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DETERMINANTS AND SUCCESS FACTORS OF STUDENT ENTREPRENEURSHIP: EVIDENCE FROM THE UNIVERSITY OF PADOVA

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DETERMINANTS AND SUCCESS FACTORS OF STUDENT ENTREPRENEURSHIP: EVIDENCE FROM THE UNIVERSITY OF PADOVA

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Summary in Italian

La "student entrepreneurship" è una modalità innovativa di guardare all'impatto delle università sul territorio, e rappresenta un modello alternativo (e numericamente più rilevante) a quello degli spin-off accademici. Lo studio delle attività imprenditoriali dei 119.347 laureati dell'Università di Padova tra il 2000 e il 2010 offre utili spunti di riflessione sul profilo dello studente che è orientato a creare impresa e sulle determinanti del successo dell'azione imprenditoriale. Se ne derivano alcune implicazioni sull'orientamento dei corsi di studio e sulle possibili azioni a sostegno dell'imprenditorialità dei neo-laureati.

Abstract in English

"Student entrepreneurship" is an innovative way of looking at the impact of universities on the territory, and represents an alternative (and numerically more relevant) model to that of academic spin-offs. The study of the entrepreneurial activities of the 119,347 graduates of the University of Padua between 2000 and 2010 offers useful food for thought on the profile of the student who is oriented towards business creation and on the determinants of the success of entrepreneurial action. Some implications on the orientation of the courses of study and possible actions to support the entrepreneurship of new graduates are illustrated.

1. Introduction

Universities contribute to countries' progresses and economic growth in many ways: generating and diffusing knowledge; spreading culture and influencing skills development; educating and training workforce; solving problems and developing new instruments. In "the era of open innovation" (Chesbrough, 2006), where firms are encouraged to look for ideas and knowledge coming from the outside to be more innovative, "universities are increasingly being called upon to contribute to economic development and competitiveness" (Feller, 1990). To make this contribution effective, universities can't behave anymore as 'ivory tower', isolated and focused on internal issues, but they are expected to collaborate with industry and government.

The current interaction of government, industry and academia witnesses a shift towards the so called 'triple helix' model, characterized by overlapping, yet relatively autonomous, spheres (Etzkowitz et al., 2000).

Perkmann and Walsh (2007) define "University-Industry links" the transfer of Intellectual Property (IP) through licensing, patents and commercialisation. Actually, the concept of university-industry links is wider, since it includes kinds of collaboration that can be more or less intense, formal or informal, short-term or long-term. Depending on the type of collaboration, on the motivations to form these agreements and on the role played by public policy in fostering such linkages (World Bank, 2013) the different forms of university-industry links can be divided in three groups: 1) academic entrepreneurship; 2) academic engagement; 3) student entrepreneurship. Academic entrepreneurship is "the attempt to increase individual or institutional profit, influence or prestige through the development and marketing of research ideas or research-based products" (Louis et al., 1989). This definition is broader than the traditional definition attributed to academic entrepreneurship, meant as "the founding of a firm with the objective to commercially exploit a patented invention, or in some cases, a body of unpatented expertise" (Shane, 2004). Indeed, academic entrepreneurs are those academics interested in "the successful commercialization of their research" (Etzkowitz, 2000), not only through spin-offs creation but also through the patenting and licensing of their inventions.

The main forms of academic entrepreneurship are: a) patenting of academic inventions (universities seek to obtain ownership of inventions created by their professors and employees to earn royalties from them; b) licensing of academic inventions (contracts between firms and universities, that guarantee the right to exploit academic IP to the former and economic rewards to the latter. Anyway, universities find many difficulties in licensing their inventions and in getting revenues from this activity; c) academic spin-offs (independent firms established to transform university knowledge and research into marketable products, processes and services contributing to the regional development). All the described forms of UIC give firms the opportunity to exploit academic knowledge and technology and provide professors and universities financial rewards and prestige. To facilitate the commercialisation of intellectual property, many universities have Technology Transfer Offices (TTOs), science parks and incubators (Clarysse at al., 2005): organizations that behave as bridge in University-Industry collaborations.

