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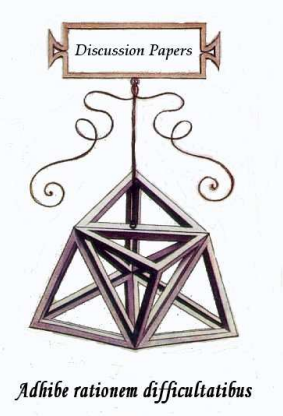

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School-to-work transition and vocational education: a comparison across Europe

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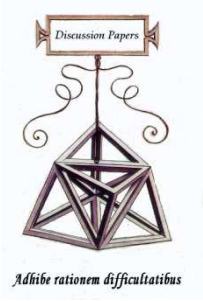


Irene Brunetti – Lorenzo Corsini

School-to-work transition and vocational education: a comparison across Europe

Abstract

Youth unemployment is a major problem that the economic systems face. Given this issue, we assess whether school-to-work transition is easier for individuals with secondary vocational education with respect to general secondary education. We want to explore which vocational systems across Europe produce better effects. We use data from a module on "Entry of young people into the labour market" from the 2009 European Labour Survey and we estimate a multinomial probit models allowing for violation of the irrelevance of the alternative assumption. We find that in countries with the dual vocational system, vocational education improves employability whereas in countries with school-based vocational system results are mixed and only in some cases they are significantly positive. We provide policy implications showing that vocational systems can improve school-to-work transitions and that the dual vocational structure appears to be an effective system. Given the relevance of youth unemployment, we provide valuable information on how to mitigate this problem. The use of cross-country comparisons offers great insights on which vocational systems appear to be well-suited to enhance employability.

Keywords: Vocational education; school-to-work transition; multinomial probit

Jel Classification: I21, I26, J24

1. Introduction

The school-to-work transition is one of the most important events in the life of young people. It represents a delicate phase of working life and bad results in this transition may have long-lasting negative effects on later labour outcomes (see Heckman and Borjas, 1980; Gregg, 2001; and Stewart, 2007). There are several reasons that justify the risks characterizing the period between the end of compulsory schooling and the attainment of full-time and/or stable employment. Workers at the first experience do not have the same knowledge, skills, competences that can be learnt only at work. Moreover, in the absence of previous work experience they lack the possibility of signalling themselves as suitable candidates for employers looking to hire. As a result, young workers often show high turn-over rates (see Caroleo and Pastore, 2007; Pastore, 2016) and it is well-known that youth unemployment is a major issue for current economic systems[1] and for European countries in particular.

Among the characteristics that affect this delicate phase, the educational attainments of young people appear to be particularly relevant and the general or vocational orientation of the educational path may have important consequences on the labour status (see Hannan *et al*., 1997 and OECD, 2000). Zimmerman *et al*., 2013 discuss how vocational education and training systems can be the proper tool to mitigate youth unemployment and Cahuc *et al.* (2013) argue how part of the good labour market performance in Germany is due to a properly designed vocational and training system.

As a matter of facts, education mediates also the effects of social background on labour market performances and might help the school-to-work transition. Young people with low education display in fact significantly lower employment rates (OECD, 2008). Quintini *et al*. (2007) show that low educated young people experience important difficulties in escaping the unemployment or inactivity spells, often by entering in temporary jobs that represent labour market traps and affect their future career prospects. Scarpetta *et al*. (2010) point out that, especially during a period of crisis, young people without proper training experience a more vulnerable occupation and long-term effects of the initial phases of unemployment. Many young workers struggle to find their place in the labour force, changing not only employers but also occupations multiple times before they settle down to stable jobs (Hanushek *et al*., 2017). Ryan (2001) argues that providing students with vocational education and training tailored to labour market needs, and particularly dual models of vocational education and training, helps the school-to-work transition. The main argument for offering such programs is that equipping students with specific job-related skills will facilitate their entry into the labour market and thereby make them productive at an earlier point (see Fersterer *et al.,* 2008).

[1] There is vast body of evidence on this aspect: see OECD (2016) and and Pastore (2017) for recent overviews. A deeper focus on the effects of the 2008 financial and economic and financial crisis on youth unemployment can be found in Choudhry *et al.* (2012) and Bruno *et al.* (2014).

European countries adopt very different schooling structure that differ mainly in their focus on the job transition. On one hand there are countries, such as Italy, United Kingdom or Spain, that focus more exclusively on general academic education, which should provide broad knowledge and serves as a basis for further learning. Specific skills may become obsolete quickly and so it is necessary to give people the ability to adapt to new technologies (Goldin, 2001; and Krueger and Kumar, 2004). On the other hand, there are countries with a system more labor market oriented, such as Switzerland, that provide extensive vocational education and training including direct involvement of industry through apprenticeships. In these countries young people are more successful in the school-to-work transition (see Brunello *et al.*, 2007 and Ryan, 2011). The actual structure of the vocational system may be one of the factors affecting labour market outcomes and youth unemployment (see Zimmerman *et al.*, 2013)

Some studies tries to assess the effect of the different educational paths during the different stages of working career: Verhaest and Baert (2015) stresses the differences between short-term and long-term gains for general and vocational education with the latter giving better initial employment chances and the former lowering the risk of bad match persistence in later stages. The higher risk of bad matches for vocationally educated individuals is also pointed out in Sicherman and Galor (1990).

