

**DOCUMENTS DE TREBALL
DE LA FACULTAT D'ECONOMIA I EMPRESA**

Col.lecció d'Economia

E13/293

Entrepreneurial skills and over-education five years later.

A comparison between Spain and the Netherlands

Aleksander Kucel

Escola Universitària del Maresme,
Tecnocampus Mataró-Maresme & Universitat Pompeu Fabra

Núria Masferrer-Llabinés

Escola Universitària del Maresme,
Tecnocampus Mataró-Maresme & Universitat Pompeu Fabra

Montserrat Vilalta-Bufí¹

Departament de Teoria Econòmica and CREB,
Universitat de Barcelona

¹ This work was supported by the Spanish Ministry of Science and Innovation [ECO2012-34046 to MVB]; and the Government of Catalonia [Barcelona GSE Research Network to MVB, 2009SGR1051 to MVB].

The authors also wish to thank the REFLEX project for granting access to their data. We benefited from the comments of participants to the Second Lisbon Research Workshop on Economics, Statistics and Econometrics of Education. We would also like to thank Yanos Zylberberg for their suggestions.

Abstract

Over-education has been demonstrated to be frequent and persistent across countries. We study whether entrepreneurial skills are a competency that helps tertiary education graduates to obtain a good job match. We analyze two possibilities: the role of entrepreneurial skills in avoiding over-education in the first job, and in exiting over-education in their early career. We do the analysis for Spain and the Netherlands, two countries that differ significantly in the degree of tracking in their educational system and the education-labor market linkages. We find that entrepreneurial skills help avoiding over-education in the first job and exiting from over-education only in Spain. Entrepreneurial skills do not seem to affect the probability of over-education in the Netherlands, where the education system is less flexible. Overall, our results give support to those policies promoting the development of entrepreneurial skills in the Spanish education system.

Resum

El fenomen de la sobre-educació és freqüent i persistent a molts països. En aquest article estudiem el paper de les habilitats emprenedores en evitar la sobre-educació a la primera feina, i en sortir d'una situació de sobre-educació cinc anys després. Comparem els resultats d'Espanya i Holanda, dos països que difereixen en el seu sistema educatiu i mercat de treball. Els resultats mostren que les habilitats emprenedores ajuden a evitar i/o sortir de la sobre-educació només a Espanya, on el sistema educatiu és més flexible i menys vinculat amb el mercat de treball. En general, els nostres resultats recolcen les polítiques que promocionen el desenvolupament d'habilitats emprenedores al sistema educatiu espanyol.

JEL codes: J24, I23

Keywords:

Over-education, entrepreneurship, entrepreneurial skills, higher education

1. Introduction

This paper contributes to the literature on over-education by introducing entrepreneurship as an explanatory factor in the menu of variables predicting both, over-education occurrence and subsequent exit from it.

Over-education has been demonstrated to be frequent and persistent across many countries (Chevalier 2003; Rubb 2003; Sloane 2003; McGuinness 2006; Budría and Moro-Egido 2009; Verhaest and Omey 2010). It has also been revealed that remaining over-educated leaves a scarring effect on future workers' career (Scherer 2004) and is detrimental to workers' cognitive capacity (de Grip, Bosma et al. 2008). Given the persistence of over-education (Alba-Ramirez 1993; Battu, Belfield et al. 1999; Sloane, Battu et al. 1999; Dolton and Vignoles 2000; Rubb 2003; Rubb 2003; Frenette 2004; Rubb 2005; Verhaest and Van der Velden 2012), various international organizations, and primarily the OECD, call for new solutions to the ever more burning education-job mismatch problem (Quintini 2011). We propose entrepreneurial skills as a competency for both, avoiding over-education and exiting it. Entrepreneurial individuals are thought to be more opportunity aware, willing to question viewpoints, and have the capacity to come up with new ideas and ways of solving problems (Jones, Coviello et al. 2011; Tang, Kacmar et al. 2012). In consequence, they are more likely to look actively for a matching job and their consciousness of what a matching job means is expected to be more attuned. These types of skills have not been so far seriously contemplated in the literature on over-education.

We conduct the analysis for Spain and the Netherlands, two countries that differ significantly in their educational system in terms of tracking and the education-labor market linkages (Shavit and Muller 1998; Muller and Gangl 2003). We expect that entrepreneurial skills have a larger role in Spain, where the education-labor market linkage is weaker and gives more space for entrepreneurial individuals to succeed.

The paper is organized as follows. In next section, we present the theoretical argument standing behind our hypothesis that entrepreneurial skills may serve as an instrument in the battle against over-education. In section 3, we describe the REFLEX survey used in this paper and the econometric methods applied to data analysis. We provide the results in section 4 and conclude in section 5, forming some policy recommendations.