Academic engagement is the "knowledge-related collaboration by academic researchers with non-academic organisations" (Perkmann et al., 2013). Compared with academic entrepreneurship, academic engagement is "more widely practiced [...], closely aligned with traditional academic research activities, and pursued by academics to access resources supporting their research agendas" (Perkmann et al., 2013). It includes forms of U-I collaborations generally very profitable and valuable, that can be both formal (such as consulting) and informal (such as services provided to firms). The most diffuse types of academic engagement are: a) contract research (collaborations in research on applied topics established when firms seek to get support by academics to develop new ideas or to solve problems); b) collaborative (or joint) research (formal collaborative arrangements, usually publicly funded), aimed at cooperation on R&D projects that involve dedicated research groups; c) consulting (research or advisory services provided by individual academic researchers to their industry clients, which directly contact professors to give them advice, problem-solving services or new ideas); d) informal activities (ad-hoc advice and services, training, meeting and conferences that firms commission to academic researchers).

Mars et al. (2008) integrated the classic forms of university-industry collaborations with the student entrepreneurship. This new and under-investigated phenomenon is defined by Colombo et al. (2015) as new ventures created by students and recent graduates. Student start-ups represent a significant part of the entrepreneurial activity directly stemming from universities (Åstebro et al., 2012).

The aim of this work is to investigate the factors driving graduates to establish new ventures, and to explore the factors influencing the success of the companies.

Secondary data analysis is performed on students graduated at the University of Padova, the second oldest university in Europe (founded in 1222), and one of the leading university in Italy, which provides a huge variety of courses both in humanities, social sciences and in STEM (science, technology, engineering, and mathematics) areas. The University of Padova is located in the Veneto region, one of the most innovative and productive regions in Italy, counting a number of, prevalently small and medium, innovative manufacturing companies, and start-ups. Results inform on the strengths and weaknesses of universities as effective elements of an entrepreneurship booster function, and assess the role played by individual and contextual factors.

The paper proceeds as follows. Section 2 review the research works on student entrepreneurship and pinpoints the left-behind topics. Section 3 illustrates the empirical setting. Section 4 offers detailed information on the empirical analysis conducted for investigating the phenomenon of student entrepreneurship at the University of Padova. Section 5 elaborates some conclusive remarks and directions of further research.

2. Student entrepreneurship

Robust empirical evidence suggests that education is an important positive determinant of entrepreneurial performance (survival probability, revenues growth, occupation rate, profits, propensity to innovate and to valorise human capital) (e.g. Bates, 1999; Ferrante, 2005), and according to some studies (Bugamelli et al., 2011; Schivardi and Torrini, 2011; Federici and Ferrante, 2014), the poor economic performance of the Italian economy in the past 15 years or so can be partly ascribed to entrepreneurial styles and strategies determined by a poor endowment of human capital.

