


Figure 7: Predicted survival function to first significant job, by apprenticeship. Note: Vocational high school on the left and Vocational college on the right. App. 1st: Apprenticeship (1st labour experience). App. previous: Apprenticeship (previous labour experience). No app.: No apprenticeship.

household wealth and/or parents' occupation. In addition, it also includes the effect of previous labour experience for individuals who had a full-time job that lasted less than six months (29%, see Section 4.1). This variable is endogenous and it is not considered in the specification given the lack of appropriate instruments in the data.

Regarding the covariates, the main differences with respect to the estimates obtained without controlling for unobserved heterogeneity are referred to the type of school and the apprenticeship variables. In particular, the negative effect of attending a private school in vocational college

disappears and the effects of apprenticeship are positive and greater in both types of vocational levels. Thus, like for the first job, we find strong evidence in favor of apprenticeship as a way of improving transitions from vocational school to a significant employment.

6 Discussion

In the previous analysis we have found relevant differences neither in duration nor in the estimates of the determinants of transitions across types of vocational education. We study the beginning of labour careers and this could explain the lack of differences. However, we have to take into account that, besides the number of months to find a job, there could exist differences in other dimensions (such as wage, occupation, contract,...). So, in this Section, we explore more deeply this possibility using the information on the characteristics of the first significant job provide by the survey¹⁰.

Table 10 shows some job characteristics disaggregated by vocational education and gender, and distinguishing also between self-employed and employee workers. We observe very few self-employed individuals (around 4%), with no differences by gender or level of education. Regarding the duration of the first significant job, we consider separately past and current jobs, which are significant jobs that expired or not, respectively, before the moment of the interview. In vocational high school, the percentage of people with a past job is 52.6% and, in vocational college is 50.6%. As we can see, the duration for current jobs is higher (more than double) than for past jobs, although it does not differ importantly by vocational high school and college, gender and type of worker.

Looking at the required degree at the workplace, a high proportion of individuals answer that no specific level of education is required, and this share is lower in vocational college. Other 40-50% of workers respond that their level of education fit the required degree. In this case, we observe that for men, the percentages are higher in vocational college than in vocational high school while for women there are not differences across vocational schooling levels. This result is stressed when we check if the needed qualification at the workplace is below, equal or above their level of education: about 65%-70% of workers answer that is equal and other 20-30% respond that the needed qualification is below (the last percentages are higher in vocational college, reflecting a proportion of overqualified people greater than in vocational high school). With respect to the method to find the significant job, most individuals use the networks (family, friends, worker colleagues) as the main channel. However, according to our previous results, apprenticeship plays an important role for searching a job, specially for employee (from the firm's point of view the training can be consider as a kind of probation period, where information about the worker ability is revealed).

¹⁰Unfortunately, we cannot do the same for the first job because the dataset does not report this information for all full-time jobs that lasted less than six months.

The principal difference between the two types of vocational education can be found in the occupation: people with vocational high school work mainly in high blue-collar occupations while those with vocational college are employed mainly, and with similar percentages, in low white-collar and high blue-collar occupations. Finally, the main sectors where people work are manufacturing-extraction, commerce and services, but there are not great differences across types of vocational education, except for the services sector, where percentages are higher in vocational college. As expected, we find differences by gender, suggesting that there is some gender segregation by sector (in particular, for Construction and Education-Health).

In Table 11, we explore more in detail the characteristics of the first significant job for employees. In particular, we look at the type of contract and the monthly wage, by gender and type of vocational education¹¹. In line with the Spanish labour market, we observe that many workers (around 42%) have a temporary contract while very few (5%) have a permanent one (according to Eurostat, in 2005, around 33% of workers had a fixed-term contract while the European Union average was about 15%). Curiously, comparing across levels of education, people with more years of schooling (vocational college) present higher percentages of fixed-term contracts, although as we can see in the next rows, wages are higher. We also find a gender wage gap in both types of education: in vocational high school (vocational college), around 50% (45%) of women earn below 750 euros while this percentage is about 32% (29%) for men.