2. Theoretical background

Since the seminal works of Freeman (1976) and Rumberger (1981; 1984) much has been discovered and explained about over-education and its consequences for workers (Groot and Brink 2000; Chevalier 2003; Rubb 2003; McGuinness 2006; Verhaest and Omey 2010). This large literature points to variables such as job experience (Sicherman and Galor 1990; Hersch 1991; Sicherman 1991; Hersch 1995), fields of study (Finnie and Frenette 2003; McGuinness 2003; McGuinness 2003; Frenette 2004; Ortiz and Kucel 2008), vocational orientation of education (Buchel and Mertens 2004), gender (Renes and Ridder 1995; McGoldrick and Robst 1996), immigrant status (Green, Kler et al. 2007; Agut, Peiró et al. 2009) and several skills (Chevalier and Lindley 2009) as factors explaining over-education.

Up to now, only the Theory of Career Mobility (TCM) advanced by Sicherman and Galor (1990) explains in a structured way the persistent existence of over-education in the labor market. It is assumed that individuals at the beginning of their careers lack job-specific skills and, hence, they need to acquire them while working in jobs that require a lower level of education than acquired (Sicherman and Galor 1990; Sicherman 1991). As they progress with their on-the-job training, workers are expected to exit over-education. Sicherman and Galor's theory explains persistence of over-education only as an aggregate phenomenon but it does not directly apply at the individual level.

From the empirical side, however, it is demonstrated that over-education is rather persistent at the individual level. It has been shown, for instance, that four out of five over-educated American workers are going to remain over-educated a year later (Rubb 2003; Rubb 2005). Around 30% of graduates never got a matched position in the UK in the eleven years after graduation (Battu, Belfield et al. 1999). Similar persistence of over-education in the UK is found in Sloane et al. (1999) and Dolton and Vignoles (2000), among others. Frenette (2004) finds that 35% of graduates remain over-educated five years after graduation in Canada. Verhaest and van der Velden (2010) compare persistence of over-education across several European countries and Japan. They find that, conditional on being over-educated in the first job, the percentage of individuals that remain over-educated five years after graduation lays in between 30 and 60%.

On the other hand, fully detached from the phenomenon of over-education, there is a vast literature on entrepreneurial skills across economics (Parker 2009), sociology (Thornton 1999; Vedres and Stark 2010) and psychology (Zhao and Seibert 2006; Moriano and Gorgievski 2007; Bosma, Hessels et al. 2012). In this paper, we join these two strands of research and show that

entrepreneurial skills might be useful to find adequate jobs in the labor market (von Graevenitz, Harhoff et al. 2010; von Graevenitz and Weber 2011).

We hypothesize that entrepreneurial individuals are more opportunity aware and self-conscious than their less entrepreneurial peers are. These personal characteristics are assumed to influence positively the job matching process of these individuals. This should translate into a lower likelihood of over-education in the first jobs after graduation. Furthermore, entrepreneurial graduates should also be more prone to look for matching jobs even if they happened to get over-educated in their first jobs after graduation. This, in turn, should be reflected by a higher likelihood of exiting over-education for those with entrepreneurial skills.

We compare two countries in our analysis: Spain and the Netherlands. These two countries show some very interesting differences in terms of educational tracking and the education-labor market connection (Shavit and Muller 1998; Muller and Gangl 2003). While Dutch children decide their educational track already at the age of 12, the Spanish ones choose it at 16 years old. Furthermore, the tracking system is more rigid in the Netherlands, being harder to change among tracks. This less flexible tracking system translates into a stronger linkage between the education diplomas and the labor market in this country. In contrast, the Spanish education system is less stratified and with more general programs, which in turn leads to a much weaker connection between education and the labor market. We expect entrepreneurial skills to have a larger role in avoiding and exiting over-education in Spain, where the education-labor market linkage is more flexible and leaves more room for entrepreneurial skills to matter.

3. Data description and methodology

Data description

We base our analysis on the REFLEX data, a survey of tertiary graduates from the year 2000 that were interviewed five years later. Data contain, apart from a rich battery of questions on the present job market situation and competences, several questions that gather retrospective information on the respondents' tertiary study program and their first job experiences. In particular, we know their matching situation in their first job as well as their job match quality five years after graduation.

We test two hypotheses. First, we analyze if entrepreneurial skills help in avoiding over-education in the first job. Second, we check whether they help in exiting over-education five years after graduation. To this end, we construct a measure of entrepreneurial skills and use it as a regressor

to explain the probability of being over-educated in the first job after studies, and the probability of exiting over-education five years after graduation if the individual started in an over-educated position.