For the above reasons, from the last decade, there was an increasing interest for the understanding of the entrepreneurship phenomena and for a better analysis of the student entrepreneurship dimension since it is an under-investigated phenomenon. By observing student entrepreneurship at Politecnico di Milano, Colombo et al. (2016) identified elements increasing students' propensity to create one or more start-up: a) a more specialized course curriculum; b) an high final degree score (103/110 or better); c) the attendance of management or economic courses. Colombo et al. (2016) investigated what is the relationship between alumni's course curriculum and the decision to become student entrepreneurs. They focused on the effects of the student entrepreneurship in technology-based universities, using as empirical setting the Politecnico of Milano. Ruda, Martin, Danko (2009) claimed that receiving an entrepreneurial education and being aware of the assistance offered by college/universities encourage students to become entrepreneurs. Other studies explored the probabilities for these start-ups to be successful, and Astebro et al. (2012) observed that are much bigger when they are closely related to the founder's degree and when they are created by graduates of the top 10 schools. Universities can foster and support student entrepreneurship in many ways, by offering an entrepreneurship education (Bae et al., 2014) and assisting graduates with business ideas to start their own businesses. The results of a questionnaire to the applicants in the Graduate Enterprise Program (GEP), a Training-agency-sponsored initiative, show that the ninety percent of the participants would certainly have deferred their entrepreneurial activities by at least five years, if not forever, without the support of this program (Brown, 1990). The programme was supporting student entrepreneurship by a) providing student entrepreneurs access to university resources, such as laboratory, free office space and telecommunication (Mars and Rhoades,2012); b) creating network with professors, that invest their expertise and money in student's projects, and leverage the start-up image with their talent and prestige (Mars and Rhoades, 2012); c) organizing Business Plan Competitions, where students can access strategic networks of entrepreneurs and influential professionals and where they can find funding sources for their project (Mars and Rhoades, 2012).

The main features of student entrepreneurs are that 1) they use university knowledge to recognize opportunities and develop, launch, and operate new companies to exploit them (aligning with Shane, 2003; Hoskisson, Covin, Volberda, and Johnson, 2011; 2) they use their university education to develop the three core capabilities that underline venture creation: opportunity refinement, resource acquisition, and venture championing (Rasmussen et al. 2011); 3) they rely on the university's reputation and networks to reach the credibility thresholds of their ventures (Rasmussen et al. 2011); 4) they use the university to develop weak and strong network ties. Weak ties provide them with new knowledge and information. Strong ties provide resources, legitimacy, and sensitive information exchange. Bridging ties provides market and customer information as well as capability to expand current capabilities (Hoskisson et al., 2011).

Existing research is meanly devoted to study deeply entrepreneurship of graduates from STEM courses, such as in Souitaris et al. (2007) and Hsu et al. (2007), basically ignoring the large variety of other courses offered by the university, and their relationships with the regional economic development in terms of contribution to enrich the entrepreneurial activities of the territory where the university is located. We aim to fill this gap by analyzing the determinants but also the success factors of student entrepreneurship.

3. Empirical setting: the University of Padova

The University of Padova strongly contributes to the development and innovativeness of the Veneto region, where it is located, by enhancing knowledge production and commercialization. In the report published for the 2004-2010 period, the National Research Assessment Committee sets this university as the highest ranking among leading Italian universities for the quality of its research results[1]. The Index used to make this ranking includes scientific articles, monographs, patents, works and publications presented by universities, public bodies and private research centers. Padova has an excellent position in all the disciplines, with a leading role in Physics, Earth Sciences, Biology, Medicine, Agrary and Veterinary,

[1]http://unipd.it/en/research/research-excellence

Industrial and Information Engineering, Economics and Statistics[2]. This university also contributes to the economic growth of the region, through commercial research services provided to private and public bodies. In fact, a particular effort is being made to enhance collaboration between university research groups and industry, with special emphasis on small and medium enterprises in North-East Italy[3].

The University of Padova promotes research and service activities at the request and in favor of third parties and in collaboration with outside entities[4]. Many regulations introduced at university level concern services and funding offered to foster research projects and to help professors and researchers to introduce interesting innovations. The most important aspects regulated at university level are: funding for research projects and collaborative research; spin-offs creation; patent registration; licensing contracts.

Together with the introduction of policies and regulations, the University of Padova has created research offices and science and technology centers to encourage and to support the different types of academic engagement and academic entrepreneurship: the Technology Transfer Office; research centers; Galileo Science and Technology Park (STP); StartCube business incubator. Together with centers and offices that support knowledge production and transfer, enhancing the different forms of academic engagement and academic entrepreneurship, the University of Padova also provides opportunities and assistance to students interested in becoming entrepreneurs. With this purpose, it organizes Start Cup Veneto, a business plan competition patterned on the M.I.T. "50K Entrepreneurship Competition" model. Start Cup wants to boost research and technological innovation and to emphasize the use of spin-off company as a way of transferring research results and know-how to the market[5]. Every year, at the end of Start Cup, the 5 best business plans compete for a final award at national level called P.N.I. (Premio Nazionale per l'Innovazione), which is organized in collaboration with other Italian universities and gives the winner a prize in money.