Due to the importance of apprenticeship in increasing the hazard rate to find a first significant job, we analyse the type of contract, the wage and the monthly average duration distinguishing whether individuals took or not the apprenticeship (Table 12). Training appears also as a relevant factor that increases the average duration in the first significant employment in both types of vocational studies. However, with respect to the type of contract and wage, we do not observe that taking the apprenticeship improves those job characteristics. In Table 13 we explore more in detail the duration of past and current significant jobs. We can observe that the duration of jobs at the moment of interview (2005) is greater than two years for around 80%-90% of workers. The percentage of individuals without the apprenticeship is higher for jobs that lasted one year or less, and this is more evident for vocational high school. For jobs with a duration above two years, the highest percentages are for workers who took the training with previous experience.

To sum up, few differences are detected in job characteristics by vocational level. Nevertheless, there is evidence that workers with vocational college are more employed in white collar occupations, with higher wages although with a high proportion of fixed-term contracts. It seems that, to some extent, the Spanish labour market recognizes that the two levels of vocational education provides different skills and this is reflected in the type of job found. In both types of vocational studies, the duration of the first significant job is lower for individuals who waived the training

¹¹As self-employed represent only 4% of workers, and to avoid misleading results regarding wages and type of contract, we exclude them from this Table.

period.

A complete understanding of the early labour market outcomes requires to explore the type of individual who attends each vocational education level and whether there are differences among them. As discussed in Lopez-Mayan (2010), following compulsory education, only around 15% of students choose vocational high school. Besides, this is a track mainly attended by people who completed compulsory schooling with delay (33% and 43% for people with one and two years of delay, respectively, versus 7% for students who finished on time). On the other hand, vocational college is chosen just by 19% of individuals who obtained an academic high school diploma¹² and, again, this path is mainly attended by students who did not graduate on time (41% and 14% with and without delay, respectively¹³). From this evidence, it seems that individuals enrolled in vocational college and vocational high school share similar characteristics because they attend vocational education after having experienced a delay in the previous schooling level completed.

7 Conclusions

In this work we analyse the determinants of the transitions from vocational education to work, focusing on whether starting with different levels of vocational education implies also differences in those transitions. In the Spanish system, young people can enter the labour market with vocational high school (upper secondary education) or with vocational college (tertiary education). Both types of vocational education include a period of workplace training, although, as they belong to different schooling levels, they have also different entry requirements. Then, individuals with vocational college have more years of education than individuals with vocational high school and, so, we would expect that the latter had a less successful entry in the labour market.

Using the only Spanish dataset with information on schooling and labour histories (*Survey on Education and Labour Market Transitions*), we study transitions to find a first job and a first “significant” job. We do not obtain important differences in the estimates of the determinants of duration between types of vocational levels. For instance, in both cases being a female, finishing vocational education older or having high educated parents reduce the exit to an employment. Our results also show that apprenticeship has a very important role on increasing the hazard rate to employment from the two types of vocational education. Moreover, this result holds after controlling for unobserved heterogeneity. Attending a public school has positive effects on the hazard, although only for individuals with vocational high school.

To complete the analysis, we have considered whether there exist differences across levels of vocational education in the characteristics of the significant job obtained. Regarding this, we only find that workers with vocational college are more employed in white collar occupations, with

¹²Most individuals with a vocational high school diploma decide to enter the labour market and not to continue in education (see Lopez-Mayan (2010))

¹³From a sample of 7750 individuals who completed compulsory education in 2001 (*Survey on Education and Labour Market Transitions* 2005).

higher wages although with a great proportion of fixed-term contracts. In both types of vocational studies, individuals who waived the training period experience the lowest duration in the first significant job.

However, clarifying this preliminary evidence requires to have more information about the quality of the apprenticeship and the tasks developed in the workplace, and this remains as an important question to be analysed in Spain in future research (for instance, Euwals and Winkelmann (2004) analyses for Germany the effects of apprenticeship quality on retention rates in the training firm, first job duration and post-apprenticeship wages). In addition, the differences in duration and in job characteristics observed by gender also remain a challenge to be addressed in the future.