The two dependent variables are thus 1) being over-educated in the first job, and 2) exit over-education five years later. Workers are considered to be over-educated if they responded that their job requires less education than they possess. The variable measuring whether the individual exited over-education is coded as 1 if the person was over-educated in their first job and managed to get matched in their consecutive job five years after graduation. The reference category coded 0 entails those individuals who were over-educated in their first jobs and persisted in over-education five years later. Therefore, in the first part of the analysis, our sample consists of those individuals that got a first job after graduation (being them over-educated or not), while in the second analysis we restrict our sample to those individuals that were mismatched in the first job and are employed (matched or mismatched) five years after graduation.

We restrict the sample to those non-self-employed individuals below 45 years old, working more than 20 hours weekly. The sample sizes are 2282 and 2255 for Spain and the Netherlands respectively in the first analysis, and 800 and 532 in the second one. Table 1 provides the descriptive statistics of both samples.

Entrepreneurial skills

Our definition of entrepreneurial skills bases on the concept of entrepreneurial alertness of Tang et al. (2012). They describe it as comprising of three dimensions: scanning and search, association and connection and, evaluation and judgment. These three dimensions complement each other giving the individual that possesses them the entrepreneurial skills. By scanning and searching, the individual gets pieces of new information, initially unconnected. The association and connection allows the individual to connect dots and identify new opportunities. Finally, the evaluation of these opportunities is the last step before taking action.

The REFLEX survey asks respondents their level of ability on 19 different competencies. The answers are collected into a 7 level Likert scale (1-very low, 7-very high). We identify the competency '*alertness to new opportunities*' as the scan and search dimension of entrepreneurial skills, '*ability to come up with new ideas and solutions*' as the association and connection dimension and '*the willingness to question your own and others' ideas*' as the third dimension identified above. We construct a measure of entrepreneurial skills as the average of these three

competencies (previously standardized to zero mean and unit variance). The Cronbach's alpha coefficient of this measure is 0.73 for Spain and 0.70 for the Netherlands.

There is, however, a serious drawback to this measure. It refers to the level of entrepreneurial skills at the time of the interview, whereas we are interested in the entrepreneurial skills of the individual when looking for the first job after graduation and when being over-educated in the first job. This could, therefore, cause endogeneity or reverse causality problems in our analysis. One could think for instance that being over-educated might enhance or impair entrepreneurial skills of individuals. We deal with these problems by using an instrumental variable on entrepreneurial skills. An arguably good instrumental variable is a measure describing to what extent the study program was a good basis for developing entrepreneurial skills. This question is included into a section of the questionnaire that asks the respondent to evaluate the study program s/he finished five years earlier. As it will be demonstrated later in the analysis, this is a good instrument for entrepreneurial skills.

Table 2 shows the correlations between the dependent variables, the entrepreneurial skills and the instrumental variable. Entrepreneurial program is positively related to entrepreneurial skills in both countries. These data reveal a negative correlation between entrepreneurial skills and over-education in the first job for Spain and a positive correlation between those skills and exiting over-education for the same country. Yet, correlation between entrepreneurial skills and the dependent variables are insignificant for the Netherlands.

Methodology

In a first step, we use a probit analysis to investigate both, the probability of being over-educated in the first job after graduation, and the factors that help in exiting mismatch. The controls included in the model on over-education in the first job after graduation are gender, grade relative to other students, education level of the father, whether the program was vocationally oriented (a very relevant variable in the Netherlands) and fields of study. The model on exit from over-education includes gender, experience in the labor market, whether the program was vocationally oriented and fields of study.

Yet, as we argued above, our measure of entrepreneurial skills might be endogenous since it refers to the level of skills at the time of the interview, while the dependent variables are about previous events. Therefore, since we are estimating a probit model with a discrete endogenous regressor, the coefficients could be inconsistent. The most common estimation method in this case is the

linear probability model estimated using instrumental variables. We use the evaluation of the study program in terms of developing entrepreneurial competencies as the instrumental variable for entrepreneurial skills. We compute the two-stage least-squares (2SLS) estimator with robust standard-errors to obtain the most efficient estimator (Cameron and Trivedi 2010). The Appendix reports the Durbin-Wu-Hausman tests of exogeneity, instrument validity and tests for weak instruments.

4. Results

Over-education in the first job

Table 3 reports the marginal effects of the estimation of the probability to get over-educated in the first job in Spain and the Netherlands. We compare the probit analysis with the linear probability model (OLS) to confirm that the linear probability model is a good approximation. Results reveal that entrepreneurial skills reduce the likelihood to become over-educated in the first job in Spain only. These results, however, do not control for the potential endogeneity bias.