[2] http://unipd.it/ilbo/content/anvur-e-qualita-della-ricerca-padova-al-primo-posto-italia
[3] http://unipd.it/en/research/research-excellence
[4] http://unipd.it/en/university/scientific-and-academic-structures/other-structures
[5] http://unipd.it/en/research/results-research/business-plan-competition-start-cup

4. Empirics

4.1 Methodology

We employed a quantitative analysis to secondary data. The initial dataset, provided by the statistics office of the University of Padova, included 119,347 students graduated at the University of Padova between 2000 and 2010. Information about personal data, university courses, enrolment and graduation years, number and types of credits (ECTS), supervisors and title of the thesis, final grade and other characteristics about the individual and/or the academic dimension were collected with the compilation of two surveys at the beginning and at the end of the academic life. InfoCamere S.c.p.A. matched the aforementioned students with the companies present on the Italian Business register where the alumni were listed as shareholders or as having a managerial role. After an elaboration and other subsequent additions, we obtained a database resulting from the merge between the Italian Business register and the University of Padova database. The final database consists of 6.427 companies founded by (4.172) or having graduates enrolled as managers (2.255) between 2000 and 2010.

As for the quantitative analysis, we focused on the 4.172 companies founded by graduates at the University of Padova.

4.2. Variables

A list of all the variables entered in the regression analysis, herafter presented in details, is available in Table A1 in the Appendix.

4.2.1 Dependent variables

Entrepreneur (ENTREPR). An individual is defined as an entrepreneur if is labelled an owner in an Italian company and has 18 or more years at the time of company establishment. All the analysis include only entrepreneurs who have founded a company after the legal age in order to try to avoid firms inheritors or acquirers of already based businesses and to have higher probability to analyse the original founders. The process used to identify the entrepreneurs is different for each category of companies. In case of corporations and partnerships, such characteristic is applied if the student is classified as partner or labeled as an owner. The qualification of entrepreneur is also

assigned to the holders ("Titolare") in case of individual enterprises and for the rest of the company forms only if the student is explicitly reported as an owner. ENTREPR is a dummy that takes value 1 if among the owners of the company there is a student graduated between 2002 and 2010 at the University of Padua.

Company Status (COMPSTATUS). As indicator of performance, we adopted the status declared by the company at the end of the 2015. The dummy takes value 1 if the company is active in 2015 and 0 if is inactive, in liquidation, in bankruptcy or suspended.

4.2.2 Independent variables

Gender (SEX). It is a dummy that takes value 1 if the student is a male.

Years of study (YStudy). It represents the years spent at the university. It is calculated as the difference between the year of graduation and the year of enrolment.

Graduation Mark (GradMark). The graduation mark is a quality indicator of the academic performance of the student at the University of Padova (the range is between 70 and 110).

Experience Abroad (ExpAbroad): The dummy variable considers all types of academic experiences made by the student abroad. It takes value 1 if the student reported an experience abroad during university.

University course. A set of 13 dummies that assume value 1 if the student has attended the specific university course.

Credits in economics exams: A set of 13 variables that indicates the total amount of credits obtained in an economic discipline.

Total credits in economics exams (TotCredEcon). It is the sum of all the credits obtained by the student in exams within the economics areas.

Same Province (SameProv): Comparison between the geographic location of the company and the province of residence of the student. The dummy assumes value 1 if the company was founded in the same province of residence of the student.