Our main contribution is to provide a better understanding on the labour market entry of students with vocational education in Spain. It seems that the Spanish labour market recognizes that the two levels of vocational education provides different skills. From a policy perspective, the results on the role of public schools and workplace training on smoothing this entry are very important, specially nowadays, when young people have difficulties to enter the labour market due to the recession. The fact that individuals who took the apprenticeship are more successful in finding a job highlights that the workplace training has to be considered as an important aspect of any educational reform. Related to this, waiving the apprenticeship with previous experience does not seem an adequate educational policy because individuals in that situation experience higher unemployment spells.

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TABLES:

Table 1: **Sample description**

	Vocational High School		Vocational College	
	Mean	Std. dev.	Mean	Std. dev.
Female	0.45	0.50	0.50	0.50
Age when finished education	20.13	1.40	21.53	1.18
Type of school:				
Public	0.73	0.44	0.75	0.43
Semi-private	0.25	0.43	0.19	0.39
Private	0.02	0.13	0.06	0.23
Father's education:				
Compulsory or less	0.65	0.48	0.65	0.48
High school	0.11	0.32	0.14	0.35
Tertiary	0.07	0.26	0.11	0.31
Don't know	0.16	0.38	0.10	0.30
Mother's education:				
Compulsory or less	0.72	0.45	0.73	0.44
High school	0.10	0.30	0.13	0.34
Tertiary	0.04	0.19	0.06	0.23
Don't know	0.14	0.34	0.08	0.28
School-based apprenticeship:				
App_1 st	0.49	0.50	0.41	0.49
App_previous	0.48	0.50	0.47	0.50
No app	0.03	0.16	0.12	0.32
Program field:				
Agriculture-Fishery	0.03	0.16	0.01	0.12
Manufacturing	0.31	0.46	0.23	0.42
Building	0.05	0.22	0.06	0.24
Clerical and Transportation	0.35	0.48	0.28	0.45
Social services	0.27	0.44	0.41	0.49
Region:				
Northwest	0.08	0.27	0.10	0.29
Northeast	0.12	0.32	0.14	0.35
East	0.17	0.37	0.15	0.36
Centre	0.47	0.50	0.47	0.50
South	0.16	0.37	0.15	0.35
N	5725		6408	

App_1st: Apprenticeship (1st labour experience). App_previous: Apprenticeship (previous labour experience). No app: No apprenticeship. Northwest: Galicia, Asturias, Cantabria. Northeast: Basque Country, La Rioja, Navarra, Aragon. East: Catalonia, Valencia, Balear Islands. Centre: Madrid, Extremadura, Castilla-Leon, Castilla-La Mancha. South: Andalusia, Canary Islands, Ceuta-Melilla, Murcia.

Table 2: **Percentage of students by age when finished education**

	Vocational High School	Vocational College
17	0.94	-
18	10.41	0.16
19	24.21	4.00
20	27.41	16.60
21	19.32	26.86
22	11.65	28.23
23	5.80	23.28
24	0.17	0.47
25	0.09	0.41
N	5725	6408

Table 3: **Percentage of students who do not find a job**

	Vocational High School		Vocational College	
	Women	Men	Women	Men
First job	3.02	1.31	2.57	1.16
N	78	41	83	37
First significant job	7.31	3.37	6.32	3.43
N	189	106	204	109

Table 4: **Percentage of students by year when finding the job**

	Vocational High School		Vocational College	
	First job	First significant job	First job	First significant job
2001	68.44	57.72	80.47	67.12
2002	25.81	31.16	14.11	22.81
2003	3.69	7.00	3.50	6.46
2004	1.84	4.11	1.61	3.56
2005	0.21	0.02	0.32	0.05
Total	100	100	100	100
N	5606	5430	6288	6095