A large body of research analyse the returns of vocational education. Hotchkiss (1993) investigates the short-run effects of vocational schooling on employment and wages of high-school graduates in 1980, finding no returns to vocational schooling. In contrast, Bishop and Mane (2004) and Meer (2007) investigate the short- to medium-run effects of participating in technical schooling among high-school graduates in the US showing positive but small wage increases. Neuman and Ziderman (1999) analyze the differences in returns to vocational versus academic schooling in Israel highlighting that the large part of vocational education benefits only arises when there is a good match between vocational specific education and the occupation of employment. Analyses for Sweden, the Netherlands and Germany study the effect of an enlargement in the general schooling contents within the vocational schooling tracks and find that this has no effect on wages or employment probabilities of students (see e.g., Oosterbeck and Webbink, 2007; Pischke and von Wachter, 2008; and Hall, 2012). Regarding Italy, Pastore (2017a) provides a framework to understand the reasons why the school-to-work transition is slow and hard in Italy. He argues that the "[…] disorganization of the educational and training system coupled with slow economic growth […] explain high youth unemployment".

On the base of this premises our paper tries to assess the determinants of labour status outcomes and school-to-work transition focusing in particular on the role of vocational secondary education for newly graduated and providing a cross-countries comparison. The comparative dimension of our analysis can greatly improve the understanding of the effects of vocational education and an international comparison is something that has hardly been done before.

Our analysis has some clear policy implications as we try to highlights which educational and vocational systems appear to produce better results in terms of employability of young people. This is a key priority in policy actions and the great interests and concerns for youth unemployment by national and supranational institutions is a clear proof of this. As a matter of fact, European Union released a formal Council Recommendations in 2013 calling forth the implementation of a "Youth Guarantee" in terms of employment, continuing education, traineeship and apprenticeship (see Council of Europe, 2013). Similarly, the OECD presented an "action plan" where one of the main proposal was to "strengthen the role and effectiveness of Vocational Education and Training" (see OECD, 2013).

The data used in our analysis come from the European Union Labour Force Survey (EU-LFS) database. We use the 2009 ad hoc module of the LFS on "Entry of young people into the labour market" to obtain information on the school to labour market transition and on the characteristics of young individuals that are not available in the standard labour force survey. In particular, we focus our analysis on individuals that obtained upper secondary school degree in 2008 and we select nine countries: France, Hungary, Italy, the Netherlands Poland, Spain, Sweden, Switzerland and UK. The selection of countries was based on data availability.

Our object of analysis is the labour status in year following the secondary school graduation: we want to assess the determinants of the status and, in particular, whether vocational education has a role in facilitating transition toward employment. In practical terms, we want to estimates the determinants of categorical outcomes (the labour status) and we therefore adopt multinomial probit models. However, given that some alternatives may be closer to each other than others we try to account for these similarities. In econometrical terms this translates in allowing for the unobserved components to be correlated over the possible alternative outcomes. On the contrary, the standard multinomial probit assume instead uncorrelated unobserved components adopting the so called irrelevance of alternative assumption (IIA) : in our estimation we depart from this standard model and renounce to the IIA.

Our results points to a variety of performances of vocational systems: in some countries (France, Hungary, Italy and Switzerland) the vocational degrees seems to facilitate employment with respect to unemployment but in others (Netherlands, Poland, Spain, Sweden and United Kingdom) this effect fails to be statistically significant. In any case, we do not find any proof of a significant negative effect of vocational education.

The paper proceeds as follows. In Section 2; we outline the institutional features of each of the nine vocational education systems; in Section 3 we provide a description of the database used and of the key variables of interests; Section 4 explains the empirical methodology and present the results and, finally, Section 5 concludes.

2. The Vocational Education System in some European Countries

In this section we discuss the main differences between general and vocational education and we provide a review of the main characteristics of vocational systems in the European countries used in our analysis: a schematic review of the key aspects of these systems in 2008 is contained in Table 1.

Most developed countries are characterized by a school system that proposes both general and vocational paths. General, often academically oriented, education provides knowledge and skills needed for further higher education. This type of skills is characterized by a high degree of generality and are aimed at improving the general cognitive skills of youth to enable work in a broader range of tasks and occupational fields. Whereas, the vocational education equips youth with practice-oriented knowledge and skills required in specific occupations (Hanushek *et al*., 2017).

Eichhorst *et al*. (2012) classified vocational education and training into three distinct systems: *i) the school-based vocational education and training, ii) the formal apprenticeships,* and *iii) dual vocational training systems*. *School-based vocational education* is part of upper secondary education system.

Countries like France, Italy, Spain and some eastern European countries, adopt the school-based vocational education and training that offers a formal curriculum combining general with occupational knowledge. In some cases, vocational and training orientation is offered within the compulsory education path as an alternative to an academically-oriented track; in other cases, vocational and training can be selected as part of several post-compulsory education options (see Zimmerman *et al*., 2013). In any case, both the academic and the vocational tracks tend to impart general knowledge and skills though the actual balance shifts between the tracks. In many countries, the vocational option is considered as a safety net for students with poor academic performance who are at risk of dropping out of school and for students who are less academically inclined. The close link to job tasks and hands-on practical experience is expected to motivate more practically-oriented youths to continue training and remain in school longer (Eichhorst, 2015).