University Influence (UnivInflue): Comparison between the type of university course and the company sector. According to the association sector-course category made specifically for this analysis , the dummy assumes value 1 if the sector of activity of the company and the university course attended by the student are connected in term of future job applications and skills required (by the sector) and/or offered (by the university).

Company during university (*CompDurUniv*): The variable identifies companies founded by students in the period between the year of enrolment and the year of graduation. The dummy assumes value 1 if the company was founded during university.

4.2.3. Control variables

Location of the company. A set of 5 dummies that indicate the geographic distribution of the companies (northeast, northwest, centre, south of Italy or islands).

Place of residence of the student. A set of 6 dummies that indicate the place of residence of the student (northeast, northwest, centre, south of Italy, islands, or foreign country).

Company sector. A Set of 4 dummy variables that indicates the sector in which the company operates according to the Italian Ateco classification.

Company age (AgeComp). It is calculated as the difference between 2015 and the year of foundation of the company.

Company size (TotEmpl). It represents the size of a company and it is calculated as the total amount of employees in 2015.

4.2.4   Results and discussion

We first estimated the factors influencing the probability to become an entrepreneur through two probit regression models (Table 1).

The difference between model A1 and model A2 is on the fact that model A2 accounts for all the possible credits obtained through the attendance of courses on economics matters, while model A1 counts the overall credits obtained in economics matters. We can observe that entrepreneurial activities are mainly conducted by males, who completed the course of study in time, not caring much about the grades and without an experience abroad. The course of study attended influences the probability to become entrepreneur, and the descriptive statistics inform that the majority of companies are founded by engineering students, but, evaluating this number against the total number of people enrolled for each university course, the pole position is covered by graduated in agricultural studies. The number of credits obtained attending courses in economic disciplines impact positively the probability to become entrepreneur, and, as model A2 informs, not all economic courses produce the same result. There are also geographical differences, showing that the place of residence of the student impact on the entrepreneurial actions.

Probit	Model A1			Model A2		
		Robust			Robust	
Entrepr	Coef.	Std. Err.		Coef.	Std. Err.	
_cons	-0.75909	(0.18)	***	-0.83277	(0.21)	***
SEX	0.463305	(0.02)	***	0.463843	(0.02)	***
YStudy	-0.04319	(0.01)	***	-0.04418	(0.01)	***
GradMark	-0.01541	(0.00)	***	-0.01559	(0.00)	***
ExpAbroad	-0.1362	(0.05)	***	-0.14077	(0.05)	***
AGR	0.758381	(0.09)	***	0.820203	(0.14)	***
ECON	(omitted)			(omitted)		
PHARM	0.726306	(0.11)	***	0.808747	(0.15)	***
LAW	0.163094	(0.10)		0.306443	(0.15)	**
ENG	0.029101	(0.09)		0.144748	(0.14)	
LIT	0.403623	(0.09)	***	0.484336	(0.14)	***
MED_CH	0.295991	(0.09)	***	0.377276	(0.14)	***
MED_VET	0.865248	(0.12)	***	0.94715	(0.16)	***
PSYC	0.109813	(0.09)		0.187194	(0.14)	
SC_FORM	0.153608	(0.10)		0.222827	(0.15)	
SC_MAT	0.218542	(0.09)	**	0.311524	(0.14)	**
SC_POL	0.391698	(0.08)	***	0.564432	(0.13)	***
SC_STAT	0.216877	(0.10)	**	0.293066	(0.16)	*
TotCredEcon	0.003731	(0.00)	***	-	-	
NCrIngEco	-	-		-0.00134	(0.00)	
NCrPolEcon	-	-		-0.00318	(0.00)	
NCrFinScien	-	-		-0.01894	(0.01)	*
NCrHistor	-	-		-0.02345	(0.02)	
NCrEcmetrx	-	-		-0.00332	(0.02)	
NCrAdvEcon	-	-		-0.00597	(0.01)	
NCrAccount	-	-		0.008488	(0.00)	*
NCrManag	-	-		0.013254	(0.00)	***
NCrBusinFin	-	-		-0.01305	(0.03)	
NCrCompMan	-	-		0.026895	(0.01)	***
NCrIntermed	-	-		-0.0053	(0.01)	
NCrHistEcon	-	-		-0.00843	(0.01)	
NcrProdScien	-	-		0.37313	(0.14)	***