Table 5: Average number of months to find the job

A. First job						
Vocational High School			Vocational College			
App-1 st	App-previous	No app	App-1 st	App-previous	No app	
<i>Full sample*:</i>						
4.54	2.93	4.99	4.56	3.23	3.77	
(7.28)	(5.47)	(8.09)	(7.37)	(5.80)	(6.52)	
<i>By age when finished education:</i>						
17	6.23	4.50	12.50	-	-	-
18	4.55	3.19	8.77	1.00	1.80	9.67
19	3.83	2.86	4.41	4.57	3.57	5.32
20	4.73	2.66	3.65	4.36	3.70	3.64
21	4.65	3.06	4.00	4.51	3.09	3.46
22	5.41	2.95	7.40	4.52	3.10	3.87
23	4.79	3.24	4.30	5.08	3.32	3.53
24	9.00	2.13	-	1.60	2.24	3.00
25	15.50	4.67	-	1.50	1.43	1.00
N	2741	2730	135	2586	2991	711
B. First significant job						
Vocational High School			Vocational College			
App-1 st	App-previous	No app	App-1 st	App-previous	No app	
<i>Full sample*:</i>						
6.54	5.37	8.04	6.42	5.53	6.54	
(8.77)	(7.83)	(10.51)	(8.48)	(7.95)	(8.56)	
<i>By age when finished education:</i>						
17	7.74	8.72	1.00	-	-	-
18	6.09	5.04	9.23	1.00	4.00	11.50
19	5.72	5.08	8.90	6.11	5.70	7.84
20	7.06	4.90	7.78	6.06	5.69	5.86
21	6.64	5.61	5.12	6.59	5.54	7.01
22	7.05	5.82	13.71	6.28	5.58	7.26
23	8.12	6.46	4.89	6.97	5.46	4.93
24	9.00	3.00	-	4.10	5.06	3.00
25	15.50	4.67	-	3.25	2.08	9.25
N	2633	2668	129	2494	2919	682

*Standard deviation in parenthesis. App-1st: Apprenticeship (1st labour experience). App-previous: Apprenticeship (previous labour experience). No app: No apprenticeship.

Table 6: Hazard ratio estimates (First job)

	Vocational High School			Vocational College		
	M1	M2	M3	M1	M2	M3
Female	0.78*** (0.02)	0.77*** (0.02)	0.80*** (0.02)	0.79*** (0.02)	0.77*** (0.02)	0.80*** (0.02)
Age when finished education	0.97*** (0.01)	0.97*** (0.01)	0.97*** (0.01)	1.03*** (0.01)	1.03*** (0.01)	1.03*** (0.01)
Duration dependence (log t)	0.43*** (0.01)	0.43*** (0.01)	0.43*** (0.01)	0.44*** (0.01)	0.44*** (0.01)	0.45*** (0.01)
<i>Type of school (ref.: Semi-private):</i>						
Private school	0.86 (0.09)	0.87 (0.09)	0.91 (0.10)	0.79*** (0.05)	0.82*** (0.05)	0.87** (0.05)
Public school	1.11*** (0.03)	1.10*** (0.03)	1.11*** (0.03)	0.95 (0.03)	0.95 (0.03)	0.94* (0.03)
<i>Apprenticeship (ref.: No app):</i>						
App_1 st	1.31*** (0.12)	1.28*** (0.11)	1.28*** (0.11)	0.89*** (0.04)	0.89*** (0.04)	0.91** (0.04)
App_previous	1.69*** (0.15)	1.65*** (0.15)	1.65*** (0.15)	1.02 (0.04)	1.02 (0.04)	1.05 (0.04)
<i>Parents' education (ref.: Compulsory or less):</i>						
Upper secondary (father)		0.97 (0.04)	0.97 (0.04)		0.97 (0.04)	0.98 (0.04)
Tertiary (father)		0.83*** (0.05)	0.84*** (0.05)		0.85*** (0.04)	0.85*** (0.04)
“Don’t know” (father)		0.82*** (0.05)	0.82*** (0.05)		1.01 (0.07)	1.00 (0.07)
Upper secondary (mother)		0.87*** (0.04)	0.87*** (0.04)		1.05 (0.04)	1.05 (0.04)
Tertiary (mother)		0.89 (0.07)	0.89 (0.07)		0.90* (0.05)	0.91* (0.05)
“Don’t know” (mother)		1.13* (0.08)	1.13* (0.08)		0.92 (0.07)	0.92 (0.07)
<i>Program field (ref.: Agriculture-Fishery):</i>						
Manufacturing			1.22** (0.11)			1.25** (0.13)
Building			1.55*** (0.16)			1.57*** (0.18)
Clerical and Transportation			1.25** (0.11)			1.17 (0.12)
Social services			1.10 (0.10)			1.05 (0.11)
Constant	1.09 (0.24)	1.08 (0.24)	0.85 (0.20)	0.47*** (0.11)	0.44*** (0.10)	0.38*** (0.10)
Regions	Yes	Yes	Yes	Yes	Yes	Yes
Log-likelihood	-11626.8	-11604.1	-11557.0	-13326.9	-13311.7	-13280.8
Observations	27258	27258	27258	30591	30591	30591
N	5606	5606	5606	6288	6288	6288