In Table 4, we compare the linear probability model (OLS) with the IV estimation using two-stage least-squares (2SLS) estimation. We use as an instrument for entrepreneurial skills the variable “entrepreneurial program” defined above. Results reveal that, once we correct for endogeneity, the effect of entrepreneurial skills increases substantially in Spain and remains insignificant in the Netherlands. Not controlling for endogeneity of entrepreneurial skills we under-estimate their effect on the likelihood to be over-educated in the first job.

The large differences in the coefficients between the OLS and the IV (2SLS) estimations indicate that entrepreneurial skills are not exogenous. We confirm it with a Durbin-Wu-Hausman test for Spain, reported in the Appendix, where we can also reject the null hypothesis of weak instruments. In the Netherlands, however, we cannot reject exogeneity of entrepreneurial skills.

The rest of variables have the expected sign. Having studied a vocational program reduces over-education in the Netherlands since it implies a stronger link with the labor market. Instead, in Spain, parental background affects the graduate’s entry success in the labor market.

Exit mismatch five years later

Tables 5 and 6 report the results of the second analysis of the paper. As before, probit and linear probability models perform similarly. When not controlling for endogeneity of entrepreneurial skills (Table 5), they are significant in explaining exit from over-education in Spain, but not in the Netherlands.

The IV estimation increases strongly the impact of entrepreneurial skills in Spain, yet it does not change results for the Netherlands. Entrepreneurial skills do not help Dutch graduates in exiting over-education in the first job. Actually, we cannot reject that entrepreneurial skills are exogenous in the Netherlands, so the OLS estimation is preferred.

Apart from entrepreneurial skills, which increase the probability of exiting over-education by 28% in Spain, labor market experience helps in both countries. Again, having studied a vocational program turns out significant in the Netherlands. As stipulated in the theoretical part, the Dutch education system being strongly stratified provides relatively little room for individual decisions and, hence, the role of entrepreneurial skills is smaller than in other more open education systems (Allmendinger 1989).

5. Conclusions

The determinants and effects of over-education have been largely studied in the literature. In addition, entrepreneurial skills have been analyzed in relation to the likelihood of enterprising and creating new businesses. In this paper, we study the relationship between entrepreneurial skills and over-education. We argue that entrepreneurial skills help individuals to find a good job match.

We contribute to the literature on over-education by analyzing the effect of entrepreneurial skills on the likelihood of over-education in the first job in Spain and the Netherlands, as well as demonstrate the importance of these skills in helping individuals exiting this situation. Results show that entrepreneurial skills are important to avoid being over-educated in the first job and help exiting over-education in Spain, yet they do not matter in the Netherlands. We suggest that this is the result of the different education-labor market linkages in these two countries. The highly stratified education system in the Netherlands leaves no role for entrepreneurial skills in terms of the education-job matching. The Spanish system, instead, which is very little stratified, leaves its graduates with a rather general set of skills. In this case, entrepreneurial skills such as opportunity search and detection, self-awareness and creativity prove very important in matching university graduates to jobs.

Having demonstrated that entrepreneurial skills help in avoiding over-education in the first place would be enough to put them in the center of the political agenda. However, we show, that not only they serve for avoiding over-education in the first job, but also, and perhaps even more

importantly, they contribute to individuals' propensity to find a matching job once over-educated in the first job.

Concluding, we show that entrepreneurial skills are relevant for the quality of education-labor matching in more open, less stratified education systems like the Spanish one, whereas they do not play such an important role in countries where the education system is more tightly linked to the labor market: e.g. the Netherlands. These observations have potentially far-reaching consequences given the high level of over-education in Spain (29% in our sample) for both, human capital's productivity opportunity cost as well as for workers' individual careers. Introduction of entrepreneurial skills into higher education curricula should help diminish the mismatch problem in Spain and perhaps other countries with similar education-job market setups.