StNW	(omitted)			(omitted)		
StNE	0.230384	(0.05)	***	0.232017	(0.05)	***
StCentre	0.648827	(0.07)	***	0.647114	(0.07)	***
StSouth	0.552411	(0.05)	***	0.553938	(0.05)	***
StIslands	0.663123	(0.06)	***	0.665544	(0.06)	***
StForeign	-0.26203	(0.14)	*	-0.24544	(0.14)	*
Number of obs		64359			64359	
Wald chi2(34)		1263.72			1311.78	
Pseudo R2		0.0792			0.0819	
Log pseudolikelihood		-8154.46			-8130.5	

Secondly, we investigated the factors influencing the probability to found a successful company through other two probit regression models (Table 2). The main difference between model B2 and model B1 relies on the fact the model B2 accounts also for the sector of activity of the company. The success is not linked to gender issues or to the quality of the students (measured as graduation mark). It is surprisingly negatively related to the experiences as students abroad, thus paving the way to a reflection on the real motivation that drive students, especially in the past, to embark in an Erasmus programs. Another unexpected result pertains the negative impact of the credits in economic matters, which might be motivated by the fact that students without economic background might engage in master courses or network with more experienced people in order to fill their gaps. It seems that the present economic preparation offered is not enough to guarantee a successful future as an entrepreneur. Nevertheless, the fitness between the company activities and the type of university course attended seems to positively affect the entrepreneurial ventures.

Table 2: Estimation of the probability to found a successful company

Probit	Model B1			Model B2		
CompStatus	Coef.	Robust Std. Err.		Coef.	Robust Std. Err.	
_cons	1.780838	(0.96)	*	1.929639	(0.99)	*
SEX	0.044668	(0.12)		0.044109	(0.12)	

YStudy	0.006909	(0.04)		0.006868	(0.04)	
GradMark	-0.0053	(0.01)		-0.00498	(0.01)	
ExpAbroad	-0.41837	(0.25)	*	-0.3985	(0.25)	
TotCredEcon	-0.00672	(0.00)	**	-0.00678	(0.00)	**
AGR	0.247669	(0.30)		0.316624	(0.31)	
ECON	(omitted)			(omitted)		
PHARM	0.19673	(0.33)		0.198663	(0.33)	
LAW	0.065761	(0.39)		0.085902	(0.39)	
ENG	0.307066	(0.26)		0.313182	(0.26)	
LIT	0.246319	(0.30)		0.249823	(0.30)	
MED_CH	0.200057	(0.27)		0.228199	(0.27)	
MED_VET	0.310078	(0.30)		0.331405	(0.30)	
PSYC	0.239956	(0.28)		0.247039	(0.28)	
SC_FORM	0.473272	(0.38)		0.477989	(0.38)	
SC_MAT	-0.04552	(0.29)		-0.03318	(0.29)	
SC_POL	0.233352	(0.28)		0.249325	(0.28)	
SC_STAT	0.309216	(0.42)		0.306825	(0.42)	
SameProv	-0.05944	(0.13)		-0.05285	(0.13)	
UnivInflue	0.589779	(0.15)	***	0.588111	(0.15)	***
CompDurUniv	0.422644	(0.30)		0.422813	(0.30)	
AgeComp	0.038934	(0.02)	**	0.040005	(0.02)	***
TotEmpl	-0.00312	(0.01)		-0.00375	(0.01)	
CoNE	(omitted)			(omitted)		
CoNW	0.056981	(0.22)		0.050959	(0.22)	
CoCentre	-0.47702	(0.22)	**	-0.48086	(0.21)	**
CoSouth	-0.38362	(0.19)	**	-0.39017	(0.19)	**
CoIslands	-0.34528	(0.23)		-0.33653	(0.23)	
A				-0.43309	(0.31)	
X				-0.08533	(0.31)	
SO				-0.20194	(0.26)	
Number of obs		1735			1735	
Wald chi2(34)		48.97			57.83	
Pseudo R2		0.0936			0.0971	
Log pseudolikelihood		-302.105			-300.949	