In other countries, vocational education and training is brought forth according to the second system and it is thus provided through *formal apprenticeships* complementing workplace training. Training in this apprenticeship system is focused at the firm level and functions without close links to the formal education system. Australia, the UK and the US are examples of this approach.

The last system, *the dual vocational training*, is adopted by few countries: Austria, Denmark, Germany, Hungary and Switzerland. The dual vocational education and training offers several benefits from a societal and individual perspective since it combines vocational schooling and structured learning on-the-job. To ensure the transferability of skills across firms after graduation from apprenticeships, the training also needs to include an adequate amount of general schooling.

The structure and the role of vocational education differs significantly across countries. Table 1 shows the main characteristics of the vocational education for the selected nine European countries.

Table 1. Vocational Education at upper secondary school in selected countries

Source: CEDEFOP, European Centre for the Development of Vocational Training, 2008

Country	Vocational Education	Vocational System Classification	Workplace Training	Access to University
France	At the end of lower secondary school, students can choose between two different options: general and technological path, or vocational path. The vocational path lasts two years and at the end students obtain a vocational training certificate which allows to entry into the workplace or to continue study towards a vocational baccalaureate (3 years). Young people can work towards these diplomas either in a vocational upper secondary or as an on-the-job apprentice.	School-based vocational education	YES, but not compulsory	NO, except in specific cases
Hungary	Vocational education at secondary level is provided by two types of schools: • Vocational school offering 2 years of general education and typically (depending on the qualification awarded) 2 or 3 years of vocational practical training to students aged 14-18/19 either in the form of school-based workplace-based training. • Secondary vocational school offering 4 years of upper secondary level general education. It mixes academic and vocational training and allows for tertiary entrance after graduation. Students in vocational schools can obtain a vocational qualification and enter into the labour market at the end of the third year.	Dual vocational education	YES, and compulsory	NO for the first type of school
Italy	The upper secondary school has two channels: the *licei* system and vocational education and training system. The vocational education lasts at least three years and leads to a c*ertificato di qualifica professionale* (vocational qualification certificate). The qualification can be used to enter the labour market or to enter post-qualification courses that leads upper secondary vocational degree. This degree is required for entry into pathways of *istruzione e formazione tecnica superiore* (IFTS - higher technical education and training) or, after attending a supplementary year, for entry into universities.	School-based vocational education	YES, but not compulsory	YES
Netherlands	Secondary education is intended for individuals in the age group 12 to 16, 17 or 18. Students can go to one of the following types of secondary education: preparatory vocational secondary education (VMBO); senior general secondary education (HAVO); and university preparatory education (VWO). Preparatory secondary vocational education is a vocationally oriented path and lasts 4 years. After the age of 16 students can go to senior secondary vocational education, or to higher education (depending on the type of diploma they obtained).	School-based vocational education	YES, and compulsory	NO
Poland	The upper secondary schools start at 16 years old and provide different forms of school: general secondary schools (3 years), and secondary vocational and technical schools (4 years). Vocational and technical education is mainly provided by Technical schools and/or basic vocational schools. Basic vocational schools also provide a vocational education lasting 2 years and grant a certificate of competence in various fields. The primary goal of vocational and technical education is to teach occupations and trades.	School-based vocational education	YES, and compulsory	NO

Table 1 cont.

Spain	Even though vocational subjects are taught also at lower secondary level of education (13 – 16 years old), proper vocational training programs start at 16 years old. At the upper secondary level vocational education and training is structured into two educational levels: • Intermediate level vocational Training. • Upper level Vocational Training. Their successful completion is certified by a vocational qualification. Vocational Training is accessed by means of the Lower Secondary Education qualification. It involves a practical and semi-vocational dimension for traditional subjects and sets out goals that assist the transition to the world of work.	School-based vocational education	YES, and compulsory	NO
Sweden	The upper secondary school starts at 16 years old and lasts 3 years. It offers both vocationally-oriented (IVET) and academic programmes. Programs that are primarily vocationally-oriented must give broad basic education within the vocational field, as well as providing the foundation for further studies. In addition, they must offer at least 15 weeks of work-based training during the three years of upper secondary school. After the 1994 reform, all education programs are designed to confer wider and deeper knowledge whether theoretical/academic or vocationally oriented.	School-based vocational education	YES, and compulsory	YES
Switzerland	The upper secondary education starts at 16 years old and it is not compulsory and varies in length from three to four years. There are two main types of upper secondary schools: academic schools and vocational schools. Vocational secondary schools prepare students for a wide range of occupations and higher vocational schools as well as universities of Applied Sciences (if combined with the Professional Baccalaureate) .	Dual vocational education	YES, and compulsory	YES
United Kingdom	In England, Wales and Northern Ireland and Scotland at age 16, after completion of compulsory education in secondary schools, young people may choose to continue in school, enter employment with training such as an apprenticeship, or enter employment without apprenticeship. Students remaining in education at a school may choose between general ('academic') and vocational subjects or take a mixture of the two. Programs are normally two years in duration, but many students take three years and the phase is generally considered to be ages 16 to 19.	School-based vocational education *and* formal apprenticeship	YES, and compulsory	YES