References

- Agut, S., J. M. Peiró, et al. (2009). "The Effect of Overeducation on Job Content Innovation and Career-Enhancing Strategies Among Young Spanish Employees." Journal of Career Development **36**(2): 159-182.
- Alba-Ramirez, A. (1993). "Mismatch in the Spanish Labor Market. Overeducation?" Journal of Human Resources **28**: 259-278.
- Allmendinger, J. (1989). "Educational systems and labor market outcomes." European Sociological Review **5**(3): 231-250.
- Battu, H., C. R. Belfield, et al. (1999). "Overeducation Among Graduates: a cohort view." Education Economics **7**(1): 21-38.
- Bosma, N., J. Hessels, et al. (2012). "Entrepreneurship and role models." Journal of Economic Psychology **33**(2): 410-424.
- Buchel, F. and A. Mertens (2004). "Overeducation, undereducation, and the theory of career mobility." Applied Economics **36**: 803-816.
- Budría, S. and A. I. Moro-Egido (2009). "The Overeducation Phenomenon in Europe." Revista Internacional de Sociología **67**(2): 329-345.
- Cameron, A. C. and P. K. Trivedi (2010). Microeconometrics using Stata, Revised Edition., Stata Press.
- Chevalier, A. (2003). "Measuring overeducation." Economica **70**: 509-531.
- Chevalier, A. and J. Lindley (2009). "Overeducation and the skills of UK graduates." Journal of the Royal Statistical Society **172**(2): 307-337.
- de Grip, A., H. Bosma, et al. (2008). "Job-worker mismatch and cognitive decline." Oxford Economic Papers **60**: 237-253.
- Dolton, P. and A. Vignoles (2000). "The incidence and effects of overeducation in the UK graduate labor market." Economics of Education Review **19**: 179.
- Finnie, R. and M. Frenette (2003). "Earnings differences by major field of study: evidence from three cohorts of recent Canadian graduates." Economics of Education Review **22**: 179.
- Freeman, R. B. (1976). The overeducated American, Academic Press.
- Frei, C. and A. Sousa-Poza (2011). "Overqualification: permanent or transitory?" Applied Economics: 1-11.

- Frenette, M. (2004). "The overqualified Canadian graduate: the role of the academic program in the incidence, persistence, and economic returns to overqualification." Economics of Education Review **23**: 29-45.
- Green, C., P. Kler, et al. (2007). "Immigrant overeducation: Evidence from recent arrivals to Australia." Economics of Education Review **26**: 420-432.
- Groot, W. and H. M. v. d. Brink (2000). "Overeducation in the labor market: a meta-analysis." Economics of Education Review **19**: 149-158.
- Hersch, J. (1991). "Education Match and Job Match." The Review of Economics and Statistics **73**(1): 140-144.
- Hersch, J. (1995). "Optimal 'mismatch' and promotions." Economic inquiry **33**: 611-624.
- Jones, M. V., N. Coviello, et al. (2011). "International Entrepreneurship research (1989–2009): A domain ontology and thematic analysis." Journal of Business Venturing **26**(6): 632-659.
- Lindley, J. and S. McIntosh (2010). Is the Over-education Wage Penalty Permanent? Discussion Papers in Economics, University of Surrey: 1-39.
- McGoldrick, K. M. and J. Robst (1996). "Gender Differences in Overeducation: A Test of the Theory of Differential Overqualification." The American Economic Review **86**: 280-284.
- McGuinness, S. (2003). "Graduate overeducation as a sheepskin effect: evidence from Northern Ireland." Applied Economics **35**: 597-608.
- McGuinness, S. (2003). "University quality and labor market outcomes." Applied Economics **35**: 1943.
- McGuinness, S. (2006). "Overeducation in the labor market." Journal of Economic Surveys **20**: 387-418.
- Moriano, J. A. and M. Gorgievski (2007). Psychology of Entrepreneurship. Madrid, Publicaciones de UNED.
- Muller, W. and M. Gangl (2003). Transition from Education to Work in Europe, Oxford University Press.
- Ortiz, L. and A. Kucel (2008). "Do Fields of Study Matter for Over-education?: The Cases of Spain and Germany." International Journal of Comparative Sociology **49**(4-5): 305-327.
- Parker, S. C. (2009). The Economics of Entrepreneurship. Cambridge Cambridge University Press.
- Quintini, G. (2011). "Right for the Job: Over-Qualified or Under-Skilled?" OECD Social, Employment and Migration Working Papers **120**.
- Renes, G. and G. Ridder (1995). "Are women overqualified." Labour Economics **2**: 3-18.