5. Conclusions

This work aimed at analysing the factors influencing the probability to establish a company for students or graduated at the University (student entrepreneurs). Moreover, it provides also insights on the drivers for a successful company foundation by student entrepreneurs. We applied a quantitative analysis based on secondary data. As a result of our investigations, we obtained a profile of the student entrepreneur and identified the specific role of each of the determinants of a successful start-up. From the analysis some main features of student entrepreneurship emerge: 1) it is gender-based (being male entrepreneurs the majority); 2) it is positively correlated to the economic courses attended; 3) it is negatively correlated with the number of years of study and the final grade; 4) it is dependent of the university course attended (there is a high heterogeneity in the entrepreneurial action). Moreover, when looking at the determinants of a successul business, other relevant factors emerge: 1) the success is not gender-based; 2) it is positively dependent on the proximity between the type of activities performed by the company and the type of university course attended.

That said, this research opens up to the creation of a portfolio of solutions to increase the university offer in terms of new events, courses and meta-organizations that should support students in their willing to establish new businesses, also far from science and technology area. Being exposed to business opportunities close to the field of study might increase the probability to establish a successful company. Therefore, universities should think to develop new ways to interact with the industry, beyond the services provided by the more traditional technology transfer offices, exploring new informal channels based on personal relationships and customized research projects, which include also the participation of soft science university courses. University managers should severely rethink the educational offer and the objectives of the U-I relationship interventions.

Further research might be conducted extending this study to other Italian Universities, for a deeper understanding of the student entrepreneurship phenomenon. By doing so, we could have a high-resolution photograph of the national panorama. Entrepreneurship is one of the main engines for the countries' development. It would be interesting and useful to understand why only the 3% of the

graduated students between 2000 and 2010 at the University of Padova decided to found a firm and the 97% decided to work for other firms. Even if this percentage is generally found also for other universities, as it emerged from working papers presented recently to conferences, still is a big question mark to be resolved. If one of the aims of Universities and Governments is the study of entrepreneurship and its promotion, a way forward to change this scenario must be found. This research offered some food for thought on which are the first actions to take in order to foster student entrepreneurship, and, more generally, for oiling the university-iundustry collaborations.

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APPENDIX

Table 1: List of variables included in the secondary data analysis

Name	Label	Type	Description
Entrepreneur	Entrepr	Dependent Variable	Dummy(0,1): Assumes value 1 if the student became an entrepreneur
Company Status	CompStatus	Dependent Variable	Dummy(0,1): Assumes value 1 if the company is active in 2015 and 0 otherwise (inactive, in liquidation, in bankruptcy or suspended)
Male	Male	Independent variable	Dummy(0,1): Assumes value 1 if the student is a male
Years of study	YStudy	Independent variable	Difference between the year of graduation and the year of enrolment at the university
Graduation mark	GradMark	Independent variable	Graduation mark
Experience abroad	ExpAbroad	Independent variable	Dummy(0,1): Assumes value 1 if the student made an experience abroad during the university
University course	AGR	Independent variable	Dummy(0,1) that assumes value 1 if the student is enrolled in the Agronomy course
	ECON		Dummy(0,1) that assumes value 1 if the student is enrolled in an Economics course
	PHARM		Dummy(0,1) that assumes value 1 if the student is enrolled in the Pharmacy course
	LAW		Dummy(0,1) that assumes value 1 if the student is enrolled in the Law course
	ENG		Dummy(0,1) that assumes value 1 if the student is enrolled in an Engineering course
	LIT		Dummy(0,1) that assumes value 1 if the student is enrolled in a Philosophy and Letters course
	MED_CH		Dummy(0,1) that assumes value 1 if the student is enrolled in the Medicine and Surgery course
	MED_VET		Dummy(0,1) that assumes value 1 if the student is enrolled in the Veterinary medicine course
	PSYC		Dummy(0,1) that assumes value 1 if the student is enrolled in the Psychology course