3. Data Description

The data used in the analysis come from the EU-LFS database. In particular, we use the 2009 ad hoc module of the LFS on "Entry of young people into the labour market" to obtain information on the school to labour market transition and on the characteristics of individuals. We want to focus on individuals that obtained a secondary education degree in 2008 and we restrict our analysis only to individuals with this characteristic. Moreover, to produce a more homogenous and robust analysis we want to compare individuals that were

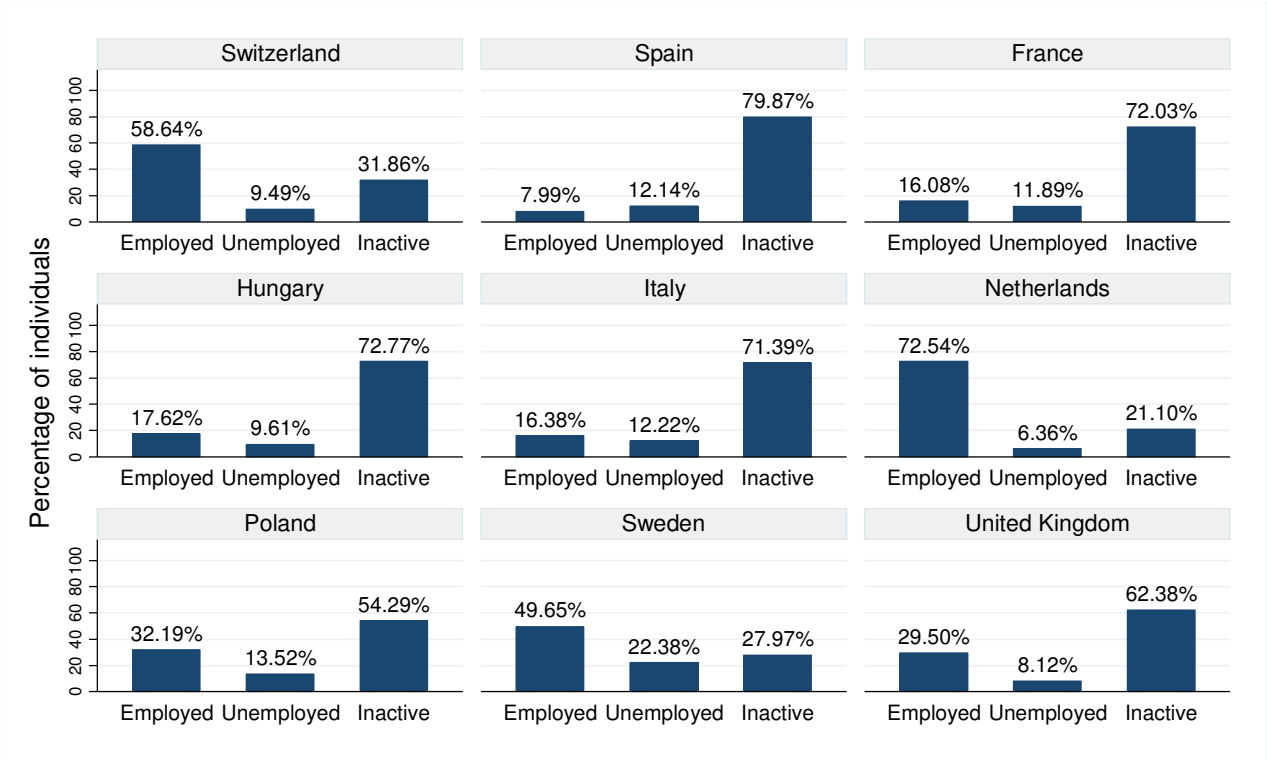
interviewed in months not too far apart: in fact, the labour status refers to the month of the interview and individuals interviewed later on in the years could have different opportunities in terms of job findings. For this reason, we restrict the sample only to individuals that were interviewed before June 2009 and we control any possible residual effect with dummy variables signalling the months of the interview. The choice of excluding the summer months also solves confounding factors due to summer seasonal jobs.

These restrictions and the fact that the ad-hoc modules of the survey have, in some cases, a small sample size produces, for some countries, a too small number of observations to perform an accurate analysis: therefore, we discarded some countries from our study. Moreover, a few countries have compulsory military service so that the actual labour status is forcedly determined for many male individuals: even in this case, we eliminate these countries (Austria, Denmark, Finland and Greece). This process leaves us with the following countries: France, Hungary, Italy, Netherlands, Poland, Spain, Sweden and United Kingdom.

The key information that we are using in our analysis is: i) labour market status in 2009 and ii) the general or vocational orientation of upper secondary school degree.