- Rubb, S. (2003). "Overeducation in the labor market: a comment and re-analysis of a meta-analysis." Economics of Education Review **22**(6): 621-629.
- Rubb, S. (2003). "Overeducation: a short or long run phenomenon for individuals?" Economics of Education Review **22**(4): 389-394.
- Rubb, S. (2005). "Overeducation, undereducation, and the theory of career mobility: a comment and a note on underemployment." Applied Economics Letters **12**(2): 115-118.
- Rumberger, R. W. (1981). "The Rising Incidence of Overeducation in the U.S. Labor Market." Economics of Education Review **1**(3): 293-314.
- Rumberger, R. W. (1984). "The Changing Economic Benefits of College Graduates." Economics of Education Review **3**(1): 3-11.
- Scherer, S. (2004). "Stepping-Stones or Traps?: The Consequences of Labour Market Entry Positions on Future Careers in West Germany, Great Britain and Italy." Work, Employment & Society **18**(2): 369-394.
- Shavit, Y. and W. Muller (1998). From School to Work. A comparative Study of Educational Qualifications and Occupational Destinations, Clarendon Press Oxford.
- Sicherman, N. (1991). "'Overeducation' in the Labor Market." Journal of Labor Economics **9**: 101-122.
- Sicherman, N. and O. Galor (1990). "A theory of career mobility." Journal of Political Economy **98**: 169-192.
- Sloane, P. J. (2003). Much ado about Nothing? What does the over-education literature really tell us? Overeducation in Europe: Current Issues in Theory and Practice. F. Buchel, A. DeGrip and A. Mertens, Edward Elgar: Cheltenham Northampton.
- Sloane, P. J., H. Battu, et al. (1999). "Overeducation, undereducation and the British labour market." Applied Economics **31**: 1437-1453.
- Tang, J., K. M. Kacmar, et al. (2012). "Entrepreneurial alertness in the pursuit of new opportunities." Journal of Business Venturing **27**(1): 77-94.
- Thornton, P. H. (1999). "The Sociology of Entrepreneurship." Annual Review of Sociology **25**: 19-46.
- Vedres, B. and D. Stark (2010). "Structural Folds: Generative Disruption in Overlapping Groups." American Journal of Sociology **115**(4): 1150-1190.
- Verhaest, D. and E. Omey (2010). "The determinants of overeducation: different measures, different outcomes?" International Journal of Manpower **31**(6): 608-625.

Verhaest, D. and T. Schatteman (2010). Overeducation in the early career: an analysis using sequence techniques. HUB Research Papers: Economics & Management. Brussels.

Verhaest, D. and R. Van der Velden (2010). Cross-country differences in graduate overeducation and its persistence. ROA Research Memorandum. Maastricht.

Verhaest, D. and R. Van der Velden (2012). "Cross-country Differences in Graduate Overeducation." European Sociological Review.

von Graevenitz, G., D. Harhoff, et al. (2010). "The effects of entrepreneurship education." Journal of Economic Behavior & Organization **76**(1): 90-112.

von Graevenitz, G. and R. Weber (2011). "How to Educate Entrepreneurs?" Munich School of Management Discussion Papers **2011-2**.

Zhao, H. and S. E. Seibert (2006). "The Big Five personality dimensions and entrepreneurial status: A meta-analytical review." Journal of Applied Psychology **91**(2): 259-271.

Table 1. Descriptive statistics.

Sample 1 Variable	Spain		Netherlands	
	Mean	Std. Dev.	Mean	Std. Dev.
overeducated in first job	0.436	0.496	0.278	0.448
entrepreneurial skills	-0.002	0.814	0.004	0.753
entrepreneurial program	2.719	1.184	2.230	1.064
female	0.624	0.485	0.596	0.491
vocational program	0.233	0.423	0.566	0.496
relative grade	0.017	1.015	0.014	0.994
Father's education	2.632	0.958	2.081	0.898
Education	0.110	0.312	0.122	0.327
Humanities and Arts	0.064	0.244	0.049	0.215
Science and Maths	0.149	0.356	0.068	0.252
Engineering	0.160	0.366	0.132	0.338
Agriculture and Vet	0.038	0.192	0.017	0.129
Health	0.128	0.335	0.198	0.399
Services	0.007	0.081	0.051	0.221
Observations	2282		2255	

Sample 2 Variable	Spain		Netherlands	
	Mean	Std. Dev.	Mean	Std. Dev.
exit overeducation	0.479	0.500	0.632	0.483
entrepreneurial skills	-0.085	0.845	0.012	0.733
entrepreneurial program	2.611	1.201	2.267	1.118
female	0.651	0.477	0.656	0.475
experience	46.001	14.263	52.109	10.845
vocational program	0.218	0.413	0.461	0.499
Education	0.143	0.350	0.090	0.287
Humanities and Arts	0.075	0.264	0.092	0.289
Science and Maths	0.159	0.366	0.062	0.241
Engineering	0.086	0.281	0.107	0.310
Agriculture and Vet	0.035	0.184	0.011	0.106
Health	0.045	0.207	0.169	0.375
Services	0.011	0.106	0.053	0.224
Observations	800		532	

Table 2. Correlations between the main variables. Upper-triangle refers to the Netherlands and lower-triangle to Spain. Significance levels (p-value) in brackets.

Sample 1 N=2282/ 2255	Entrepreneurial skills	Entrepreneurial program	Over-education first job
Entrepreneurial skills		0.0923 (0.0000)	0.0109 (0.6054)
Entrepreneurial program	0.1907 (0.0000)		0.0358 (0.0893)
Over-education first job	-0.0691 (0.0010)	-0.0631 (0.0026)	

Sample 2 N=800 / 532	Entrepreneurial skills	Entrepreneurial program	Exit over-education
Entrepreneurial skills		0.0795 (0.0670)	0.0607 (0.1623)
Entrepreneurial program	0.1931 (0.0000)		0.0499 (0.2503)
Exit over-education	0.1268 (0.0003)	0.0811 (0.0218)	

Table 3. Probit marginal effects and OLS regression for Spain and the Netherlands. Dependent variable: Over-education in the first job.