	SC_FORM		Dummy(0,1) that assumes value 1 if the student is enrolled in the Education Sciences course
	SC_MAT		Dummy(0,1) that assumes value 1 if the student is enrolled in a Physical and Natural Sciences course
	SC_POL		Dummy(0,1) that assumes value 1 if the student is enrolled in a Political Science course
	SC_STAT		Dummy(0,1) that assumes value 1 if the student is enrolled in a Statistical Sciences course
Location of the company	CoNW		Dummy(0,1): Assumes value 1 if the company is located in the northwest of Italy
	CoNE		Dummy(0,1): Assumes value 1 if the company is located in the northeast of Italy
	CoCentre	Independent variable	Dummy(0,1): Assumes value 1 if the company is located in the centre of Italy
	CoSouth		Dummy(0,1): Assumes value 1 if the company is located in the south of Italy
	CoIslands		Dummy(0,1): Assumes value 1 if the company is located in Sicily or in Sardinia
Place of residence of the student	StNW		Dummy(0,1): Assumes value 1 if the student lives in the northwest of Italy
	StNE		Dummy(0,1): Assumes value 1 if the student lives in the northwest of Italy
	StCentre	Independent variable	Dummy(0,1): Assumes value 1 if the student lives in the centre of Italy
	StSouth		Dummy(0,1): Assumes value 1 if the student lives in the south of Italy
	StIslands		Dummy(0,1): Assumes value 1 if the student lives in Sicily or in Sardinia
	StForeign		Dummy(0,1): Assumes value 1 if the student lives in a foreign country
Same province	SameProv	Independent variable	Dummy(0,1): Assumes value 1 if the company was founded in the same province of residence of the student
University influence (consistency)	UnivInflue	Independent variable	Dummy(0,1): Assumes value 1 if the sector of activity of the company and the university course attended by the student are consistent
Company created during university	CompDurUniv	Independent variable	Dummy(0,1): Assumes value 1 if the company was founded during the university
Age company	AgeComp	Independent variable	Difference between 2015 and the year of foundation of the company

Total employees	TotEmpl	Independent variable	Total number of employees of the company at 2015
Company sector	A		Dummy(0,1): Assumes value 1 if the company operates in the agriculture, forestry and fishing sector
	C	Independent variable	Dummy(0,1): Assumes value 1 if the company operates in the manufacturing sector
	X		Dummy(0,1): Assumes value 1 if the company operates in an unclassified sector
	SO		Dummy(0,1): Assumes value 1 if the company operates in all the other sectors
Credits received in economics exams	NCrIngEco		Total credits in Economic Engineering
	NCrPolEcon		Total credits in Economic Policy
	NCrFinScien		Total credits in Financial Science
	NCrHistor		Total credits in History of economic thought
	NCrEcmetrx		Total credits in Econometrics
	NCrAdvEcon		Total credits in Applied Economics
	NCrAccount	Independent variable	Total credits in Business administration
	NCrManag		Total credits in Economics and business management
	NCrBusinFin		Total credits in Corporate finance
	NCrCompMan		Total credits in Corporate organization
	NCrIntermed		Total credits in Economics of Financial Intermediaries
	NCrHistEcon		Total credits in Economic history
	NcrProdScien		Total credits in Product science
Total credits in economics exams	TotCredEcon	Independent variable	Sum of the credits in all the exams listed above