The labour market status is coded according to the ILO classification which classify individuals as i) employed (if currently working for pay or profit); ii) unemployed (if they are currently not working for pay or profit and seeking and available to start working for pay) and iii) inactive (if not part of the labour force). Data on labour status in the different countries is presented in Figure 1: the data only consider individuals interviewed before June 2009.

Figure 1: Labour Status in 2009 of previous year secondary school graduates

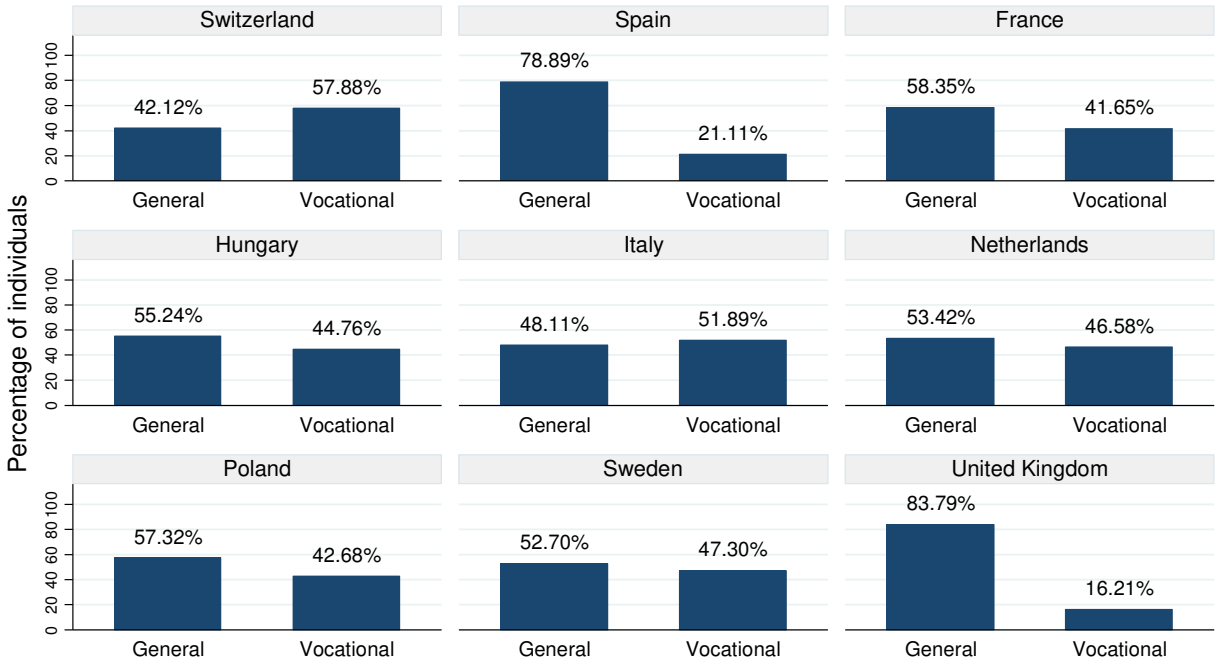


The data shows a clear pattern: in many countries, the most frequent labour status is inactive. This is understandable: in fact, most of these inactive individuals are actually made up by students, something that is easily explained by the actual age of our sample. Netherlands is the main exception to this but further checks on the database showed that, for this country, most individuals that declare themselves students are also having a paid job: this explains why the Dutch figures. This is also true, to some lesser extent, also in Sweden and in Swtizerland.

Apart the common trend in the distribution between activity and inactivity, we can instead see some more variety in the distribution of employed and unemployed among the actives. In general, the employed group is the most common. However, in Netherlands, Poland, Sweden, UK and partly in Hungary the employed have a clear prevalence on the unemployed whereas in France and Italy the prevalence of employed is less clean-cut. Instead, in Spain, unemployment is more prevalent than employment.

The data on vocational studies determines whether the secondary education was a vocational path and we thus code it as a dummy variable. The share of individuals with vocational orientation of secondary studies (among all individuals obtaining the secondary school degree) is shown in Figure 2.

Figure 2: General and Vocational education among 2008 secondary school graduates



In most countries, the distribution of general and vocational education is spread quite equally across the newly graduated, with general orientation being usually slightly more common (apart in Italy and in Switzerland). The prevalence of general education is instead much more clean cut in Spain and United Kingdom with only around 20% of individuals obtaining a secondary degree with a vocational orientation.

Apart these two key variables, we use several controls to better assess labour market outcomes: in particular, we use gender, age, education of parents, and country of birth. Age is coded in 5 years intervals (15-19, 20-24, 25-29 and 30-34), education of parents indicates the highest degree obtained by either of the parents and country of birth takes the form of a dummy which is one if citizenship is different from the country of living. In addition, the EU-LFS has some variables identifying and describing the area of living: the degree of urbanisation (classified in three level: rural, towns/suburb and cities on the base of population density) and the belonging to a certain region at the NUTS 1 and NUTS 2 level (that is, dummy variables identifying the region). Moreover, we use data from EUROSTAT database on the unemployment level for the 15-24 age individuals in the NUTS 2 region which could represent a measure on how difficult is, in a given region, to find work for an individual in that age-class.