Dependent variable: number of months to find the first job after completing vocational education. Significance levels: *** 1%; ** 5%; * 10%. Standard errors in parenthesis. App_1st: Apprenticeship (1st labour experience). App_previous: Apprenticeship (previous labour experience). No app: No apprenticeship.

Table 7: Hazard ratio estimates with unobserved heterogeneity (First job)

	Vocational High School	Vocational College
Female	0.74*** (0.04)	0.80*** (0.04)
Age when finished education	0.94*** (0.01)	0.99 (0.02)
Duration dependence (log t)	0.78*** (0.02)	0.80*** (0.02)
<i>Type of school (ref.: Semi-private):</i>		
Private school	0.84 (0.13)	0.90 (0.08)
Public school	1.13** (0.06)	1.00 (0.05)
<i>Apprenticeship (ref.: No app):</i>		
App-1 st	1.37* (0.22)	1.01 (0.07)
App-previous	2.07*** (0.34)	1.20*** (0.08)
<i>Parents' education (ref.: Compulsory or less):</i>		
Upper secondary (father)	1.00 (0.07)	0.91 (0.07)
Tertiary (father)	0.95 (0.09)	0.79*** (0.06)
“Don’t know” (father)	0.75*** (0.07)	0.88 (0.10)
Upper secondary (mother)	0.81*** (0.06)	1.13 (0.09)
Tertiary (mother)	0.87 (0.11)	0.93 (0.08)
“Don’t know” (mother)	1.25** (0.12)	1.00 (0.12)
<i>Program field (ref.: Agriculture-Fishery):</i>		
Manufacturing	0.99 (0.13)	1.09 (0.19)
Building	1.44** (0.24)	1.82*** (0.35)
Clerical and Transportation	1.03 (0.14)	1.00 (0.17)
Social services	0.94 (0.13)	0.90 (0.15)
<i>Unobserved heterogeneity:</i>		
Constant type 1	0.33*** (0.13)	0.17*** (0.07)
Constant type 2	7.74*** (2.96)	4.58*** (2.03)
Probability type 2	0.61	0.59
Regions	Yes	Yes
Log-likelihood	-10118.8	-11540.4
Observations	27258	30591
N	5606	6288

Dependent variable: number of months to find the first job after completing vocational education. Significance levels: *** 1%; ** 5%; * 10%. Standard errors in parenthesis. App-1st: Apprenticeship (1st labour experience). App-previous: Apprenticeship (previous labour experience). No app: No apprenticeship.