	Spain		Netherlands	
	Probit	OLS	Probit	OLS
Entrepreneurial skills	-0.028** (0.012)	-0.028** (0.012)	0.012 (0.012)	0.011 (0.012)
Female	0.011 (0.021)	0.010 (0.021)	0.071*** (0.020)	0.071*** (0.020)
Vocational	-0.002 (0.023)	-0.002 (0.023)	-0.069*** (0.020)	-0.070*** (0.021)
Relative grade	-0.051*** (0.010)	-0.051*** (0.010)	-0.030*** (0.009)	-0.030*** (0.009)
Fathers' education	-0.043*** (0.010)	-0.043*** (0.010)	-0.009 (0.010)	-0.009 (0.010)
Education	-0.022 (0.033)	-0.024 (0.036)	-0.156*** (0.033)	-0.148*** (0.029)
Humanities	-0.004 (0.041)	-0.005 (0.045)	0.168*** (0.041)	0.206*** (0.050)
Science&Maths	-0.042 (0.030)	-0.047 (0.032)	-0.086** (0.040)	-0.090** (0.038)
Engineering	-0.222*** (0.030)	-0.236*** (0.031)	-0.056* (0.030)	-0.058* (0.030)
Agriculture&Vet	-0.192*** (0.052)	-0.206*** (0.053)	-0.113 (0.076)	-0.114* (0.068)
Health	-0.444*** (0.034)	-0.412*** (0.027)	-0.086*** (0.027)	-0.089*** (0.027)
Services	0.056 (0.119)	0.061 (0.130)	-0.016 (0.043)	-0.021 (0.046)
R-squared		0.113		0.051
Adj.R-squared		0.108		0.046
Pseudo R-squared	0.090		0.042	
Observations	2282	2282	2255	2255

Marginal effects; Robust standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Reference category: Social Sciences.

Table 4. OLS and IV regressions for Spain and the Netherlands. Dependent variable: Over-education in the first job.

	Spain		Netherlands	
	OLS	IV(2SLS)	OLS	IV(2SLS)
Entrepreneurial skills	-0.028** (0.012)	-0.138** (0.065)	0.011 (0.012)	0.204 (0.131)
Female	0.010 (0.021)	0.004 (0.022)	0.071*** (0.020)	0.091*** (0.025)
Vocational	-0.002 (0.023)	0.010 (0.025)	-0.070*** (0.021)	-0.086*** (0.024)
Relative grade	-0.051*** (0.010)	-0.044*** (0.011)	-0.030*** (0.009)	-0.039*** (0.011)
Fathers' education	-0.043*** (0.010)	-0.040*** (0.011)	-0.009 (0.010)	-0.020 (0.013)
Education	-0.024 (0.036)	-0.014 (0.038)	-0.148*** (0.029)	-0.134*** (0.033)
Humanities	-0.005 (0.045)	0.016 (0.047)	0.206*** (0.050)	0.189*** (0.053)
Science&Maths	-0.047 (0.032)	-0.038 (0.033)	-0.090** (0.038)	-0.106** (0.041)
Engineering	-0.236*** (0.031)	-0.219*** (0.033)	-0.058* (0.030)	-0.044 (0.033)
Agriculture&Vet	-0.206*** (0.053)	-0.204*** (0.055)	-0.114* (0.068)	-0.073 (0.075)
Health	-0.412*** (0.027)	-0.405*** (0.028)	-0.089*** (0.027)	-0.082*** (0.030)
Services	0.061 (0.130)	0.084 (0.128)	-0.021 (0.046)	0.019 (0.056)
Observations	2282	2282	2255	2255

Marginal effects; Robust standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Reference category: Social Sciences.

Table 5. Probit marginal effects and OLS regression for Spain and the Netherlands. Dependent variable: Exit over-education.