4. Empirical Strategy and Estimation Results

The aim of our analysis is to assess the determinants of labour status outcome of newly graduated and, in particular, what is the effect of vocational education in the from school-to-work transition. Given this premise, our dependent variable is the labour status in 2009 which, according to the ILO classification, is a categorical variable with three possible values signalling whether an individual is unemployed, employed or inactive.

4.1 Empirical Strategy

The standard tools to estimate categorical non-ordinal outcomes are multinomial probit or multinomial logit. These estimation techniques assume the existence of latent variables that actually measures the propensity of ending up in a given outcome (a labour status outcome in our case) and these latent variables depend on the characteristics of the individual. According to these models, the outcome with the highest propensity is selected.

In our specific case, we are therefore assuming the existence of three latent variable y_j (one for each possible outcome identified by *j*) that depends on the following:

$$y_j = \alpha_j + \beta_j x_i + \varepsilon_{i,j}$$

where α_j is the alternative-specific constant, x_i are the individual characteristics, β_j represents the effect that the individual characteristics have on the propensity of selecting outcome *j* and $\varepsilon_{i,j}$ is the erratic component for the individual *i* in the outcome *j*. Depending on the hypothesis made on $\varepsilon_{i,j}$ the multinomial probit or logit is defined and in the standard version of these estimation techniques the errors of a given individual are uncorrelated across the different outcomes: this property is called independence of irrelevant alternatives (IIA) . Estimation is obtained choosing a certain outcome as the reference category and obtaining estimations of β_j that represents the effect of the characteristics in making outcome *j* more likely with respect of the outcome used as reference. This is particularly suitable in our analysis as we are mostly interested in finding out why individuals become employed rather than unemployed. As a matter of facts, in its influential text-book, Wooldridge uses exactly the determination of labour status outcomes to illustrate the multinomial logit (see Wooldridge 2010, Chapter 10). As mentioned before, the estimation with these techniques is usually performed under the IIA hypothesis which greatly simply the computations. However, in our case of the transition from school to labour outcome, the IIA hypothesis may not be respected: for example, individuals with better unobserved skills are more likely to pursues further education but, at the same time, they are also more likely to perform better in finding a job and less likely to remain unemployment: in practice, the error component of a single individual may be correlated across the alternatives and this actually violate the IIA hypothesis.

In truth, while multinomial logit strictly relies on IIA, the multinomial probit estimation does not need the IIA (see Greene, 2012) even if the IIA is usually assumed in actual estimations to simplify the computation. In our case we directly renounce to the assumption of uncorrelated error terms and we thus opt for the multinomial probit estimation[2] *without* the IIA. This comes at a cost: as pointed out in Greene (2012), multinomial probit without the IIA requires large computational time and convergence is not always achieved. This latter aspect forced us to be conservative in the use of some regional variables[3] (dummies for region at the NUTS 1 and 2 level and regional unemployment) that were selected on the base of actual convergence of estimation. Moreover, another drawback of using multinomial probit is the lack of a direct interpretation of the estimated magnitude of coefficients: a significant coefficient fully indicates that the variable as a significant effect in determining the likelihood of an outcome with respect to the reference outcome but, *per se*, the value of the coefficient is not particularly informative in terms of its magnitude. All our estimation was performed at the country level so that for each country we estimated a separated multinomial probit model.

4.2 Estimation Results

In our estimation, we use a multinomial probit regression allowing for correlated alternative-specific errors. The dependent variable is labour status outcome which is made of three categorical outcomes (unemployed, employed and inactive). In our estimation we use the outcome "unemployed" as reference category. As mentioned before, the estimation delivers outcome-specific coefficients: that is, we obtain coefficients that measure the effect of a characteristics in making an outcome more likely with respect to the reference category. Our choice of the reference is not casual. The use of unemployment as reference allows a direct interpretation of results: in fact, the coefficient related to the employment category can now be read as the effect that the characteristics have in making the individual more likely to find a job with respect of remaining unemployed. This is to all extents the key focus of our analysis: we want to know whether vocational education facilitate the school-to-work transition rather than unemployment.

The actual metrics of some variables was chosen to facilitate convergence process in the computations: in particular, the "regional" dimension of the analysis proved to be troublesome.

[2] Given the premise of our analysis it might be tempting to use Nested Logit estimation, a techniques that gathers alternatives in nests made of similar outcome. However nested logit assumes that alternatives within a nest have correlated errors but the errors are uncorrelated between alternatives belonging to different nests and this latter characteristics appears to be too restrictive in our case.

[3] As a matter of facts, using specific dummies for each different NUTS 2 region in a country largely increase the number of independent variables in the regressions.

Ideally, we should use dummy variables that identify with the greatest possible accuracy the area of living: however, this greatly increase the number of independent variables and can prevent convergence in the estimation process. For this reason, we used dummy variables for NUTS 2 or NUTS 1 regions depending on actual convergence and where this was not achieved we resorted to use unemployment rates for the 15-24 age group in the NUTS 2 region. We also had to adjust data on individuals older than 24 and on foreign citizenship: in fact, in some countries, the occurrence of this cases was negligible so that it was not possible to use a dedicated variable.