Table 8: Hazard ratio estimates (First significant job)

	Vocational High School			Vocational College		
	M1	M2	M3	M1	M2	M3
Female	0.77*** (0.02)	0.76*** (0.02)	0.79*** (0.03)	0.79*** (0.02)	0.78*** (0.02)	0.81*** (0.02)
Age when finished education	0.97*** (0.01)	0.97** (0.01)	0.98** (0.01)	1.01 (0.01)	1.01 (0.01)	1.01 (0.01)
Duration dependence (log t)	0.43*** (0.01)	0.43*** (0.01)	0.43*** (0.01)	0.44*** (0.01)	0.44*** (0.01)	0.45*** (0.01)
<i>Type of school (ref.: Semi-private):</i>						
Private school	0.88 (0.10)	0.89 (0.10)	0.92 (0.11)	0.80*** (0.05)	0.83*** (0.05)	0.90* (0.06)
Public school	1.10*** (0.03)	1.09*** (0.03)	1.10*** (0.04)	1.00 (0.03)	0.99 (0.03)	0.99 (0.03)
<i>Apprenticeship (ref.: No app):</i>						
App_1 st	1.19* (0.11)	1.17* (0.11)	1.17* (0.11)	1.09* (0.05)	1.09* (0.05)	1.12*** (0.05)
App_previous	1.41*** (0.13)	1.40*** (0.13)	1.40*** (0.13)	1.16*** (0.05)	1.17*** (0.05)	1.21*** (0.05)
<i>Parents' education (ref.: Compulsory or less):</i>						
Upper secondary (father)		0.94 (0.04)	0.95 (0.04)		0.99 (0.04)	0.99 (0.04)
Tertiary (father)		0.94 (0.06)	0.94 (0.06)		0.88*** (0.04)	0.88*** (0.04)
“Don't know” (father)		0.85** (0.06)	0.85** (0.06)		1.01 (0.07)	1.01 (0.07)
Upper secondary (mother)		0.98 (0.05)	0.99 (0.05)		1.01 (0.04)	1.01 (0.04)
Tertiary (mother)		0.84** (0.07)	0.85** (0.07)		0.89* (0.06)	0.90* (0.06)
“Don't know” (mother)		1.09 (0.08)	1.09 (0.08)		0.93 (0.07)	0.94 (0.07)
<i>Program field (ref.: Agriculture-Fishery):</i>						
Manufacturing			1.22** (0.11)			1.15 (0.13)
Building			1.51*** (0.16)			1.44*** (0.17)
Clerical and Transportation			1.24** (0.11)			1.09 (0.12)
Social services			1.13 (0.10)			0.96 (0.11)
Constant	0.64** (0.15)	0.65* (0.15)	0.51*** (0.13)	0.33*** (0.08)	0.32*** (0.08)	0.29*** (0.08)
Regions	Yes	Yes	Yes	Yes	Yes	Yes
Log-likelihood	-13923.6	-13914.6	-13902.8	-15819.1	-15808.9	-15778.6
Observations	44732	44732	44732	49923	49923	49923
N	5430	5430	5430	6095	6095	6095

Dependent variable: number of months to find the first significant job after completing vocational education. Significance levels: *** 1%; ** 5%; * 10%. Standard errors in parenthesis. App_1st: Apprenticeship (1st labour experience). App_previous: Apprenticeship (previous labour experience). No app: No apprenticeship.

Table 9: Hazard ratio estimates with unobserved heterogeneity (First significant job)

	Vocational High School	Vocational College
Female	0.75*** (0.03)	0.84*** (0.03)
Age when finished education	0.96*** (0.01)	1.00 (0.02)
Duration dependence (log t)	0.76*** (0.02)	0.75*** (0.02)
<i>Type of school (ref.: Semi-private):</i>		
Private school	0.78 (0.13)	0.87 (0.08)
Public school	1.10** (0.05)	0.99 (0.05)
<i>Apprenticeship (ref.: No app):</i>		
App-1 st	1.24* (0.15)	1.15** (0.07)
App_previous	1.52*** (0.19)	1.25*** (0.07)
<i>Parents' education (ref.: Compulsory or less):</i>		
Upper secondary (father)	1.07 (0.07)	0.98 (0.05)
Tertiary (father)	0.94 (0.08)	0.86** (0.06)
“Don't know” (father)	0.86* (0.08)	1.04 (0.10)
Upper secondary (mother)	0.93 (0.07)	1.04 (0.06)
Tertiary (mother)	0.84* (0.09)	0.89 (0.08)
“Don't know” (mother)	1.11 (0.11)	0.99 (0.10)
<i>Program field (ref.: Agriculture-Fishery):</i>		
Manufacturing	1.22* (0.15)	1.13 (0.17)
Building	1.62*** (0.24)	1.44** (0.24)
Clerical and Transportation	1.24* (0.15)	1.06 (0.16)
Social services	1.17 (0.14)	0.92 (0.14)
<i>Unobserved heterogeneity:</i>		
Constant type 1	0.18*** (0.06)	0.10*** (0.04)
Constant type 2	23.12 (78.07)	12.32 (51.95)
Probability type 2	0.41	0.39
Regions	Yes	Yes
Log-likelihood	-13402.2	-15283.8
Observations	44732	49923
N	5430	6095