	Spain		Netherlands	
	Probit	OLS	Probit	OLS
Entrepreneurial skills	0.068*** (0.021)	0.068*** (0.020)	0.029 (0.028)	0.031 (0.029)
Female	-0.087** (0.038)	-0.088** (0.039)	0.039 (0.046)	0.038 (0.047)
experience	0.003*** (0.001)	0.003*** (0.001)	0.009*** (0.002)	0.010*** (0.002)
Vocational	-0.045 (0.043)	-0.045 (0.043)	0.121*** (0.042)	0.120*** (0.042)
Education	-0.053 (0.054)	-0.052 (0.054)	-0.229*** (0.071)	-0.239*** (0.079)
Humanities	-0.029 (0.071)	-0.030 (0.072)	-0.306*** (0.068)	-0.329*** (0.076)
Science&Maths	0.076 (0.051)	0.077 (0.052)	-0.131 (0.083)	-0.140 (0.093)
Engineering	0.072 (0.065)	0.072 (0.065)	0.115 (0.074)	0.109* (0.065)
Agriculture&Vet	0.122 (0.097)	0.123 (0.097)	-0.357** (0.179)	-0.379** (0.185)
Health	-0.042 (0.085)	-0.043 (0.087)	-0.083 (0.060)	-0.079 (0.061)
Services	-0.184 (0.173)	-0.186 (0.168)	-0.094 (0.091)	-0.096 (0.095)
R-squared		0.052		0.113
Adj.R-squared		0.038		0.094
Pseudo R-squared	0.038		0.088	
Observations	800	800	532	532

Marginal effects; Robust standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Reference category: Social Sciences.

Table 6. OLS and IV regressions for Spain and the Netherlands. Dependent variable: Exit over-education.

	Spain		Netherlands	
	OLS	IV(2SLS)	OLS	IV(2SLS)
Entrepreneurial skills	0.068*** (0.020)	0.283** (0.124)	0.031 (0.029)	0.054 (0.283)
Female	-0.088** (0.039)	-0.084** (0.040)	0.038 (0.047)	0.041 (0.056)
experience	0.003*** (0.001)	0.002 (0.002)	0.010*** (0.002)	0.010*** (0.003)
Vocational	-0.045 (0.043)	-0.057 (0.046)	0.120*** (0.042)	0.115 (0.073)
Education	-0.052 (0.054)	-0.109* (0.066)	-0.239*** (0.079)	-0.241*** (0.081)
Humanities	-0.030 (0.072)	-0.098 (0.088)	-0.329*** (0.076)	-0.334*** (0.091)
Science&Maths	0.077 (0.052)	0.020 (0.063)	-0.140 (0.093)	-0.149 (0.139)
Engineering	0.072 (0.065)	0.021 (0.071)	0.109* (0.065)	0.110* (0.066)
Agriculture&Vet	0.123 (0.097)	0.062 (0.105)	-0.379** (0.185)	-0.381** (0.181)
Health	-0.043 (0.087)	-0.096 (0.092)	-0.079 (0.061)	-0.081 (0.066)
Services	-0.186 (0.168)	-0.248 (0.178)	-0.096 (0.095)	-0.093 (0.096)
Constant	0.391*** (0.071)	0.499*** (0.098)	0.111 (0.108)	0.121 (0.166)
Observations	800	800	532	532

Robust standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$;
Reference category: Social Sciences.

APPENDIX: Econometric tests

Over-education in the first job

Durbin-Wu-Hausman test of exogeneity (2SLS).

Ho: variables are exogenous

	Spain	Netherlands
Robust score chi2(1)	3.02686 (p=0.0819)	2.38993 (p=0.1221)
Robust regression F(1, N-13)	3.01769 (p=0.0825)	2.39006 (p=0.1223)

Instrument validity

First-stage regression summary statistics

2SLS	Spain	Netherlands
R-sq.	0.0567	0.0323
Adjusted R-sq	0.0517	0.0271
Partial R-sq	0.0363	0.0105
Robust F(2, N-12)	74.3614	22.9596
Prob>F	0.0000	0.0000
Minimum eigenvalue statistic	85.4031	23.6819

Ho: Instruments are weak

of excluded instruments: 1

of endogenous regressors: 1

Critical values	10%	15%	20%	25%
Size of nominal 5% Wald test	16.38	8.96	6.66	5.53

Exit from Over-education

Durbin-Wu-Hausman test of exogeneity (2SLS).

Ho: variables are exogenous

	Spain	Netherlands
Robust score chi2(1)	3.79413 (p=0.0514)	0.006804 (p=0.9343)
Robust regression F(1, N-13)	3.75839 (p=0.0529)	0.006638 (p=0.9351)

Instrument validity

First-stage regression summary statistics

2SLS	Spain	Netherlands
R-sq.	0.0693	0.0606
Adjusted R-sq	0.0563	0.0408
Partial R-sq	0.0340	0.0107
Robust F(2, N-12)	23.5222	5.10403
Prob>F	0.0000	0.0243
Minimum eigenvalue statistic	27.7071	5.63448

Ho: Instruments are weak

of excluded instruments: 1

of endogenous regressors: 1

Critical values	10%	15%	20%	25%
Size of nominal 5% Wald test	16.38	8.96	6.66	5.53