In Table 2 we report the estimation of the coefficients for the outcome “employment”, later on we will briefly report also the coefficients for the outcome “inactive”: the estimation of the model was performed separately for each country.

Table 2. Determinants of employment with respect to unemployment: Multinomial Probit estimation.

	France	Hungary	Italy	Netherlands	Poland	Spain	Sweden	Switzerland	UK
Vocational Studies	1.060**	0.756**	0.658**	0.243	0.0864	-0.550	0.274	0.628**	0.190
	(0.473)	(0.379)	(0.258)	(0.384)	(1.191)	(2.066)	(0.256)	(0.314)	(0.384)
Age 19-24	0.880**	0.387	0.206	0.0177	-0.459*	0.00281	0.117	-0.284	0.0148
	(0.449)	(0.305)	(0.206)	(0.379)	(0.248)	(0.711)	(0.277)	(0.285)	(0.510)
Older than 24	1.299	NA	NA	-1.318*	NA	NA	NA	NA	0.413
	(0.894)			(0.760)					(0.728)
Female	-0.443	0.104	-0.218	-0.146	0.0446	-0.151	0.497**	0.332	0.886***
	(0.382)	(0.293)	(0.216)	(0.288)	(0.316)	(0.458)	(0.245)	(0.280)	(0.256)
Foreign citizen	-0.484	NA	-0.275	NA	NA	0.542	0.194	0.0117	NA
	(1.121)		(0.448)			(1.993)	(0.983)	(0.309)	
Highest education of parents is secondary	0.984**	0.428	0.344	-0.404	0.446	0.148	0.543*	-0.161	0.566*
	(0.486)	(0.316)	(0.218)	(0.339)	(0.891)	(1.047)	(0.298)	(0.366)	(0.340)
Highest education of parents is tertiary	1.585**	-0.249	0.730	0.691	0.586	-0.322	0.387	0.272	0.313
	(0.656)	(0.508)	(0.552)	(0.522)	(1.794)	(1.589)	(0.322)	(0.442)	(0.302)
Living in a city	0.111	-0.139	-0.119	-0.101	-0.188	1.133	-0.115	NA	-0.208
	(0.461)	(0.550)	(0.256)	(0.315)	(0.615)	(0.732)	(0.507)		(0.372)
Living in a rural area	0.220	-0.462	-0.0251	NA	-0.293	0.486	0.111	NA	0.0244
	(0.600)	(0.407)	(0.247)		(0.392)	(0.749)	(0.417)		(0.458)
Regional dummies	NUTS1	No	No	NA	No	NUTS 1	NUTS2	No	NUTS1
Regional Unemp.	No	-0.0305	-0.062***	NA	-0.0559	No	No	-0.0121	no
		(0.0227)	(0.0132)		(0.0415)			(0.0497)	
Month of interview	Dummies	Dummies	Dummies	Dummies	Dummies	Dummies	Dummies	Dummies	Dummies
Constant	-1.892**	-0.695	0.175	1.757***	2.244	-0.338	-0.599	1.254	-0.262
	(0.946)	(0.646)	(0.457)	(0.452)	(1.761)	(4.097)	(0.586)	(0.871)	(0.614)
Number of obs.	286	432	764	335	462	308	285	284	593

*Significance levels: * 10%; **5%; ***1%. NA: not available. NO: not used.*

The estimation results highlight a mixture of light and shade in the effect of vocational education. In truth, the impact of this orientation is usually positively and individuals that obtained a vocational degree appear to be more likely to be employed rather than unemployed. However, this effect is significant only in four countries: France, Hungary, Italy and Switzerland. In Netherlands, Poland, Sweden and UK the effect of vocational studies appears to be positive but it fails to be significant. Finally in Spain the effect has a negative sign even if in this case no statistically significance is detect.

This variety of results can be used to try to assess, at least partially, if there exist a pattern that links the effectiveness of vocational systems to their characteristics. From this point of view, our estimations offer two findings: *i)* in the countries (Hungary and Switzerland) with dual vocational education we find that this orientation improve employability and *ii)* in the countries where school-based vocational education is in place, compulsory workplace training does not appear to be the key ingredient to successfully increase employability. As for these latter finding, this is grounded on the fact that the only two countries (France and Italy) where school-based vocational education have a significant positive effect, do not prescript compulsory workplace training.

Overall, on the base of our results, we can still argue that vocational education is helping individuals in finding a job but this result is not widespread and leaves areas of inconclusiveness. In terms of policy implications, we still propose that vocational education is useful but that its effect should not be taken for granted and great care should be used in the way it is structured: from this point of view, the dual system appears to be an effective choice.

We report in Table 3 the coefficients related to the determinants of inactive status with respect to unemployment (that is still the reference category).

Table 3. Determinants of inactivity with respect to unemployment: Multinomial Probit estimation.