Dependent variable: number of months to find the first significant job after completing vocational education. Significance levels: *** 1%; ** 5%; * 10%. Standard errors in parenthesis. App-1st: Apprenticeship (1st labour experience). App_previous: Apprenticeship (previous labour experience). No app: No apprenticeship.

Table 10: **Characteristics of first significant job (% , all workers)**

	Vocational high school				Vocational college			
	Women		Men		Women		Men	
	Self-employed	Employee	Self-employed	Employee	Self-employed	Employee	Self-employed	Employee
Percentage	3.63	96.37	5.83	94.17	3.70	96.30	4.27	95.73
Duration (in months)								
<i>Past job:</i>								
Average	18.72	17.23	18.06	18.23	15.37	17.13	21.53	18.02
Standard dev.	9.70	9.89	10.40	10.39	8.58	10.11	11.01	10.23
<i>Current job*:</i>								
Average	37.69	38.78	42.91	41.85	42.97	40.65	42.48	42.46
Standard dev.	11.63	10.67	9.50	9.42	7.25	10.34	9.95	8.96
Required degree:								
Compulsory	1.15	7.06	2.82	5.42	4.46	4.09	3.82	3.20
Academic high school	0.00	0.65	0.00	0.38	2.68	2.57	0.00	1.22
Vocational high school	39.08	47.62	25.99	49.27	7.14	10.13	6.87	8.30
Vocational college	4.60	2.47	2.26	3.60	36.61	47.34	33.59	55.67
University	1.15	2.69	2.26	2.27	0.00	1.68	0.76	1.77
Not required	44.83	37.87	59.89	37.44	41.96	32.23	48.09	27.73
Don't know	9.20	1.65	6.78	1.61	7.14	1.96	6.87	2.11
Needed qualification:								
Below	24.14	30.55	21.47	24.6	32.14	34.64	18.32	27.87
Equal	66.67	65.25	66.67	70.05	62.5	62.48	73.28	68.49
Above	9.20	4.20	11.86	5.35	5.36	2.88	8.40	3.64
Method to find the job:								
Apprenticeship firm	8.05	24.35	14.12	31.42	16.96	23.55	9.16	31.92
Networks	41.39	64.83	42.93	57.58	50.89	62.8	36.63	54.17
Other	50.56	10.82	42.95	10.98	32.15	13.65	54.21	13.91
Occupation[†]:								
High white-collar	13.79	0.65	9.6	0.59	9.82	1.75	9.92	3.30
Low white-collar	18.39	37.65	8.47	14.00	49.11	65.05	30.53	42.5
High blue-collar	54.02	54.77	72.88	69.00	38.39	28.94	48.85	43.59
Low blue-collar	13.79	6.93	9.04	16.31	2.68	4.26	10.69	10.62
Sector:								
Agriculture-Fishery	4.60	0.78	14.69	2.52	0.89	0.51	10.69	1.46
Manufacturing-Extraction	17.24	11.92	24.29	33.00	16.96	15.17	29.77	30.55
Construction	3.45	2.43	20.34	21.00	4.46	3.67	13.74	12.59
Commerce	26.44	28.16	19.77	21.00	22.32	21.66	16.03	14.87
Hotel industry	6.90	7.80	11.86	5.88	8.93	5.73	6.11	3.91
Services	12.64	17.59	3.95	11.93	25.00	28.90	16.03	28.79
Education-Health	8.05	17.07	1.69	2.00	10.71	14.83	0.76	2.62
Other	20.69	14.25	3.39	1.85	10.71	9.51	6.87	5.21
N	87	2308	177	2858	112	2913	131	2939

*Current job: a job that has not expired at the moment of the interview. [†]High white-collar: Managers and Professionals. Low white-collar: Technicians and associate professionals; Clerical support workers. High blue-collar: Service and sale workers; Skilled agricultural; Craft and related trade workers; Plant and machine operators. Low blue-collar: No qualified occupations.

Table 11: **Characteristics of first significant job (% , employee workers)**

	Vocational high school		Vocational college	
	Women	Men	Women	Men
Type of Contract:				
Permanent	6.46	5.28	4.98	4.15
Fixed-term	39.3	42.72	42.54	47.19
No contract	3.38	1.51	2.75	1.60
Other	29.85	29.64	28.18	27.22
Don't know	21.01	20.85	21.55	19.84
Monthly wage*:				
< 433.55	10.05	3.04	7.55	2.89
433.55 to 750	40.08	28.90	36.94	26.10
750 to 1000	9.88	23.97	13.53	25.76
1000 to 1250	1.43	5.56	2.03	7.83
> 1250	0.30	1.37	0.21	1.62
Don't know	38.26	37.16	39.74	35.80
N	2308	2858	2913	2939

*In euros.

Table 12: **Characteristics of first significant job (% , employee workers)**

	Vocational high school			Vocational college		
	App.1 st	App-previous	No app	App.1 st	App-previous	No app
<i>Month average duration:</i>						
Past job	17.64	17.98	16.22	17.39	17.95	16.72
N	1280	1429	67	1184	1459	352
Current job [†]	39.91	41.24	38.74	41.39	42.01	40.10
N	1232	1105	53	1214	1346	297
<i>Type of Contract:</i>						
Permanent	5.53	5.92	9.17	4.75	4.21	5.39
Fixed-term	41.13	41.48	36.67	45.62	45.31	40.21
No contract	2.03	2.68	1.66	2.34	1.82	3.08
Other	29.22	30.23	30.00	25.06	29.77	28.52
Don't know	22.09	19.69	22.5	22.23	18.89	22.80
<i>Monthly wage*:</i>						
< 433.55	6.65	5.56	9.17	6.26	4.24	5.55
433.55 to 750	35.43	32.68	27.50	33.53	30.12	29.89
750 to 1000	14.81	20.32	21.66	17.64	21.60	18.80
1000 to 1250	2.31	5.09	4.17	3.21	5.88	7.24
> 1250	0.48	1.23	2.50	0.66	1.18	0.77
Don't know	40.32	35.12	35.00	38.70	37.00	37.75
N	2512	2534	120	2398	2805	649

*In euros. †Current job: a job that has not expired at the moment of the interview. App.1st: Apprenticeship (1st labour experience). App-previous: Apprenticeship (previous labour experience). No app: No apprenticeship.

Table 13: **First significant job duration (% , employee workers)**

	Past job				Current job*			
	1 year	1-2 years	> 2 years	N	1 year	1-2 years	> 2 years	N
<i>Voc. high school:</i>								
App.1 st	39.14	36.96	23.90	1280	3.33	9.01	87.66	1232
App-previous	38.77	36.19	25.04	1429	2.81	5.23	91.96	1105
No app	52.24	26.87	20.89	67	3.77	13.22	83.01	53
<i>Voc. college:</i>								
App.1 st	42.15	34.12	23.73	1184	3.21	5.26	91.53	1214
App-previous	38.79	35.78	25.43	1459	2.30	5.49	92.21	1346
No app	42.33	34.66	23.01	352	3.37	9.10	87.53	297

*Current job: a job that has not expired at the moment of the interview. App.1st: Apprenticeship (1st labour experience). App-previous: Apprenticeship (previous labour experience). No app: No apprenticeship.