	France	Hungary	Italy	Netherlands	Poland	Spain	Sweden	Switzerland	UK
Vocational Studies	-1.702***	-1.472***	-1.328***	-0.0239	-0.423	-2.186***	-0.513*	-1.563***	-1.298***
	(0.359)	(0.308)	(0.201)	(0.452)	(0.893)	(0.389)	(0.284)	(0.344)	(0.400)
Age 19-24	-0.435	-0.963***	-0.625***	-0.717	-0.357	-0.395	0.552*	-0.599*	-1.502**
	(0.378)	(0.267)	(0.175)	(0.455)	(0.396)	(0.373)	(0.306)	(0.316)	(0.614)
Older than 24	-1.501	NA	NA	-0.369	NA	NA	NA	NA	-0.303
	(1.065)			(0.883)					(0.838)
Female	-0.173	0.501*	0.0529	0.310	0.113	-0.216	0.151	-0.308	0.230
	(0.314)	(0.263)	(0.183)	(0.338)	(0.250)	(0.342)	(0.271)	(0.315)	(0.254)
Foreign citizen	-0.299	0.719**	-0.483	NA	NA	-1.395	-0.111	-0.0993	NA
	(0.982)	(0.296)	(0.380)			(0.961)	(1.130)	(0.346)	
Highest education of parents is secondary	0.382	0.779*	0.448**	-0.538	0.717*	0.929**	0.198	0.0118	-0.0562
	(0.378)	(0.402)	(0.183)	(0.410)	(0.378)	(0.443)	(0.326)	(0.430)	(0.336)
Highest education of parents is tertiary	0.330	-0.488	1.764***	1.320**	1.143*	1.241**	0.270	0.455	0.121
	(0.484)	(0.503)	(0.494)	(0.562)	(0.692)	(0.500)	(0.343)	(0.487)	(0.286)
Living in a city	-0.137	-0.812**	0.142	-0.653*	-0.0120	0.295	-0.643	NA	-0.488
	(0.376)	(0.369)	(0.214)	(0.364)	(0.524)	(0.607)	(0.571)		(0.357)
Living in a rural area	-0.110	-0.462	-0.169	NA	-0.262	0.121	-0.155	NA	-0.605
	(0.509)	(0.407)	(0.209)		(0.412)	(0.461)	(0.448)		(0.438)
Regional dummies	NUTS 1	No	No	NA	No	NUTS 1	NUTS 2	No	NUTS1
Regional Unemp.	No	-0.0305	0.00191	NA	-0.0395	No	No	-0.0293	No
		(0.0227)	(0.0106)		(0.0501)			(0.0545)	
Month of interview	yes	yes	yes	yes	yes	yes	yes	yes	yes
Constant	2.709***	-0.00140	1.835***	0.484	2.026	2.676**	-0.467	1.512	0.913
	(0.735)	(0.767)	(0.381)	(0.508)	(2.738)	(1.165)	(0.642)	(0.954)	(0.583)
Number of obs.	286	432	764	329	462	308	285	284	475

*Significance levels: * 10%; **5%; ***1%. NA: not available. NO: not used.*

Even if they are not directly the focus of our analysis, the determinants of inactivity status show interesting results. As expected, vocational education always displays a negative impact on the inactivity outcome and this impact is usually significant. This was quite expected: in our sample inactivity is usually associated to further studies and the vocational school path provides less instruments to continue the educational career. Even more so, in some countries vocational studies do not even allow access to tertiary education.

The other aspect that appear to be relevant in explaining the inactivity status is parents' education. Even in this case we can imagine that inactivity is largely associated with further education and our results points to the fact that in Italy, Netherlands Poland and Spain having a parent with at least tertiary education increases the probability of becoming inactive and, likely, to continue the education path. The effect for these countries is statistically significant whereas a positive, but not significant, effect is found in France, Sweden and United Kingdom. These findings highlight the importance of family background in educational attainment.

5. Conclusions

Our analysis tried to link the attainment of a vocational secondary school degree to the success in the school-to-work transition. In this effort, we offered a cross-country comparison hoping to shed light on how the different vocational systems can be more or less effective in helping in this transition. The overall conclusion is that vocational education often enhance the employability of secondary school graduates with respect to general education graduates but its impact is, in some cases, not statistically significant. The dual vocational system appears to perform well in our analysis as in the two countries under these scheme, vocational degrees are associated to an increase in employment probabilities.

The school-based vocational systems appear to be less incisive with large areas of inconclusiveness. Interestingly, the countries where this system has a positive and significant impact do not have compulsory workplace training within the educational career. This may appear in contrast with the effectiveness of the dual system that we found but it probably signals that a blend of the two systems do not deliver good results: from a policy points of view, it suggests either a switch toward the dual system or a re-structuring towards other directions.

In all our analysis, only in Spain we find a negative (but not significant) association between vocational studies and employability. Moreover, Spain displays a very low participation to vocational paths. Even if we cannot draw a direct connection between the limited and ineffective vocational education and the bad performance of Spanish labour market, we can argue that vocational education in this country has ample

spaces for improvements, both in its structure and its diffusion and could be an useful tool in fighting the well-known unemployment problem.

Finally, we have to stress that further analyses would be useful to further discern the areas of inconclusiveness: in particular, some countries within the school-based vocational system offer different shades within the actual vocational paths. This differences could be exploited to try to disperse the grey areas and to understand what is working and what is not in those systems. The main difficulty from this point of view is the availability of proper database that would allow to keep track the differences in the vocational paths.

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